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Economic and Monetary Union in Europe

Charles R. Bean

On January 1, 1993, the European Community is set to become a single integrated market as most of the remaining national barriers to the free flow of goods, capital and labor are swept away. The result should be a significant increase in the economic interdependence between member states. Along with the Single Market program, the proposed amendment to the 1958 Treaty of Rome—the basic legal foundation of the Community—that was agreed by the European Council at its meeting in Maastricht in December 1991, proposes to transfer a number of decision-making capacities in the economic, social and foreign policy spheres from the national to the Community level. The future of this amendment, which must be ratified by the parliaments and/or electorates of all twelve member states before it can come into force, is in doubt at the time of this writing as a result of its narrow rejection in the Danish referendum. However, so much political capital is invested in the Maastricht agreement that it still seems inevitable that something very like the proposed treaty amendment will ultimately pass into law.

Within the sphere of economic policy-making, the most important ingredient of the Maastricht agreement is the mapping out of a precise route to monetary union and the eventual introduction of a common currency. The report in 1990 of the Delors Committee, comprising the governors of the national central banks and chaired by Jacques Delors, the president of the European Commission, provided the original blueprint, and the Maastricht agreement embodies most of the key features of this report. The agreement lays down both the institutional structure and the operational objectives for a European Central Bank that will ultimately take over the running of monetary

■ *Charles R. Bean is Professor of Economics, London School of Economics, London, United Kingdom.*

policy from the national central banks. It also lays out a precise timetable for monetary union, as well as conditions under which individual countries can be admitted to the union. Finally, it contains a number of clauses relating to the conduct and supervision of national fiscal policies. This last issue has probably been the most controversial, both from an academic and from a political perspective.

My discussion begins with a look at the general arguments for and against monetary union. I shall then discuss the proposed constitution of the European Central Bank and whether it is likely to be conducive to monetary stability, together with some of the problems posed by the transition to the new regime. Finally, I will turn to the issue of rules for the conduct of fiscal policy and the question of "fiscal federalism."

Why Monetary Union?

The task of the Delors Committee was the study of economic as well as monetary union, and both the report of the Committee and the European Commission's own assessment of monetary union (European Commission, 1990a) consistently link monetary union to the completion of the Single European Market. For instance, the Commission argues that "one market needs one money" (p. 9) and that "only a single currency allows the full potential benefits of a single market to be achieved" (p. 20). While the economic justification for this view is dubious, what is clear is that the present exchange rate arrangement which has operated since 1979 (usually referred to as the European Monetary System but more accurately the Exchange Rate Mechanism or ERM for short) is unlikely to be viable over the long term, now that most obstacles to intra-European capital flows have been removed as part of the creation of a single European capital market.

Under the ERM, participating currencies are allowed to fluctuate within narrow, but adjustable, bands. However, there is a fundamental tension between the triple objectives of fixed but adjustable exchange rates, autonomy in national monetary policies, and free capital movements. Any system that permits discrete realignments is likely to be subject to speculative attacks if such a realignment is thought to be imminent. For example, if a currency is expected to be devalued, speculators will immediately begin selling it to avoid the capital loss, resulting in an outflow of reserves and further intensifying the pressure for a devaluation. Even concerted intervention by central banks may be insufficient to fight off such an attack, given the scale of flows across foreign exchange markets; the mere expectation of a realignment can thus become a self-fulfilling prophecy. Indeed, unlimited access to credit from "hard" currency central banks would be necessary for a "soft" currency central bank to be guaranteed of being able to fight off a speculative attack. Furthermore, this

condition is necessary without being sufficient: a set of credible fiscal plans must also be in place to underpin the announced exchange rate parities.

In practice, the ERM is not quite as fragile as this argument may seem to imply, because it is a regime of managed floating within limited bands of fluctuation ($2\frac{1}{4}$ percent except for Spain, Portugal and the UK who have 6 percent), rather than one of fixed but adjustable parities. Consequently, realignments can be made small enough such that the new central parity lies within the old bands, avoiding discrete jumps in exchange rates and therefore limiting the rate of capital loss that speculators can suffer. In addition, as a result of the 1987 Basle-Nyborg agreement, current arrangements do give soft currency central banks unlimited access to foreign currency credit from counterpart hard currency central banks for up to 75 days.

This sort of system could conceivably be quite durable without full monetary union, if it can develop a credible commitment to make only small and infrequent realignments. The fact that there has been no significant realignment since 1987,¹ despite the considerable tensions thrown up by German unification, is a testament to the credibility of the existing parities. However, the pronounced widening in long-term interest differentials prompted by the rejection of the Maastricht agreement in the Danish referendum indicates how fragile that credibility can be. Since new political and economic tensions will inevitably arise with time, the current arrangement would be almost bound to degenerate into one with either wider bands or more frequent realignments or both. The only viable long-term alternatives are thus monetary union with a single currency or a considerably more flexible exchange rate arrangement than at present; the fact that the current system is probably not viable over the long term needs to be kept in mind when evaluating the costs and benefits of full monetary union.

The Costs of Monetary Union

Two main costs of monetary union are identified in the literature: a loss of seignorage in high inflation countries; and the loss of the exchange rate as a weapon of macroeconomic management. Seignorage is the revenue the government obtains by financing its budget deficit through printing money rather than selling debt; since at constant employment this would lead to inflation, it is frequently also referred to as the “inflation tax” because it acts like a tax on the holders of existing money balances. Since monetary union forces a convergence of inflation rates—and this rate is expected to be a low one—high inflation countries will be forced either to sell more debt or to reduce their budget deficits.

¹The Italian lira underwent a technical realignment at the same time as it moved from the wide 6 percent band of fluctuation to the current narrow 2.25 percent band.

While one can apply optimal tax ideas from public finance to argue that, in the absence of lump-sum taxes, the optimal inflation rate is positive (Phelps, 1973) and further that this optimal rate is likely to vary across countries because the base for other taxes also varies, in practice the seignorage issue is of almost negligible importance except perhaps for Portugal and Greece. The flow of revenue to the government from money creation, as a proportion of GDP, is simply the rate of growth of the monetary base divided by its velocity of circulation.² For the northern members of the Community, the latter is a number between 10 and 20 (on an annual basis), so that at current inflation rates the revenue from seignorage is minute (less than 0.5 percent of GDP). Only for Greece, Italy, Portugal and Spain are the numbers of any significance; in 1988, seignorage for these countries was 2.8 percent, 1.1 percent, 2.2 percent and 1.4 percent of GDP respectively (European Commission, 1990a, p. 122).

Furthermore, these four countries have only been able to maintain relatively high seignorage revenues by imposing strict reserve requirements on the banking sector (which limits the velocity of circulation). One of the consequences of the creation of a common financial market is that nationals of one country will be free to hold accounts with foreign banks in other currencies, which will put pressure on governments with high required reserve ratios to lower them, to prevent banking business going abroad. As a result, even in the absence of monetary union, seignorage revenue would shrink. The Commission estimate that under monetary union, seignorage in these countries would fall to between 0.5 percent and 0.9 percent of GDP, with roughly half of the fall being due to the provisions of the Single Market rather than convergence on a low inflation rate.

The second, and potentially more important, cost of monetary union is the loss of the exchange rate as a tool of macroeconomic management. The locus classicus here is Robert Mundell's (1961) analysis of optimum currency areas. He notes that the exchange rate may be a useful weapon when a nation needs to adjust its external terms of trade and domestic wages and prices move sluggishly; in that case, an exchange rate realignment can swiftly accomplish what might otherwise need a painful period of recession or inflation. However, an exchange rate change is not helpful when internal relative prices are what need to change.

There are thus two issues. First, are the nations of the Community likely to be subject to idiosyncratic or asymmetric shocks that would necessitate significant changes in the intra-Community terms of trade? Second, if the answer to the first question is "yes," are nominal rigidities sufficiently important to make

²From the government budget identity we have that $\dot{M} + P_B \dot{B} = D$ where M is the nominal money stock; B is the number of bonds outstanding and P_B their price; D is the budget deficit. The real revenue from seignorage, as a proportion of GDP, is then just $\dot{M}/PY = (\dot{M}/M)(M/PY)$ where Y is real GDP and P is the price level. Strictly speaking, one should subtract from this quantity any interest paid on reserves; the figures quoted in the text do this.

one wish to retain exchange rate realignments as the preferred method of adjustment?

The European Commission (1990a, p. 142) approached the first question by arguing that the Community is increasingly characterised by intra-industry trade based on the exploitation of economies of scale, rather than inter-industry trade based on specialisation through comparative advantage. They calculate that in 1987, between 57 percent and 83 percent of trade between EC countries was intra-industry rather than inter-industry for all countries except Greece (31 percent) and Portugal (37 percent) (European Commission, 1990b, p. 41). Furthermore, they argue that the Single Market program can only intensify this process; thus shocks are increasingly unlikely to have a differential impact across the members of the Community.

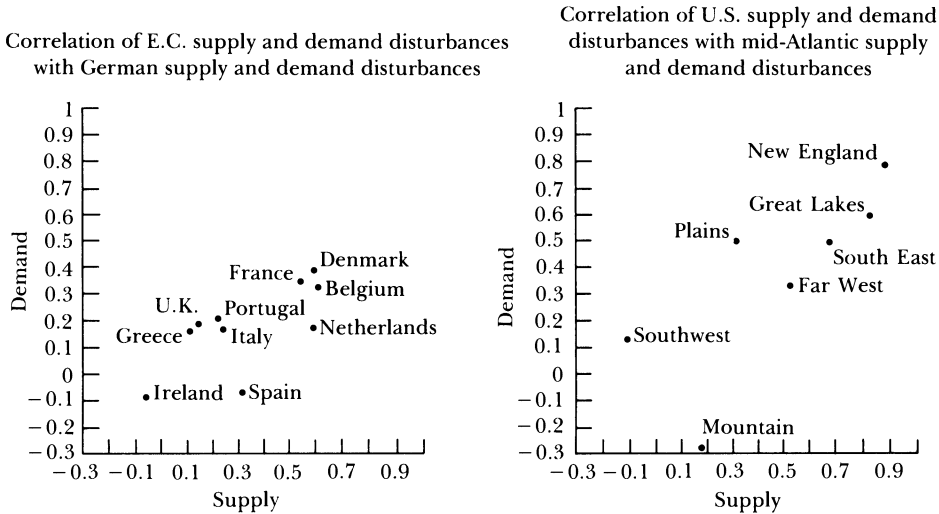
This argument seems to me rather sanguine, because plenty of goods will still be non-traded even after 1992 (the proverbial haircut for instance). Country-specific shocks will still occur—for example, as a result of fiscal decisions—and these shocks may require a change in the relative price of tradeables to non-tradeables. In principle, movements in the exchange rate could be useful in bringing this about. The German fiscal expansion associated with unification is surely a case in point. An appreciation of the mark in 1991 would have helped limit inflationary pressure in Germany, and prevented European interest rates rising as much as they have, and from creating an unnecessarily sharp downturn in activity in the rest of the Community. However, shocks of the magnitude of German unification are likely to be relatively rare, so it may not be too costly to forego the possibility of national exchange rate adjustments.

What of the empirical evidence on the degree of synchronization of shocks across countries? One of the most revealing studies is that by Tam Bayoumi and Barry Eichengreen (1992). They apply a variant of the “structural vector autoregression” approach pioneered by Olivier Blanchard and Danny Quah (1989) to extract estimates of the supply and demand shocks³ driving output fluctuations over the period 1962–88 for both the EC countries and the main regions of the United States, which serves as a natural benchmark. Figure 1 plots the correlation coefficients of the estimated supply and demand disturbances for each country against an anchor region (Germany for the European Community, the mid-Atlantic for the United States).

A high correlation for supply shocks is thus indicated by a country being near the right border of the scatter diagram, and a high correlation in the

³Blanchard and Quah estimate a vector-autoregression in the rate of growth of output and the level of unemployment which they assume to be driven by two underlying shocks that they label “demand” and “supply.” The crucial (and debatable) identifying assumption is that demand shocks have only temporary effects on output whereas supply shocks can have permanent effects. Bayoumi and Eichengreen simply substitute inflation for the unemployment rate to avoid problems associated with modelling the evolution of the equilibrium unemployment rate in the European countries.

Figure 1

Supply and Demand Correlations Across the U.S. and Europe

Source: Bayoumi and Eichengreen (1992)

demand shocks by a country being near the top border. With respect to supply shocks, Europe does not look too different from the United States. In each case there is a “core” region—Germany, France, Denmark and Benelux for Europe; the mid-Atlantic, New England, Great Lakes, southeast and far west for the United States—where the shocks are highly correlated and a “periphery” region where the correlation with the anchor region is much lower. The economic weight of the European periphery is, however, rather greater. With respect to demand shocks there is more of a difference. For the United States, the correlation with the mid-Atlantic is still high for the other regions in the American core, but in Europe the correlation with Germany is much lower, even for the other countries of the European core.⁴

These findings are intuitively sensible. Intra-industry trade is especially prevalent within the core, while there is more inter-industry trade between the core and the periphery; thus, differential shocks are more likely between the core and the periphery than within the core. Furthermore, one would expect the cross-country correlation of demand shocks to be lower in Europe than in the United States, because there were periods in the sample when European countries pursued largely independent monetary policies and because the federal income tax and social security system in the United States automatically

⁴Of course it is not just the correlation, but also the absolute size of the shocks that matters. The Bayoumi-Eichengreen results suggest the variances of the driving shocks are also roughly comparable between the United States and Europe, except that the variance of supply shocks was somewhat greater in Greece, Portugal and the United Kingdom. The first two of these (and arguably the UK too) experienced major political upheaval during the sample period, so this is not necessarily a good guide to future performance.

ensures that fiscal shocks are correlated across regions. European monetary union should eliminate independent national monetary policies as a source of idiosyncratic demand shocks, but independent national fiscal policies will remain, so the cross-country correlation in movements in demand will remain less than perfect.

However, as noted earlier, the existence of idiosyncratic shocks is not sufficient to establish the case for retaining separate currencies. Nominal exchange rate realignments are only helpful in facilitating adjustment when nominal wages and/or prices are rigid. Most of the recent literature on unemployment suggests that the European Community is characterized by *real* rather than nominal wage rigidity. Empirical evidence generally suggests that European nominal wages adjust relatively rapidly to movements in prices compared to the United States, but that in the European Community, high unemployment has less of a restraining effect on wage settlements than elsewhere.

For instance David Grubb, Richard Jackman and Richard Layard (1983) report estimates of wage and price equations for 19 OECD countries over the postwar period and then calculate indices of nominal and real wage rigidity. The index of nominal wage rigidity is just the cumulated increase in the unemployment rate associated with a one percentage point fall in the rate of growth of nominal income; a value of zero thus corresponds to the complete absence of nominal inertia. The index of real wage rigidity is the cumulated increase in the unemployment rate associated with a real shock that produces a temporary decrease of one percent in the real wage at full employment; thus if the elasticity of wages with respect to unemployment were infinite so that employment remained unchanged the value of this index would be zero. The average value of the index of nominal wage rigidity for the EC is 0.52 as against 3.14 for the United States (Japan scores 0.18) while the corresponding figures for the index of real wage rigidity are 1.23 and 1.09 respectively (Japan scores 0.13 here). Numerous other studies have repeated this sort of finding; see Bean (forthcoming) for further discussion and references.

The bottom line of all this is that the pattern of shocks across regions within the Community does not look that different from the United States, and that relatively little is lost by giving up the exchange rate as a weapon of adjustment, because the effectiveness of independent monetary policy is anyway limited by the relatively low degree of nominal inertia. Certainly Europe looks no less of a candidate for a common currency than the United States. Skeptics such as Martin Feldstein (1992), Xavier Sala-i-Martin and Jeffrey Sachs (1991), and the German "Gang of Sixty" (Herbert Giersch et al., 1992) point to a lack of labor mobility in Europe as a potential obstacle to a successful currency union and the need to counteract it with interregional fiscal flows. Following Mundell, these authors note that idiosyncratic shocks can be accommodated by flows of factors between regions as well as movements in the terms of trade. Consequently, if wage and price inertia are present, it only makes sense to fix

the exchange rate if factor mobility is sufficiently high. By comparison with the United States, Europe does not satisfy this criterion (nor will it in the foreseeable future). Monetary union will then, so the argument goes, condemn some regions to low growth and high unemployment, which will need to be counteracted by fiscal transfers from the prospering regions to those in decline. Since Europe presently lacks such a mechanism the sustainability of any currency union must be in doubt, they conclude.

While a lack of labor mobility within the Community does indeed raise important issues, and there may be a case for interregional fiscal flows on insurance grounds (a point discussed below), this argument seems to me irrelevant to the issue of monetary union. The Mundellian argument rests on the premise that factors move faster than prices, something which I find implausible in general, and especially in the European context where, as we have seen, the degree of nominal inertia actually seems to be rather low. Certainly some regions will prosper and others will decline, but this will happen independently of whether there is a single currency or not.

An important corollary here is that exchange rate changes can do nothing to offset permanently the effect of idiosyncratic real shocks, such as a shift in tastes away from a country's products; rather, workers in the country must ultimately accept a decline in real living standards, *ceteris paribus*. Consequently, I do not find compelling the claim that post-unification Germany is an example of how disastrous an ill-thought-out currency union can be. Would things really have been that different if a conversion rate of, say, 10 Ostmarks to the Deutschmark had been chosen? While much of East German industry might have been viable at that rate, it would have remained so only as long as East German workers were willing to accept the correspondingly low real wages. Before long, wage inflation would surely have occurred in the East, so that the initially low exchange rate was simply postponing the day of reckoning. At the end of the day the problem is that East German workers want a West German standard of living, which East German capital is not presently capable of delivering. No amount of manipulation of the exchange rate can avoid this problem.

The Benefits of Monetary Union

If the costs of monetary union are small, what of the benefits? Compared to a regime of (managed) floating, the most frequently claimed advantage—especially by businessmen—is a reduction in exchange rate volatility and uncertainty. But although the monthly standard deviation of the exchange rate for the original members of the ERM over 1979–89 is about two-thirds of that for the other members of the Community, what one learns from this statistic is unclear. The ERM with its adjustable bands is obviously designed to limit

volatility, but the appropriate question to ask is what effect this has on economic efficiency. Furthermore, the greater volatility experienced by the non-ERM members may simply reflect their greater susceptibility to idiosyncratic shocks which would have made them more reluctant to join the ERM; for instance, the United Kingdom chose to remain outside the ERM until 1990 at least in part because of its status as an oil producer.

The value of any reduction in exchange rate volatility depends in the main on whether movements in exchange rates primarily reflect underlying economic fundamentals, including national monetary policies, or whether autonomous movements in market sentiment play a significant role. If exchange rate volatility only reflects fundamentals, then it simply reflects the proper functioning of the market mechanism. On the other hand, if movements in market sentiment lead to sustained exchange rate misalignment, a misallocation of resources may result. (Since short-term volatility can be insured against through forward markets, only sustained misalignments which cannot easily be insured against present real problems.) I cannot do justice here to the huge literature testing the efficiency of foreign exchange markets, and the extent to which they reflect economic fundamentals, although I find it difficult to believe that events such as the appreciation of sterling in 1980–82 and the dollar in 1982–85 were just a rational response by speculators to movements in fundamentals (for an example of the evidence on this point, see George Evans, 1986). Having said that, the fairly numerous empirical studies of the link between exchange rate volatility and economic activity (European Commission, 1990a, offers references) do not seem to point in the direction of very large welfare effects, either.

Of course, going the whole hog to a single currency gains additional benefits beyond reducing exchange rate volatility to zero. By eliminating all currencies except one, cross-border transaction costs will be reduced. At present, a round-trip through the ten currencies of the Community would, on the basis of existing average commissions, produce nearly a 50 percent loss on the original sum. On the assumption that currency conversion is a competitive industry and that bid-ask spreads reflect the real resources devoted to changing currencies, the Commission (1990a) estimates that the direct welfare gains from eliminating the industry to be nearly 0.5 percent of GDP, with countries with relatively unsophisticated financial sectors reaping proportionately larger benefits. This number seems unduly optimistic—it implies that roughly one in 200 people in the Community is currently engaged full-time in international currency transaction—but one might as well have the gains, however small.

Probably more important in the long run than the elimination of transaction costs is the fact that a single currency establishes the credibility and longevity of a monetary union in a way that “irrevocably” fixed exchange rates across multiple currencies do not. As long as national currencies are retained, a country can leave the union without too much difficulty if it really wants to, although the political costs may be high. With a single currency, the escaping

country would first have to print a new currency. This is certainly possible—witness the Ukraine and some of the other former Soviet republics—but is a much more cumbersome and costly process.

Aside from exchange rate stability, enthusiasts for monetary union also point to the role of the ERM in reducing inflation in countries that seem to be inflation-prone because of their political or institutional structures. The analytical framework is that of the macroeconomic “time consistency” literature. Consider a standard “neoclassical synthesis” economy in which nominal wages have to be set in advance on the basis of the expected rate of inflation, so that the realized level of output is positively related to the gap between the inflation outcome and expected inflation. Given that there is no systematically manipulable output-inflation trade-off, the best the authorities can on average achieve is zero inflation and the “natural” rate of output.

Now suppose, following Robert Barro and David Gordon (1983), that the “natural” rate of output is too low because of microeconomic distortions. Then if wages are set on the assumption of no inflation, the authorities will subsequently be willing to tolerate some positive inflation to engineer higher output. However, wage setters knowing that this is how the authorities will behave would be irrational to expect zero inflation in the first place, whatever the authorities may say about their intentions. The only “time consistent” equilibrium is one with output at the natural rate and a rate of inflation (expected and actual) that is already so high that the authorities are unwilling to tolerate yet higher inflation to buy a higher level of output.⁵

What is required to avoid this trap is some commitment device that makes government announcements of low inflation credible. One possibility is the acquisition of a reputation for pursuing low inflation, although this takes time. Where governments tend to have short lives—as in Italy, for example—such a reputation may be difficult to sustain. Another solution is to delegate monetary authority to an independent central bank that is mandated to pursue zero inflation. A fixed exchange rate is an indirect way of doing this, by pegging the currency to a country, Germany in the case of the ERM, with an established reputation for pursuing non-inflationary monetary policies.

For this course to work, undertaking a devaluation must impose significant political or economic costs. The realpolitik of fixed exchange rate regimes in

⁵The formal argument runs as follows. Write the supply function as $y_t = \alpha(\pi_t - E_{t-1}\pi_t)$, where y_t is the logarithm of output, π_t is the inflation rate, E_{t-1} denotes the private sector's expectation conditional on information at the start of the period and α is a parameter. The authorities' objective is to set the inflation rate to minimize the quantity $\pi_t^2 + \lambda(y_t - y^*)^2$, where λ is a parameter and $y^*(> 0)$ is the “target” rate of output. In a one-shot Nash game the authorities can do nothing to affect the private sector's inflationary expectations. Hence they will pick an inflation rate given by $\pi_t = \alpha\lambda(y^* + \alpha E_{t-1}\pi_t)/(1 + \alpha^2\lambda)$. The private sector, knowing this is how the authorities behave, will expect exactly this inflation rate, so that $\pi_t = E_{t-1}\pi_t$ and hence $\pi_t = \alpha\lambda y^*$ in equilibrium, along with $y_t = 0$. Clearly, $\pi_t = y_t = 0$ would be a better equilibrium for the authorities, but this is not sustainable in the absence of some device to make the announcement of zero inflation credible.

general, and the ERM in particular, has indeed been to make such devaluations extremely costly in political terms, while devaluations negotiated within the ERM have de facto generally provided less than full compensation for differential inflation rates (one view claims that this was necessary to ensure continued German participation in the system). The experience of France in 1982–83 provides a classic example where such costs forced a reversal of domestic economic policies (Jeffrey Sachs and Charles Wyplosz, 1986).

But should one really count this on the plus side of the ledger? After all, if central bank independence really is the key to low inflation, why could not other countries have reformed their institutions to give their central banks the same status, goals, and independence as the Bundesbank? Certainly “importing” the Bundesbank’s reputation via the ERM may have been convenient and obviated the need for any reform of domestic monetary institutions. However, in evaluating the costs and benefits of monetary union, the alternative scenario of retaining national currencies, within a more flexible exchange rate regime than the current ERM, should also allow for the possibility of institutional reform in those countries with a tendency to high inflation. If this alternative were to involve the Bundesbank plus eleven clones, then it is no longer obvious that a Community with a single currency would be characterized by a lower average inflation rate than one with many currencies. Consequently I am led to conclude that, at least in principle, the overall benefits as well as the costs of monetary union may be rather small. However, this does invite the question of whether the new European monetary institutions will indeed deliver low inflation and enhance economic performance more generally, and it is to this point I now turn.

The European Central Bank

The structure of the new European monetary institutions, as laid out in the Maastricht agreement, closely resembles that envisaged in the Delors report. There will be a European Central Bank (ECB), whose location is yet to be decided, although Bonn is a likely candidate. Monetary policy on a day-to-day basis will be implemented by an Executive Board of six people, each of whom will be appointed by the European Council for a non-renewable term of eight years. However, the overall monetary strategy will be the responsibility of a larger group, the Governing Council, comprising the members of the Executive Board and the twelve national central bank governors; each Council member has one vote and on most matters a simple majority suffices. Together the ECB and the twelve national central banks are to be collectively known as the European System of Central Banks (ESCB). The broad structure is thus fairly similar to the U.S. Federal Reserve System. A third institution, known as the European Monetary Institute (EMI), will have the task of planning the fine

detail of how the ESCB will function, many aspects of which are still unclear,⁶ and to monitor the transition to monetary union.

At first sight, the draft Treaty seems to embody the principle of a mandated zero inflation rule enacted by an independent central bank, which was one of the solutions to the "time consistency" problem mentioned earlier. Thus Article 105 states that the primary objective of the ESCB is "to maintain price stability" while Article 107 prohibits the ESCB or the ECB from "seek(ing) or tak(ing) instructions from Community institutions or bodies, from any government of a Member state or from any other body."⁷

While this set-up might be optimal for the very simple economy that was considered in the earlier discussion, it ceases to be so once the monetary authorities are also in a position to use activist monetary policy for stabilization purposes, perhaps because they have an informational advantage. One way of improving on the fixed rule in such circumstances is to leave the central bank discretion, but to ensure that it is run by "conservatives" who have a relatively high aversion to inflation. This will permit some stabilization in the face of shocks, although at the cost of accepting a higher average inflation rate (Kenneth Rogoff, 1985). In practice the vagueness of the way the objective of price stability is defined does appear to provide for exactly this sort of discretion, for the Treaty fails to specify either which of the many possible price indices should be stabilized or the relevant time period.

However, delegation of monetary authority to a "conservative" central banker is not the only way to proceed. Stabilization only really matters when the shocks impinging on the economy are large. An alternative and potentially superior approach is then to give the central bank a precise numerical target for a specific price index over a specified time period, but let the government override the target in special circumstances by laying an order before parliament. This would permit stabilization of large disturbances but only in a transparent fashion. Such a scheme has in fact been adopted in New Zealand and has been advocated in the European context by Charles Goodhart (1992).

Two lacunae in the specified objectives of the ESCB have attracted particular attention. The first relates to the role of the exchange rate of the ECU versus other currencies. Article 109 states that the European Council, after consultation with the ECB, may "conclude formal agreements on an exchange rate system for the ECU vis-à-vis non-Community currencies" and that even in

⁶These include questions such as in what countries debt open market operations are to be carried out and developing a payments system.

⁷My guess is that the ECB and the ESCB would have been de facto independent even without Article 107, for the simple reason that the Governing Council would have been faced by twelve countervailing national governments, rather than just one. Time consistency problems are likely to be much worse around election time, but since elections are not synchronised across the Community, the chances of the Governing Council voting for a looser monetary policy as a result of short-term political pressure seems slim.

the absence of a formal agreement it may “formulate general orientations for exchange rate policy.” This provision is obviously intended to leave the door open for managed floating against the dollar or the yen, or even a return to a Bretton-Woods-style international monetary system. However, what is unclear is how such an exchange rate agreement is to be achieved, since “these general orientations shall be without prejudice to the primary objective of . . . price stability.” One possibility is that EC fiscal policy will have to be directed to achieving the external exchange rate target; this is pretty far-fetched. Another is that such exchange rate agreements will only be possible on ECB terms—that is, a hegemonic system where the dollar, yen and so on are pegged to the ECU as the anchor currency.

The second omission relates to the role of the ECB/ESCB as lender of last resort, and more generally in prudential matters relating to the financial system. The nearest the Treaty comes to mentioning this role is in Article 105, which says that “the ESCB shall contribute to the smooth conduct of policies pursued by the competent authorities relating to the prudential supervision of credit institutions and the stability of the financial system.” This lack of clarity on the ESCB’s obligations reflects fundamental disagreements about the proper role of a central bank in maintaining the smooth functioning of the financial system. In Germany and France, bank-intermediated credit is the primary source of finance to companies, and a combination of liquidity requirements and a privately administered deposit insurance scheme is considered sufficient to forestall any systemic collapse of the financial system through a bank run. On the other hand, securities provide a much more important source of finance in the United Kingdom, while banks provide the liquidity necessary to keep the securities market functioning. Such markets are more likely to experience temporary liquidity shortages—as exemplified by the October 1987 stock market crash—and hence show a greater need for a central bank to stand ready to act as lender of last resort than when finance is bank-intermediated (David Folkerts-Landau and Peter Garber, 1991).

Is there any reason at all for the ESCB to be involved in banking supervision? Or could that be left to the diverse national bodies that are presently responsible? Financial integration is now so complete that it will be very difficult to contain systemic difficulties within national boundaries, which argues for adopting a Community-wide approach. While there have been moves to harmonize banking regulations and standards,⁸ regulation of this sort can only go so far, and there must inevitably also be a role for discretion in dealing with systemic problems; Pierre-André Chiappori et al. (1991) offers a more detailed discussion of the issue. The ESCB would seem to be the natural

⁸The two most important documents in this regard are the 1983 Basle Concordat covering the G-10 countries, and the Second Banking Directive which lays down the principles for a single market in banking.

institution to take on the task of supervising the new integrated European financial market. The worry must be that it will take a crisis to bring this home to policy-makers.

The Transition to Monetary Union

The Maastricht Treaty also maps out conditions and a timetable for the transition to monetary union. Four conditions for admitting a country to the union are specified:

1. A consumer price inflation rate no more than 1.5 percentage points above the average for the three countries with the lowest inflation rates;
2. Average nominal long-term interest rates no more than 2 percentage points above those for the three countries with the lowest inflation rates;
3. No exchange rate realignments for at least two years;
4. A sustainable government financial position, defined as a general government deficit to GDP ratio of less than 3 percent and a gross debt to GDP ratio of less than 60 percent (with exceptions if an “excessive” deficit is temporary, or an “excessive” deficit and/or debt ratio is declining at a “satisfactory” pace).

The purpose of these rules is to prevent the union being destabilized by the premature admission of a country whose economic fundamentals are not yet compatible with a fixed exchange rate. Obviously, a central requirement then is that trend inflation rates are the same and the first three rules are intended to ensure this, with rule 1 covering the recent past while rules 2 and 3 are intended to be more forward looking in nature (a recent devaluation would increase inflationary pressure in the near future). Whether these rules are enough is debatable, since convergence in long-term interest rates may simply reflect the credibility of the intention to move to monetary union, and therefore to lock future short-term interest rates in different countries even more closely together. Furthermore, even if inflation rates may have converged, the real exchange rate could still be some way away from sustainable levels. However, the first three rules seem generally unobjectionable.

Rule 4 is intended to ensure that no country joins the monetary union when its public finances are in such a state that they might destabilize the monetary union. Whether this rule fits the bill will be discussed shortly, but for the present merely note that from Table 1 the only countries that could simultaneously meet all four of these criteria at the end of 1991 were France and Luxembourg; even Germany would not be allowed to join! This naturally raises the question of whether union will ever occur.

In fact the Treaty also specifies a timetable—that is, a date-contingent rule as well as a state-contingent one. By the end of 1996, the European Council must decide, on the basis of a report by the European Monetary Institute and by a qualified majority, “whether a majority of the Member States fulfils the

Table 1
Convergence Indicators in 1991

	<i>Consumer Price Inflation (%)</i>	<i>Long-term Interest Rates (%)</i>	<i>Budget Surplus (% of GDP)</i>	<i>Gross Public Debt (% of GDP)</i>
Belgium	3.2	9.3	-6.4	129.4
Denmark	2.4	10.1	-1.7	66.7
France	3.0	9.0	-1.5	47.2
Germany	3.5	8.6	-3.2	46.2
Greece	18.3	N/A	-17.9	96.4
Ireland	3.0	9.2	-4.1	102.8
Italy	6.4	12.9	-9.9	101.2
Luxembourg	3.4	8.2	+1.9	6.9
Netherlands	3.2	8.9	-4.4	78.4
Portugal	11.7	17.1	-5.4	64.7
Spain	5.8	12.4	-3.9	45.6
United Kingdom	6.5	9.9	-1.9	43.8
European Community	5.0	10.4	-4.3	61.8

Source: *European Economy*, December 1991.

necessary conditions for the adoption of a single currency” and if so whether it is appropriate to proceed to monetary union (the final step does not follow automatically). The likelihood of seven EC countries meeting this requirement seems negligible, unless liberal use is made of the discretionary element in the fiscal rules. However, come what may, union will begin on January 1, 1999, with whatever states are eligible for membership. Since the EMI will have a major role in determining what states are eligible, and under pressure from the Bundesbank is likely to be conservative in its use of the discretionary element in the fiscal rules, a “two-speed” outcome with an initial membership of just (probably) Denmark, France, Germany, Luxembourg and (maybe) the Netherlands, Spain and the United Kingdom seems inevitable. In particular, it is difficult to see Italy being admitted to early membership.

Fiscal Rules

Perhaps the most contentious part of the report of the Delors Committee was its advocacy of “binding” rules on budget deficits, after the move to monetary union. The Maastricht Treaty incorporates such rules, since the fiscal preconditions for joining (less than 3 percent budget deficit and less than 60 percent public debt ratio) are also expected to continue to operate thereafter. However, the rules are probably not as tight as those envisaged by the authors of the report, in that a discretionary element remains in deciding whether a

country's public deficit/debt is excessive, and a rather lengthy process of consultation and recommendation is required before any financial or other sanctions are invoked.

Why should national fiscal policies be constrained in this manner? Is it necessary? In fact, finding any coherent justification in either the Delors Report or elsewhere is remarkably hard. One can dimly perceive two general lines of thought, however. The first is that economic integration will increase the externalities from national fiscal decisions, and therefore also the need for co-ordinated decision-making, especially in the absence of a supra-national fiscal authority. While this may be true, it hardly constitutes a case for the sort of rules written into the Treaty, since uncoordinated decision-making could just as easily lead to excessively tight fiscal policy—it all depends on what events decision-makers are responding to and what their objectives are.

The second and more important argument, however, seems to be that governments have an endemic tendency to overborrow; that capital market integration and monetary unification will exacerbate this tendency; and that consequently governments will be more prone to run up unsustainably high debt levels that will threaten default and financial instability. Furthermore, the argument goes, private capital markets do not provide enough discipline to prevent this happening, so constraints on national fiscal policies are also called for. Let us examine the components of this argument more closely.

First, do governments have an endemic tendency to overborrow? Why this should be so is not clearly stated, but it could be argued that in representative democracies, governments tend to have relatively short time horizons, caring primarily about winning the next election. Consequently, they may be more inclined to borrow to finance expenditure, thus passing the burden to future generations, rather than taxing the current generation of voters (the force of this argument will obviously depend on the degree to which Ricardean equivalence holds).

How does capital market integration affect things? Obviously the extent of the overborrowing will depend on the marginal cost of funds. The gap between the marginal and average cost of borrowing is then just an inverse function of the interest elasticity of the supply of savings to the government. Capital market integration increases the interest elasticity of the supply of savings to a given national government and so worsens the tendency to overborrow; this is just a standard second-best argument whereby removing one distortion can aggravate the inefficiency arising from another. Furthermore, monetary unification eliminates the possibility that the government can de facto repudiate its debt through a bout of unanticipated inflation; consequently, the marginal cost of borrowing should also fall for this reason.

Thus it appears that the marginal cost of borrowing by a country could indeed fall, leading to higher deficit and debt levels. The worry is that this could then degenerate into an unsustainable debt position, for as the debt level grows, ever larger primary budget surpluses (the government budget surplus before deduction of interest payments) are required to service the debt. Thus, a

country like Italy with a debt/GDP ratio of around 100 percent needs to run a primary budget surplus of around 2–3 percent of GDP just to keep the debt/GDP ratio constant.⁹ In fact the Italian primary budget was roughly in balance over 1990–91, so a significant fiscal tightening is still required. Furthermore, this adjustment is harder under economic and monetary union because *de facto* debt repudiation through inflation is ruled out, and imposing higher taxes on mobile factors of production (skilled labor and capital) risks encouraging them to move to other countries in the Community with more attractive tax regimes. Thus, unsustainable positions might both build up more easily, and also be harder to correct.

The alleged failure of the capital markets to price public debt correctly now enters the picture. The Delors report argues that “rather than leading to a gradual adaptation of borrowing costs, market views about the creditworthiness of official borrowers tend to change abruptly and result in the closure of access to market financing. The constraints imposed by market forces might either be too slow and weak or too sudden and disruptive.” The case of New York, where interest rates rose only 40 basis points before the 1974 crisis, is often cited in support of this view, although since New York ultimately paid back all of its debt with interest, it is not clear what one learns from the episode. The worry is that such a sudden cut-off of lending to a government would then provoke either a bailout of the country in question through national fiscal transfers; or a threat of financial collapse as holders of the country’s official debt revise upwards their expectation of outright default (the parallel with Latin America is obvious); or pressure on the ECB to relax its monetary stance and to monetize part of the country’s budget deficit.

This train of thought rides on many “ifs” and “buts,” but even if one accepts the general validity of the argument, it is not clear how it justifies the sort of rules written in to the treaty amendment. The Maastricht agreement already contains both “no monetization” and “no bailout” clauses, so why are further constraints required? One might argue that the additional constraints help to make the “no monetization” and “no bailout” rules more credible, but given the scope for discretion over the way the fiscal rules are themselves to be enforced, the effect could just as easily be to reduce their credibility.

Furthermore, the rules are not directed at the sources of market failure which are twofold: the (purported) tendency of governments to overborrow; and the (supposed) failure of the capital markets to provide the appropriate discipline, which leads to the attendant danger of systemic collapse. The way to tackle the first would surely be to make payments into the central Community budget dependent on debt and deficit levels in a way that leads national governments to evaluate correctly the costs of their tax and spending decisions. Such a policy would be clear and easy to administer. The second problem could be addressed by introducing prudential limits on holdings of official debt by

⁹Formally, the primary surplus required to keep the debt-GDP ratio, d , constant, with no monetization, is just $(r - n)d$, where r is real interest rate and n is the growth rate.

financial intermediaries (David Begg et al., 1991). This step would simultaneously ensure that the rise in interest rates would be more gradual and reduce the danger of systemic failure.

I find it very difficult to see a rationale for the fiscal rules as framed. However, they are not just irrelevant, but may be positively harmful because of the limits they place on the scope for national fiscal policies. The 3 percent deficit and 60 percent debt numbers have no historical rationale whatsoever, except that they are near the current Community average. Since the rules are asymmetric—there is no countervailing pressure on countries below the norms to relax their fiscal stance—the consequence will be a contractionary bias to fiscal policy for some time to come. The inclusion of the rules in the agreement is largely a reflection of German concern that Italian membership will destabilize the union. However, it is unfortunate, to say the least, that these immediate concerns have so dominated the political negotiations as to lead to an institutional framework that could greatly handicap the Community in the long run.

Fiscal Federalism

This brings us naturally to the question of whether national fiscal policies will be sufficient in the new integrated European economy, or whether some supra-national fiscal mechanism—sometimes called “fiscal federalism”—needs to be introduced. As explained earlier, the linkage of fiscal federalism to monetary union appears misplaced. However, there is nevertheless an important issue here, which may be illustrated with comparison to the United States. There, federal tax and spending programs automatically shift resources from prospering individuals and regions to the less well off. Thus Sala-i-Martin and Sachs (1991) find that for each dollar fall in regional income in the United States over 1970–88, roughly 40 cents is absorbed by the federal government, (34 cents through taxes, 6 cents through transfers), while Bayoumi and Paul Masson (1992) using data on states rather than regions report a figure of 27 cents in the dollar for temporary fluctuations in state income, but only 20 cents in the dollar for permanent differences.

The Community fiscal structure is not remotely like this. No Community-wide income tax and social security system shifts resources between individuals; no automatic redistribution mechanism shifts resources significantly between nations. Although national contributions to the Community budget are linked to a country's income through value-added tax receipts, the offset is very small. The total size of the Community budget was a shade over 1 percent of Community GDP in 1991, and the gearing is such that only 0.5 cents of each dollar fall in a country's income is absorbed by the rest of the Community.

What would happen if all tax and spending decisions in the United States were abrogated back to the individual states, with no interstate fiscal transfers?

A state whose industries were in decline would then be faced with the prospect of either cutting government spending or raising taxes, either of which would encourage labor and capital to migrate to states with a less harsh fiscal climate, accelerating the decline still further. The work of Olivier Blanchard and Larry Katz (1992) suggests that such labor force flows are presently a central mechanism that brings about the equalization of state unemployment rates. Thus, abolishing the federal fiscal system would seem to be a recipe for the depopulation of declining regions. Will the same happen in Europe?

I believe the answer is “no,” because European labor mobility is so much lower, and because of linguistic and cultural heterogeneity will remain so even after 1992. Differential shocks will thus tend to show up in variations in real wages across regions rather than migratory flows. Furthermore, this relative immobility in part of the tax base will mean that national governments will still be able to pursue independent fiscal policies. So the argument that economic union must also necessitate a federal fiscal authority (and therefore also some sort of political union) seems to me a complete non-sequitur.

Having pointed out that “fiscal federalism” is by no means necessary, the lack of labor mobility means there is nevertheless a perfectly sound insurance-based reason for some interregional transfers. To make things concrete, consider a shift in tastes away from a country or region’s products, which implies a fall in the real income accruing to both capital and labor. The owners of physical capital can insure themselves against such an eventuality by appropriately diversifying their portfolios across national boundaries, but human capital cannot be diversified in this way. If this shock is temporary, capital markets are perfect and individuals are long-lived, the holders of human capital can effectively self-insure by borrowing and lending. On the other hand, if the loss in income is sufficiently large or persistent that an individual’s permanent income is affected, or capital markets are imperfect, then mutual insurance, with contingent transfers from the “lucky” to the “unlucky,” will be welfare enhancing.

In practice, this mutual insurance is provided within countries by their income tax and social security systems. However, the contingent redistribution need not just take place between those individuals who are alive today: provided Ricardean equivalence does not hold, governments can transfer resources from “lucky” individuals in future generations to the present by borrowing to sustain current consumption and raising taxes in the future. In this way the government can insure the current population against the effects of an adverse shock that is common to all.

Provided the Maastricht fiscal rules do not bind, a member government should thus be able to ensure that self-insurance in the face of transitory disturbances takes place. However, a government can do nothing to offset the impact on real living standards of a permanent adverse shock. The same goes for the Community as a whole. But permanent shocks that have asymmetric effects on Community members can, and should, be insured against by

introducing mechanisms to redistribute resources across nations. One way of doing this would be through a Community-wide unemployment benefit scheme. This has the virtue of being both automatic and targeted at those individuals who may find difficulties in self-insuring. Regional and development aid is an indirect way of achieving a similar objective.¹⁰

As noted above, the Community presently has no effective automatic mechanism for shifting resources across regions in the face of asymmetric shocks. Furthermore, there is absolutely no chance of an individual-based redistribution mechanism being introduced in the near future. Making net payments into the Community budget more sensitive to regional variations in economic activity is marginally more likely, but such a step would first require a significant increase in the size of the budget. The Commission and some of the periphery countries are pressing for this, but the richer countries of the core are resisting.

Even if such an expansion does happen, it seems unlikely to take the form of a simple, no-strings attached, redistributive mechanism between countries, because of the worry that such funds will not go to those who deserve it. Instead, such redistribution is likely to be channelled through the so-called Structural Funds. At present, these amount to only about $\frac{1}{4}$ percent of Community GDP, but they are planned to rise substantially over the coming years. For the main recipients in the poorer regions of the Community the flows could be substantial—approaching 5 percent of their GDP, which is on a scale similar to the Marshall Plan.

The Structural Funds serve two main objectives: to promote development in the less developed regions; and to help areas affected by industrial decline and high unemployment. The first loosely corresponds to reducing differences in permanent income across regions, while the latter is addressed to cyclical changes. A characteristic feature of these funds, however, is that they have to be linked to particular sorts of projects and programs and are carried out in partnership with the local government, which is expected to provide additional funds.

The rationale for preferring this method to simply giving the recipient government the funds without strings is twofold. First, some of the development projects have Community-wide implications: for example, building infrastructure that may affect companies' location decisions. However, much of the spending is not on projects that create such externalities. Second, there is a belief that rent-seeking activities within some recipient countries would lead to the funds being misused or misdirected if they were simply given as no-strings attached aid. However, the bureaucratic nature of the decision-making process means that the present scheme is also open to rent-seeking activities, while the

¹⁰Development aid may seem to fulfil a rather different purpose, but viewed from a Rawlsian perspective, it can be considered as simply a payout in respect of past circumstances which have led to a region being relatively poor.

“additionality” requirement which aims to prevent funds being fungible is likely to distort the allocation of resources. I am not convinced that the bureaucratic failure at the national level is likely to be any worse than at the Community level, and letting national governments decide how to use the aid has the virtue that it is at least partly responsive to the democratic process. My hunch is that some time in the future misuse of the Structural Funds is likely to prove as big a bone of contention as the Common Agricultural Policy has already done.

Concluding Remarks

Where does this leave us? First, I believe that neither the costs nor the benefits of monetary union are in principle as great as critics and advocates respectively have made out. In fact, from a purely economic perspective, it seems to me something of a storm in a teacup. Why then has so much fuss been made over it? I think the answer is primarily political (on this I am in agreement with Feldstein, 1992). A separate currency is an important symbol of nationhood, while a common currency is an equally potent symbol of a shared political destiny. This is why anti-federalists such as Margaret Thatcher chose to make their stand here rather than on issues of greater economic significance.

Despite the hiccups in the ratification process something very similar to the Maastricht agreement, at least on the economic front, is likely to pass into law and a currency union of at least the core members of the Community should come into force by the end of the millenium. The new European monetary institutions are likely to be just as tough on inflation as the Bundesbank, and the European Community is thus likely to remain a zone of monetary stability. The consequence may well be that the ECU plays an increasingly important role as an international reserve currency, primarily at the expense of the dollar.

The effect on the real economy is more debatable. While the completion of the Single Market program should provide a significant boost to output and growth over the medium term, the contractionary fiscal bias built into the Maastricht rules is likely to work in the other direction. Active national fiscal policies will be needed more than ever after monetary union, and imposing unnecessary constraints is a major error, especially in the absence of a Community-wide fiscal system. Furthermore, the chosen mechanism through which transfers between countries are to take place is excessively bureaucratic and will probably ultimately hinder rather than enhance the interregional flows that are desirable on equity and efficiency grounds. Although various important issues connected with monetary union remain unresolved, these fiscal questions seem to me of considerably greater significance. If the price of monetary union is the adoption of inappropriate fiscal policies, then it is probably a price that is not worth paying.

References

- Barro, Robert and David Gordon**, "A Positive Theory of Monetary Policy in a Natural Rate Model," *Journal of Political Economy*, August 1983, 91, 589–610.
- Bayoumi, Tamim and Barry Eichengreen**, "Shocking Aspects of European Monetary Unification," National Bureau of Economic Research, Working Paper No. 3949, January 1992.
- Bayoumi, Tamim and Paul Masson**, "Fiscal Flows in the United States and Canada: Lessons for Monetary Union in Europe," International Monetary Fund, mimeo, May 1992.
- Bean, Charles R.**, "European Unemployment: A Survey," *Journal of Economic Literature*, forthcoming.
- Begg, David K. H., Francesco Giavazzi, Luigi Spaventa and Charles Wyplosz**, "European Monetary Union—The Macro Issues." In Begg, David et al., eds., *Monitoring European Integration: The Making of Monetary Union*, London: Centre for Economic Policy Research, 1991, 3–68.
- Blanchard, Olivier J. and Lawrence F. Katz**, "Regional Evolutions," Massachusetts Institute of Technology, mimeo, May 1992.
- Blanchard, Olivier J. and Danny Quah**, "The Dynamic Effects of Aggregate Demand and Supply Disturbances," *American Economic Review*, September 1989, 79, 655–73.
- Chiappori, Pierre-André, Colin Mayer, Damien Neven and Xavier Vives**, "The Microeconomics of Monetary Union." In Begg, David et al., eds., *Monitoring European Integration: The Making of Monetary Union*. London: Centre for Economic Policy Research, 1991, 69–114.
- European Commission**, "One Market, One Money," *European Economy*, October 1990a, 44.
- European Commission**, *European Economy: Social Europe* (special edition), 1990b.
- Evans, George W.**, "A Test for Speculative Bubbles and the Sterling-Dollar Exchange Rate: 1981–84," *American Economic Review*, September 1986, 76, 621–36.
- Feldstein, Martin**, "The Case against EMU," *The Economist*, June 13, 1992, 23–26.
- Folkerts-Landau, David and Peter M. Garber**, "The ECB: A Bank or a Monetary Policy Rule." In Canzoneri, Matthew, Vittorio Grilli and Paul Masson, eds., *Establishing a Central Bank: Issues in Europe and Lessons from the US*, Cambridge: Cambridge University Press, 1991, 86–123.
- Giersch, Herbert, et al.**, "Manifesto against EMU," *Frankfurter Allgemeine Zeitung*, June 11, 1992.
- Goodhart, Charles**, "The ESCB after Maastricht," January 1992, London School of Economics, mimeo.
- Grubb, David, Richard A. Jackman and P. Richard G. Layard**, "Wage Rigidity and Unemployment in OECD Countries," *European Economic Review*, March/April 1983, 21, 11–39.
- Mundell, Robert**, "A Theory of Optimum Currency Areas," *American Economic Review*, September 1961, 51, 657–65.
- Phelps, Edmund S.**, "Inflation in the Theory of Public Finance," *Swedish Journal of Economics*, 1973, 75, 67–82.
- Rogoff, Kenneth**, "The Optimal Degree of Commitment to an Intermediate Monetary Target," *Quarterly Journal of Economics*, November 1985, 100, 1169–90.
- Sachs, Jeffrey and Charles Wyplosz**, "The Economic Consequences of President Mitterrand," *Economic Policy*, April 1986, 261–305.
- Sala-i-Martin, Xavier and Jeffrey Sachs**, "Fiscal Federalism and Optimum Currency Areas: Evidence for Europe and from the United States," Harvard University, mimeo, June 1991.