

EMU: Ready, or Not?*

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Abstract

In this paper I focus on two specific hazard areas in the transition from Stage Two to Stage Three of European economic and monetary union (EMU), as well as on some key problems of Stage Three that EMU's monetary and fiscal structures appear ill-prepared to handle. The transitional hazards are of considerable theoretical as well as policy interest: the best way to coordinate monetary stances and lock exchange parities for a smooth switch from eleven national currencies to a single joint currency. A third problem, one that is central for EMU and to any currency union, lies behind the difficulty of the transition: the possibility of nationally asymmetric real shocks. I review that topic in the context of Ireland's recent experience. The paper goes on to discuss weaknesses in the structure of Stage Three, already much noted, connected with the provision of lender of last resort facilities in the euro zone and the framework for supervising financial institutions. The deficit and debt limits embodied in the excessive deficits procedure of the Maastricht treaty and the subsequent Stability and Growth Pact have been justified by the threat high debts might pose to the stability of the euro zone's financial markets. I consider the past and prospective fiscal adjustments of the EMU 11, and suggest these might pose future difficulties for macroeconomic policy and growth.

Keywords: EMU, euro, European integration

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This essay is based on the Frank D. Graham Memorial Lecture for 1997-98, which I had the honor of presenting at Princeton University on April 9, 1998. Frank Graham was deeply concerned with the interplay among national policy sovereignty, exchange rate regimes, and price-level stability. At present the international scene offers an embarrassingly rich diversity of national and regional arenas in which domestic political realities and the desire for exchange stability have come into conflict--or threaten to. Europe, where a new common currency, the euro, is to be launched on January 1, 1999, will not be exempt from this tension in the foreseeable future. True, an independent European Central Bank rather than national authorities will set monetary policy for the euro zone. But even as the twenty-first century approaches, national political identity remains a dominant force in the European Union. So long as it does, monetary policies motivated by Europe-wide conditions will invite energetic national challenge, and conflicts over alternative national visions of the ideal framework for economic policy will continue.

More than a quarter-century ago, Max Corden's celebrated Graham lecture on "Monetary Integration" (Corden, 1972) invoked Frank Graham's own somber prediction concerning a multinational system for the "stabilization of both price levels and exchange rates through the imposition, on all countries, of the requisite monetary policy, with some central bank for central banks as the ultimate governing authority." According to Graham (1943, p. 22):

The struggle for control of such a central bank would be fierce The chances are strong that the system would be sabotaged by the action of some powerful country, or countries, reluctant to follow the general policy of the controlling authority or in disagreement with the methods by which it sought to make its policies effective.

Corden's essay quoting Graham was inspired by the Werner Report of 1970, precursor to the Delors plan for monetary union and therefore to the Maastricht treaty. However, his reference to Graham's words was incidental to Corden's main text. Given the remoteness in the 1970s of the Werner plan's seemingly utopian goal, Corden understandably decided against focusing his inquiry on the *political* questions raised by full currency unification. Arguably, that decision was fortunate, for "Monetary Integration" even today is often startling in its economic insights and remains an essential part of the analytical foundation underlying current research on the euro.

In the late 1990s, though, Frank Graham's warning should resonate much more strongly for Europeans. Economists have increasingly become cognizant of the role politics plays in determining economic outcomes, and with European economic and monetary union (EMU) finally under way, potential fault lines are apparent. EMU, it is often said, is at bottom about politics, not economics. Political change is, however, an ongoing, dynamic process; it is a mistake to think that the visions motivating today's European leaders will be enough to sustain EMU indefinitely. If EMU generates economic, social, or cultural stresses, their political ramifications will shape the monetary union's evolution and, indeed, determine its survival.

1. Introduction

On March 25, 1998, the European Commission formally recommended to the Council of the European Union (EU) the admission of eleven countries as founder members of the EU's economic and monetary union. EU finance ministers and heads of government or state ratified the Commission's recommendation in Brussels on May 2, 1998. Despite an embarrassing twelve-hour quarrel over the presidency of the European Central Bank (ECB), the new institution was operating soon after the Brussels summit. Wim Duisenberg of the Netherlands was at its head, having promised publicly--at French insistence--to relinquish his appointment at an unspecified time well before its statutory terminal date.

Under the Maastricht treaty, the ECB would have no monetary policy powers until the introduction of the euro on January 1, 1999. Its charge for the balance of Stage Two of EMU was to complete the infrastructure for the introduction of the single currency. This task was a formidable one. The overarching conceptual framework for monetary policy, the set of monetary instruments to be used, the ECB council's mode of communication with the public, and myriad other issues remained to be decided (see Kenen, 1998, for a review). The large-value euro payments system intended to link the eleven national payments systems and facilitate the single monetary policy (TARGET) still required completion and debugging. Such technical preparations were essential for a smooth lift off on EMU's first day of business, Monday, January 4, 1999.

The problem of Europe's readiness for EMU goes far beyond the immediate technical tasks that the newborn ECB has faced, despite a continuing state of denial among many observers. Nearly everyone acknowledges, for example, that European unemployment is perilously and unsustainably high, and that labor-market reform would ease life under the single

currency. Yet the hope in Europe is that the single currency itself will induce greater flexibility in member states' labor markets. That outcome, it is argued, follows from several features of EMU, notably the independence of the ECB and the greater cross-border transparency and competition that common adoption of the euro will allow. Unfortunately, it isn't hard to come up with equally plausible arguments under which labor-market flexibility does not decline on its own; see, for example, Calmfors (1998).¹

In this essay I will focus on two specific hazard areas in the transition from Stage Two to Stage Three, as well as on some key problems of Stage Three that EMU's monetary and fiscal structures appear ill-prepared to handle. The transitional hazards, discussed in sections 2 and 3, are of considerable theoretical as well as policy interest: the best way to coordinate monetary stances and lock exchange parities for a smooth switch from eleven national currencies to a single joint currency. A third problem, one that is central for EMU and any currency union, lies behind the difficulty of the transition: the possibility of nationally asymmetric real shocks. Section 4 reviews that topic in the context of Ireland's recent experience. Section 5 reviews weaknesses in the structure of Stage Three, already much noted, connected with the provision of lender of last resort facilities in the euro zone and the framework for supervising financial institutions. The deficit and debt limits embodied in the excessive deficits procedure of the Maastricht treaty and the subsequent Stability and Growth Pact have been justified by the threat high debts might pose to the stability of the euro zone's financial markets. Section 6 reviews the past and prospective fiscal adjustments of the EMU 11, and asks what difficulties these might pose for macroeconomic policy and growth. Section 7 concludes.

2. The End of the Beginning: Choosing Irrevocable Pegs

An inescapable requirement of the transition from Stage Two to Stage Three is to redefine all nominal prices in the eleven member economies in terms of the euro. Thus, the EU must decide the value of a euro in terms of deutsche marks, French francs, and so on. The decision is an important one because two issues are at stake. First, the choice of irrevocable conversion rates of member currencies against the euro affects relative national wealth levels. Second, and arguably more importantly, the choice of conversion rates affects the initial *relative* price levels in the member states provided nominal prices and wages display some stickiness. That is, the choice of conversion rates affects relative competitiveness at the start of monetary union.

In thinking about the effects of alternative conversion rates, it is important to distinguish the consequential from the incidental. What really matters are the *bilateral* conversion rates between national currencies implied by the chosen rates against the euro. The “scale” or “size” of the euro currency unit is itself irrelevant: there are no real effects from multiplying each national currency rate against the euro by the same constant. As an example, imagine that for France and Germany the chosen conversion rates against the euro are $S_{FF/E}$ francs per euro and $S_{DM/E}$ marks per euro. These rates imply the bilateral conversion rate $S_{DM/FF} = S_{DM/E}/S_{FF/E}$. If P_{FF} is France’s French franc price level at the start of Stage Three while the national-currency price level in Germany is P_{DM} , then after the conversion to euros the Franco-German real exchange rate will be

$$\frac{P_{FF}/S_{FF/E}}{P_{DM}/S_{DM/E}} = \frac{S_{DM/FF} P_{FF}}{P_{DM}}.$$

All that counts for this ratio in the short run (that is, given price levels) is the implicit bilateral

conversion rate, $S_{DM/FF}$.

The Maastricht treaty (Article 109l[4]) and a subsequent 1995 decision of the Madrid European Council tightly delimit the procedure for choosing the conversion rates of EMU member currencies into euro, and hence the implied bilateral conversion rates. A member currency's conversion rate into euro is to equal its end-of-Stage Two market exchange rate against the European Currency Unit (ECU) basket of twelve EU currencies. This requirement has the relatively minor implication that the euro's scale probably cannot be known until December 31, 1998 (Denmark, Greece, and the U.K. will not adopt the euro in 1999 but their currencies are components of the ECU basket). Much more important is a second implication: the bilateral conversion ratios for Stage Three will equal the closing Stage Two bilateral market exchange rates. (These provisions and their implications are discussed at length in Obstfeld, 1998, which provides references to related literature. The preceding interpretation of the relevant EU legislation was confirmed by a joint communiqué issued at the Brussels summit; see European Union, 1998).

Why did the EU choose this mode of determining conversion rates? European leaders have hoped that the ECU would evolve into Europe's single currency, and for that reason have long sought to promote the ECU market by promising that arbitrary EU decisions--such as changes in basket composition upon the accession of new EU members--would not be allowed to modify the ECU's value. The ECU's reserve currency status in the EMS was another motivation for avoiding such modifications. Moreover, the ECU referred to in many private contracts is a pure inside currency that is not convertible into its basket components simply because no outside authority guarantees that convertibility. Since no national economy issues or prices in the private

ECU, its exchange rate therefore would be indeterminate without the prospect that some day the private ECU would be pegged to a true currency (Folkerts-Landau and Garber, 1995). To support the private ECU market, EU authorities have long had an interest in cultivating the expectation of such pegging. Figure 1 illustrates the behavior of the private ECU compared to the corresponding official currency basket, from 1991 through June 8, 1998.

Because the ECU basket has had a tendency to depreciate against the hard currencies of the exchange rate mechanism (ERM) core, public relations called for a different name for the new currency and “euro” was duly chosen by the Madrid Council in December 1995. To ensure consistency with the Maastricht treaty, which refers to the single currency as the ECU, the Madrid Council stipulated that the ECU, which ceases to exist *qua* basket at the start of Stage Three, would merge seamlessly into the euro at a 1:1 parity. This requirement yields the implication mentioned above, that bilateral conversion rates for Stage Three must be closing Stage Two market exchange rates.² The Madrid Council also implied that all private ECU contracts would be payable in euro at this par, and market participants now expect that this will generally be the case.³

A fully credible promise of a 1:1 conversion rate for private into basket ECU (i.e., into euro) would have driven the values of the two very close to equality, obviously eliminating at the same time the possibility of an indeterminate value for the private ECU. The data in figure 1 show, however, that for the 1990s the most sizable discounts of the private ECU relative to its basket counterpart occurred *after* the Madrid Council’s end-1995 ruling. Figure 1 reminds us that until quite recently, markets harbored considerable doubts that EMU would happen. As of early June 1998, however, the private ECU was trading very close to par.

Leaving aside the rationale behind the mandated procedure for choosing conversion rates, what are its implications? At one time it was popular to recommend that the EU authorities somehow “let markets decide” on closing Stage Two bilateral exchange rates, which then would become the immutable Stage Three conversion rates. However, such procedures lead to excessive volatility in exchange rates, as well as opening the door to possible beggar-thy-neighbor depreciations by future EMU members. (See Obstfeld, 1998, for discussion.) As a result, the EU announced on May 2, 1998 (at the Brussels summit) that the bilateral conversion rates to be set on the first day of would be the ERM bilateral central rates then prevailing (European Union, 1998).

A notable feature of this plan is that the preannouncement of bilateral rates cannot have the force of a legal commitment. Ministers are bound, instead, to *derive* the bilateral conversion rates from December 31, 1998 market exchange rates against the basket ECU. Nothing in EU law rules out the earlier May 2 announcement concerning bilateral rates, however; and EU officials clearly hope that the announcement will be believed by the markets, which then will obligingly drive bilateral market rates to a pinpoint December 31 landing on the chosen rates.

The problem with this scenario is that the authorities’ announcement cannot be fully credible. To see why, imagine that markets do not believe the announcement, and instead drive bilateral market rates to 31 December levels different from those that have been announced. In that event, EU authorities would be obliged to ignore their announcement in favor of the market’s verdict. So conspicuous a failure would not enhance the credibility of future EMU policy.

But why should markets disbelieve the authorities’ promises? As an example, suppose the Irish economy speeds up from its current torrid pace, prompting the country’s central bank to

raise interest rates and allow the punt to rise further relative to its central parity. Markets might then begin to expect a revaluation of the punt to slow the economy more forcefully prior to EMU's launch. Indeed, this is just what the EU did on the weekend of March 14-15, 1998, when the punt's central rate was unexpectedly revalued by three percent.

The official argument for the small March 1998 punt revaluation was that it would render more credible the subsequent May choice of the existing central rates as irrevocable Stage Three parities. On the other hand, it is hard to be confident that further realignments will be precluded by the May 2 announcement. After all, 1998 is the last year for adjusting a national exchange rate in response to a national problem. In the absence of a credible announcement tying down the December 31 bilateral rates, however, exchange rate volatility could emerge, particularly in the face of any severe market shocks.

One can look for evidence on the credibility of the Brussels preannouncement in one-year bilateral forward exchange rates, which are market-based forecasts of the future Stage Three conversion rates. For four EMU currencies, figure 2 plots daily differences between one-year forward rates against the DM and bilateral central rates against the DM.⁴ The Dutch guilder is basically right on track, except for a brief flurry of (unfounded) revaluation speculation prior to the Brussels summit, and serves as a control currency.

Even before the May 2 announcement, it was widely anticipated that the Europeans would wish to choose negotiated ERM bilateral central rates as the future Stage Three conversion rates. Figure 2 shows that markets strongly factored in a possible revaluation in the punt's central rate through March 13, as the Irish currency's forward rate hovered nearly 200 basis points from its central rate. Even after the small revaluation a sustained discrepancy of around 30 basis points

remained through April, however, suggesting that markets were wary of a second possible realignment. The other currency for which there was a sustained discrepancy prior to the Brussels summit is the Italian lira, which displayed the slight possibility of a devaluation (the largest discrepancy in April being 62 basis points). There were discrepancies for currencies that are not pictured as well. The discrepancy for Finland's markka, non-negligibly negative early in March, dropped in half shortly after the Suomen Pankki raised Finnish interest rates in mid-month (an action discussed further below).

In the week after the Brussels preannouncement of the conversion ratios (issued on May 2), all the forward rates moved strongly toward their central rates. Subsequently some have moved away again, though not generally so far as to reach levels that prevailed before May. The escudo has shown a slight but economically significant discrepancy. More strikingly, the Irish punt has continued to show a larger (and apparently growing) gap. Evidently the market attaches a small, albeit still positive, probability to a further punt realignment.

The problem of a noncredible announcement of permanent conversion rates can be avoided if the national central banks of the future EMU members intervene in some concerted way to drive market bilateral rates to the preannounced levels. Several schemes have been proposed.⁵ For example, Flood and Garber (1998) suggest forward-market intervention at the end of Stage Three. This intervention would peg at the preannounced levels the bilateral exchange rate on contracts with value dates at the start of Stage Three. They (p. 4) argue that "the details of TARGET system operations are a key element in making credible unlimited intervention in support of selected bilateral exchange rates prior to January 1, 1999." Obstfeld (1998) shows that the same forward pegging can be accomplished through forward instruments denominated in

euros, implying a scheme that is workable even in the absence of the theoretically unlimited inter-central bank credits entailed by TARGET. So far the competent authorities, shrouding their intentions in “mystique,” have not tipped their hand about how they intend to guarantee that December 31, 1998 bilateral market exchange rates equal their promised values. The Brussels communiqué on conversion ratios for the euro (European Union, 1998, p. 1) notes only that “The central banks of the Member States adopting the euro as their single currency will ensure through appropriate market techniques that on 31 December 1998 the market exchange rates, recorded according to the regular concertation procedure used for calculating the daily exchange rates of the official ECU, are equal to the ERM bilateral central rates as set forth in the attached parity grid.”

3. Interest Rate Policy before Stage Three

Some methods of driving market exchange rates to preordained levels could be macroeconomically destabilizing, in the sense of accentuating the divergences among member economies over the last part of 1998. In particular, a monetary policy forcing interest rates to converge along with exchange rates might well be counterproductive. The German Bundesbank, followed by other central banks in low interest-rate countries, appeared to be embarking on such a route when it raised interest rates late in 1997, and much market commentary has presumed that central banks’ policy rates will have to converge by the end of Stage Two.⁶ But this is not necessary or, in general, even desirable.

To see this point, imagine an EMU of two countries whose central banks simply maintain constant money supplies through the balance of Stage Two. Country 1 has higher output than

country 2, a shorthand for the possibility of cyclical divergences as Stage Three nears. I will derive the path of interest and exchange rates in this case under a (hypothetical) credible announcement of the Stage Three bilateral conversion ratio. I will then compare that equilibrium informally with the one that would result from purposeful interest-rate coordination. (Later I examine the implications of the credibility problem raised in the last section.)

Assume a simple model in which the monetary equilibrium in either country is given by

$$\frac{M_j}{P_j} = y_j e^{-\lambda i_j}, \quad j = 1, 2,$$

where i_j is country j 's short-term nominal interest rate, uncovered interest parity holds, and purchasing power parity, $P_1 = S P_2$ is assumed. Let S^* denote the preannounced bilateral conversion rate. Then at the start of Stage Three--assuming no immediate change in the euro zone's total money supply--the euro nominal interest rate i^* is given implicitly by

$$\frac{M_1 + S^* M_2}{P} = (y_1 + y_2) e^{-\lambda i^*},$$

where P is the euro area price level measured in country 1 currency units. Assuming a constant real interest rate, i^* equals that real rate plus expected inflation, so that the preceding equation can be solved for i^* and P (under rational expectations) in the usual way.

Consider now the behavior of short-term nominal interest and exchange rates when $y_1 > y_2$ but $S^* = M_1 / M_2$ (meaning that the announced bilateral conversion rate would be the current equilibrium exchange rate at equal output levels). The country 1 nominal interest rate will be above

that in country 2, and $S = P_1 / P_2$ will be below $S^* = M_1 / M_2$, that is, country 1's currency will be relatively strong compared to its Stage Three conversion rate. But if $i_1 > i_2$, interest parity implies that S must be rising over time (country 1's currency is depreciating against that of country 2). And S rises at an accelerating rate! The price level in 1 is simultaneously rising, pushing the nominal interest rate further up, while that in country 2 is falling, allowing its interest rate to decline over time.

Thus we actually have *divergence* in short-term nominal interest rates until the first moment of Stage Three, when S reaches S^* and both countries' nominal interest rates jump to i^* , with country 1's rate falling and country 2's rising. (See figure 3.) Accompanying these interest rate shifts is an instantaneous flow of high-powered money from country 2 to country 1 through the newly operative TARGET payments system. Prior to these events, the exchange rate may stay relatively far from its ultimate rate for a while; but it then moves toward S^* very rapidly shortly before the regime switch.

Note that in reality a continuous-time model is not realistic: the end of Stage Two is December 31, 1998 but the effective start of Stage Three is January 4, 1999. The implication is that central banks' overnight policy rates may still diverge on the last day of Stage Two.⁷ Of course, longer-term interest rates will converge closely even if (very) short-term rates don't.

This behavior of short-term interest rates may be surprising, even counter-intuitive, but it is the only way to reconcile the output divergence with monetary equilibrium absent active interest-rate policy. And it is realistic. The central bank of Finland, currently growing at one of the EU's fastest rates, and showing slightly higher inflation than the EMU core, did push up domestic interest rates on March 19. As figure 4 shows, Irish three-month interest rates actually rose

relative to DM rates from mid-March 1998 (when the punt was revalued) through early June of that year.

These interest-rate responses illustrate the inadvisability of an alternative policy of enforcing short-term interest rate convergence prior to Stage Three in the face of divergent cyclical developments. Imagine a non-PPP, sticky-price version of the oversimplified model I have been discussing. Suppose that country 1 is Ireland and country 2 is Germany, and that their central banks during Stage Two steer both countries' interest rates toward some estimate of i^* . In Ireland growth and inflation would accelerate further as the real interest rate falls; in Germany the opposite would occur. The earlier approach of the exchange rate toward its ultimate level would reinforce the divergent tendencies. These dynamics are reminiscent of Sir Alan Walters' critique of the ERM in the 1980s. Compared to policies that hold relative domestic money supplies constant over Stage Two, the two countries will start Stage Three with a greater cyclical divergence than they otherwise would have had.

Of course, a policy of interest-rate independence at the shortest maturities cannot have big effects once Stage Three is close. A more potent antidote to overheating would be to revalue the punt again before Stage Three. No doubt market participants still have that possibility somewhere in mind, however remotely (recall figure 2). Given the much greater difficulty in tailoring monetary policy to individual members' needs after Stage Three begins, the temptation to use exchange rate policy when it is still available, even to make minor adjustments, is great.

This brings us back to the credibility problem raised earlier. My discussion in this section has assumed a fully credible future fixed conversion rate between the currencies. However, a policy of interest-rate independence could, in itself, undermine credibility by prolonging the period

during which the spot exchange rate remains far from its ultimate irrevocable level. Markets might then begin to question and test the authorities' resolve, with destabilizing effects.

4. Irish Irony

Ireland's three percent revaluation on March 19 is highly ironic because it is the kind of event EMU optimists have been arguing for years would be unnecessary.⁸ Ireland is the paragon of a small open economy. In 1996 Ireland's exports amounted to 80 percent of GDP (with two-thirds of those directed toward the future euro area), while its imports were 61 percent of GDP (with more than half from within the EMU 11; see European Monetary Institute, 1998, Table 10 for Ireland). Even in the early 1970s Corden (1972) concluded that Ireland, then running a currency board based on sterling, couldn't possibly benefit from an independent exchange rate policy, whereas, in his opinion, the Netherlands and Belgium could. Yet situations like Ireland's certainly could recur in the future, and EMU is ill-prepared to deal with them.

The standard cost of forgoing an adjustable nominal exchange rate is the consequent ability to adjust rapidly, with minimal unemployment, to an idiosyncratic real shock to the domestic economy. If France suffers a permanent fall in export demand, say, but maintains the French franc's peg, output will decline and unemployment will rise. The culprit in these developments are sticky nominal prices and wages, which, if they were fully flexible would fall immediately so as to maintain output and employment. Even under nominal rigidities, however, a more gradual domestic deflation will induce a real currency depreciation that eventually restores external demand and employment, while leaving the terms of trade permanently lower. But the process is long and socially wasteful. The unemployment problem is exacerbated in the EU by

Table 1 Macroeconomic Data for Ireland, 1994-98					
	1994	1995	1996	1997	1998 ^a
Real GDP growth	7.0	10.4	7.7	10.5	8.6
Growth in unit labor costs	-1.4	-4.3	-0.8	-1.3	0.9
CPI inflation rate	2.7	2.0	1.1	1.2	3.1
General government surplus	-1.6	-1.9	-0.9	0.9	1.5
Return on business capital	11.6	13.7	14.8	16.0	17.8
Employment growth	3.0	4.8	3.4	4.2	3.6
Unemployment rate	14.8	12.2	11.9	10.2	9.3
DM/punt exchange rate	2.42	2.30	2.41	2.63	2.50
^a OECD estimate/forecast. Source: <i>OECD Main Economic Indicators</i> , June 1998.					

low labor mobility coupled with high capital mobility, which allows capital to flee depressed countries while labor stays put (Corden, 1972, p. 27). A discrete nominal devaluation of the franc that left internal money prices unchanged could restore employment much more quickly.

The exchange rate option is typically thought to be unavailable for small and very open economies. In their setting a currency depreciation is much more likely to feed quickly into nominal prices and wages. Notwithstanding the greater utility of exchange rate independence for larger countries, the Irish experience nonetheless offers a relevant example of a small economy that has gained from using its exchange rate as an adjustment tool.

Ireland has been booming since 1994, its growth propelled by a number of idiosyncratic factors. A Programme for Competitiveness and Work, negotiated centrally with labor, limited wage growth over 1994-96 in return for government promises of income tax cuts and lower social insurance taxes. The program was renewed in 1997. The result has been high investment

profitability, a sharply increased share of profits in the economy, booming investment, yet declining unit labor costs and slowing inflation. (See table 1.) High (though slowly falling) unemployment, coupled with growing inward migration, has contributed to wage restraint. (Alesina and Perotti, 1997, present empirical evidence on the link between taxes and unit labor costs under varying degrees of labor-market centralization.)

The promised tax cuts imparted a sharp stimulus to the Irish economy in 1995, contributing to a GDP growth rate of more than 10 percent that year. The magnitude of the stimulus is of course understated by the small measured increase in the fiscal deficit, given the extremely rapid growth in the economy. Further tax reductions have continued to fuel the economy. The sharp appreciation of sterling after the summer of 1996--in part the result of fears of a weak euro--had a big incipient effect on Ireland's competitiveness, since the U.K. is the country's most important trading partner. The authorities responded to the expansionary pressures by allowing the punt to appreciate sharply within the ERM. Between 1995 and 1997 the punt appreciated against the DM by about 14 percent.

Nonetheless, the punt depreciated back toward its central rate over 1997 as EMU became more of a certainty. Real GDP grew by 10.5 percent in 1997. At the same time, the economy showed increasing signs of overheating: booming asset prices, especially for housing, and a rate of domestic credit growth double that of nominal GDP. OECD forecasts (see table 1), as well as those of the EMI, called for higher future inflation. According to the EMI (European Monetary Institute, 1998, p. 68), "These risks to inflation are being exacerbated in the run-up to EMU by the expected further decline in short-term interest rates and, should this materialise, by a resulting decline in the effective exchange rate." It was in this context that Ireland requested a 3 percent

reevaluation of the punt's central rate.⁹ The adjustment would have left the punt at its new central rate had the currency not promptly appreciated by around 1 percent (due to Ireland's still relatively high nominal short-term interest rate; see figure 4). Figure 5 shows how the punt/DM spot rate behaved relative to the bilateral central rate.¹⁰

From a global EMU perspective the punt revaluation ran the risk of being counterproductive in two related ways. First, it risked destabilizing the process of attaining preannounced currency conversion rates, as I have argued above. Second, it sent a signal that EMU will indeed impose a tight monetary constraint on its members, at least in its first years, so that it is helpful to make even minor adjustments now if that helps the initial conditions and worsens the consequent political pressures on the new ECB.

From the more limited perspective of the Irish economy, however, the move definitely was helpful in reducing the size of the eventual *devaluation* entailed by EMU entry, and in appreciating the currency in the short term. The realignment relieves some upward inflation pressure, both by keeping import prices down and by maintaining the real wage so as to discourage nominal wage growth. Higher domestic real interest rates will restrain the boom, as will the increase in the real value of consumer debts and mortgages. Ireland will enter EMU less vulnerable to a sudden run up in euro interest rates. Notice that in principle fiscal policy could have been used to slow consumption growth and cool the economy, but in practice major fiscal tools were unavailable. Government outlays were already being cut as rapidly as was politically feasible, whereas income tax increases, often an easier route politically, would have violated the terms of the wage pact and sparked increased wage demands.

The 1998 punt revaluation, coming just weeks before the formal selection of EMU's

founder members, illustrates the potential cost of giving up the exchange rate. It also illustrates the scope for idiosyncratic shocks, arising from factors such as divergent trade patterns, union behavior, and fiscal policy. If exchange rate independence can be useful even for a small open economy like Ireland's, its importance is even greater for large countries like France, Germany, Italy, and Spain, with trade/GDP ratios around 25 percent, and for which nominal currency realignment is a much more effective tool than in the Irish case for adjusting quickly to unexpected real asymmetric shocks.

None of this is meant to deny that certain asymmetric financial shocks are avoided by a common-currency regime--notably shocks due to unjustified shifts in exchange-market sentiment. Corden was over optimistic when he predicted that: "The Canadian experience, as well as well-known theoretical arguments, suggest that short-term capital movements in a floating-rate system are, on the whole, likely to be stabilizing" (Corden, 1972, p. 28). Destabilizing exchange-rate movements certainly have been a feature of the post-1973 experience. But if an important member country is hit by a big asymmetric real shock in Stage Three, it will not soften the pressures on the ECB to explain to unemployed workers that the euro has spared them the effects of many hypothetical financial shocks.

5. The Problem of Financial Sector Stability

The current asset-price boom in Ireland brings to mind the possibility of financial shocks not directly related to currency movements, but emanating instead from domestic asset markets. De Grauwe (1998) has depicted the risks Stage Three poses to financial stability quite vividly. Some EMU prospectives like Finland have already gone through boom-crash cycles and have

spent large sums strengthening their financial systems. France and Italy are currently cleaning up more limited domestic banking messes. Nonetheless, the Maastricht treaty's blueprint for safeguarding financial stability contains grave inherent weaknesses. The set of safeguards currently in place corresponds to the path of least political resistance, but is unlikely to be highly effective in preventing or managing financial crises.

The Maastricht treaty gives the ECB no statutory mandate to act as a lender of last resort (LLR); moreover, its supervisory responsibility for credit institutions is limited to specific tasks assigned by the Council through a unanimous vote, on a recommendation of the Commission, after consultation with the ECB, and with the assent of the European Parliament.¹¹ Supervision and regulation of credit institutions is explicitly left in the hands of the existing national authorities, following the principle of decentralization. The ECB has a vague mandate to "contribute" to the supervisory efforts of national authorities and to promote smooth operation of the euro payments system. Just how it should do so is nowhere spelled out.

This set of arrangements reflects two characteristics also found in the German system. The Bundesbank has no statutory LLR role, and in Germany responsibility for the supervision of credit institutions is separate from responsibility for monetary policy. In many countries the monetary and supervisory functions are separate; prospective EMU members differ among themselves in this respect, and the U.K. has moved to such a system following the grant of instrument independence to the Bank of England. One justification might be to avoid situations in which the central bank's resolve to raise interest rates is weakened by too intimate a knowledge of the effects on particular banks' balance sheets. Goodhart and Schoenmaker (1995) argue that when the fiscal authority rather than the central bank bears primary responsibility for financial rescue

operations, it is natural that it also take the leading role in supervision.

However, the Bundesbank's ability to avoid an LLR role, and indeed to limit its interventions to smooth money-market interest rates, flows from special features of the German financial system, including a relatively low degree of securitization, the dominant position of large universal banks, the high levels of reserves and collateralizable securities that German banks hold, and other features of the domestic payments system. As Folkerts-Landau and Garber (1992, p. 97) put it:

financial systems with a limited extent of securitization have in practice a small number of large universal banks in the market for wholesale funds. Wholesale payments and securities transactions are cleared internally in these organizations. The risk of nonsettlement is low due to the lack of significant exposure to non-bank financial institutions and an increased ability to work out unexpected problems quickly among the small number of players. Hence, although the clearing banks ultimately clear on the books of the central bank, there is little need for the central bank to provide intra-day credit or stand ready to act as lender-of-last-resort to the clearinghouse to ensure the payments settlement.

The euro financial system will not share these structural features of the German system-- certainly not if it aspires to support a financial market competitive with, and eventually absorbing, London. Furthermore, the TARGET system will be a real-time gross settlement (RTGS) system, in which payments are made with finality within seconds rather than becoming final only at the end-of-day clearing of a netting system. The EU chose an RTGS system to avoid the risk of an unwinding crisis, in which a day's payment instructions all are revoked because a small number of

parties cannot settle their net balances in central bank reserves at the end of the day. RTGS systems, however, require much more liquidity than do netting systems if payment delays and queues are to be avoided.¹² Accordingly, the ESCB will provide fully collateralized and generally unlimited intraday credit to TARGET users; a standing marginal lending facility will provide overnight credit on similar terms.

Because of idiosyncrasies in national financial institutions, there will be two classes of collateral, so-called “Tier I” collateral satisfying standards specified for the entire euro area, and “Tier II” collateral that EMU national central banks (which of course will belong to the ESCB) certify as eligible. To minimize the moral hazard problem of NCBs certifying home institutions’ risky paper as collateralizable, the certifying NCB will bear the entire default risk for a Tier II asset, whereas the ESCB will bear the default risk for Tier I assets (Folkerts-Landau and others, 1997, p. 175). This rather contorted set of rules is necessitated by the political demand that EMU respect diversity in national financial cultures and traditions, a diversity unlikely to survive for long if the euro leads to a truly integrated European financial market.

The greater liquidity needs of TARGET participants and growing financial-market sophistication gradually will push the ESCB to play a more active role in money and other financial markets than the Bundesbank presently does. As a result, an implicit LLR role is likely to evolve--and experience in the United States suggests that it is necessary (Folkerts-Landau and Garber, 1992). Certainly in the case of a systemic payments crisis only the ESCB would be able to mobilize liquidity quickly enough to avert disaster. The ESCB will be more effective in the role of LLR, and better able to fulfill that role without compromising its mandate to pursue price stability, if it has access to timely information on private credit institutions’ balance sheets.

Perhaps the main weakness in the planned structure of euro zone prudential supervision is the division of regulatory responsibility among national regulators, some of them NCBs, and hence closely connected with the ESCB, but many of them not. This seems a misguided application of the principle of subsidiarity, since on several grounds it is hard to conceive of the optimal domain of regulation in an integrated financial market as being smaller than the market itself. One reason is that national regulators may not fully internalize the adverse repercussions of a financial crisis, particularly when the bill for containment arrives at the EMU or EU level. A further problem, stressed by Eichengreen (1993), is that national regulators might favor national institutions or financial centers through lax application of the rules. This type of problem has arisen in enforcing the Basle Committee's 1988 international bank capital standards, as national regulators have been pressed by domestic financial interests to adopt overly broad definitions of eligible capital.

Problems can be reduced by harmonizing prudential standards, exchanging information, and clearly assigning regulatory responsibility in areas of possible ambiguity, but gaps seem sure to arise nonetheless. Competitive regulatory leniency, especially coupled with the ESCB's uncertain readiness to act as an LLR, poses a genuine threat to the euro zone's financial stability. Regulatory authority for the euro zone need not be placed in the hands of the ESCB. That assignment would have the advantage, though, of giving the ESCB better information on borrowers' balance sheets. And in the absence of a supra-national fiscal authority, it would conform to the Goodhart-Schoenmaker (1995) prescription that regulatory powers and financial responsibility should go hand in hand. Plainly, however, supervision should be exercised at a global level. As the EMU countries' financial markets become more unified and similar, any

supposed advantages of local regulation will wither away in any case.

6. Fiscal Convergence and the Conduct of Macro Policy

1997 was a year of high fiscal drama, as observers wondered which (if any) core players would achieve fiscal consolidation sufficient to qualify them for EMU entry. The uncertainty was resolved with near-finality when the European Commission recommended on March 25, 1998 that all existing excessive deficit judgments of the Ecofin Council, save that on Greece, be abrogated (European Commission, 1998). In a report issued the same day the EMI expressed reservations about the sustainability of fiscal adjustment in many of the EMU 11, but stopped far short of questioning the Commission's recommendation (European Monetary Institute, 1998). Subsequent reports of the Bundesbank and the Banque de France, whose heads had already signed the EMI document, took similar tacks. The contrasting tones of the Commission and the central bankers is suggestive of future conflicts between EMU's monetary and fiscal authorities.

The Commission took a sanguine view of fiscal adjustment in the EMU 11. Technically, all had met the 3.0 per cent of GDP deficit test in the short run--France only barely--and forecasts call for smaller deficit ratios in 1998. The 60 percent of GDP debt test was interpreted very loosely, so that even Belgium and Italy, with ratios over 120 percent of GDP, qualified. They qualified on the grounds that their debt levels were declining under the force of primary surpluses. The Commission noted (European Commission 1998, p. 18) that "the Belgian government has recently confirmed its commitment to maintain the primary surplus at a high level over the medium term." Italy seems to have made a more qualified commitment, assuming that even slight variations in Commission formulas are immensely significant. Italy promised only "to maintain the

primary surplus at an *appropriately* high level over the medium term” (European Commission 1998, p. 24; emphasis added). Recent increases in debt-GDP ratios for France, Germany, and Austria were rationalized away, and without reference to the cyclical factors that feature in the Stability and Growth Pact.

As the EMI noted in its own assessment, the Italian and Belgian primary surpluses, even if sustained over the *long* term, could leave the Belgian and Italian debt-GDP ratios above the 60 percent reference value for as long as 15 to 20 years. By that time, as EMI also noted, unfunded public pension systems--also present in France and Germany--will be placing public finances under serious strain. Significantly, the EMI report used the same language to describe the Belgian and Italian fiscal adjustment that it applied to Greece (European Monetary Institute, 1998, pp. 37, 55, and 79):

Notwithstanding the efforts and the substantial progress made towards improving the current fiscal situation, there is an evident ongoing concern as to whether the ratio of debt to GDP will be “sufficiently diminishing and approaching the reference value at a satisfactory pace” and whether sustainability of the fiscal position has been achieved; addressing this issue will have to remain a key priority for the [Belgian, Greek, Italian] authorities.

The Commission’s precedent-setting decisions have signaled, however, that it is unlikely to push countries nearly as hard as the EMI would like toward “forceful” debt reduction.

The EMI’s concern did not stop at the high-debt countries, of course. France was singled out as having its debt on a rising trajectory relative to GDP; other countries’ deficits were

compared unfavorably to the medium-term goal of a nonnegative budget balance specified in the SGP. However, these criticisms may represent the central bankers' last hurrah. In future the ECB will be able to express its unsolicited views on fiscal policy, but will have little leverage to make its views effective except by trading interest-rate cuts for fiscal concessions on the part of EMU member governments.

Are the EMI's views alarmist? Economists have had a hard time coming up with plausible externalities that might justify the excessive deficit procedure of the Maastricht treaty or the stability pact; see, for example, Eichengreen and Wyplosz (1998). Perhaps the best story is the one told by Kenen (1995, p. 95-96): a government debt crisis might have cascade effects that endanger the euro payments system as a whole, prompting a monetary expansion that might not be totally reversible. The urgency with which the EMI has focused on debt levels (as well as the maturity structure of debt) is also motivated by more prosaic fears, I believe, and these fears may paradoxically be due to the stability pact itself!

Consider a situation in which Italy's debt ratio remains high and Italy is suffering a recession while for the rest of the euro zone, higher interest rates are appropriate. With a budget in surplus and little debt, Italy would have the option of expanding fiscal policy to offset the ECB's monetary tightening. Under current conditions, however, Italy's interest payments would rise sharply, perhaps pushing it into fiscal cuts to avoid later stability pact sanctions. The ECB's statutory independence in theory would allow it to proceed anyway, but the presence of unresolved fiscal vulnerabilities could certainly worsen the asymmetric transmission of ECB monetary policies and thus threaten the bank's acceptance by the public over the longer run. The EMI's concern over short government debt maturities is consistent with this fear, as well as with

the fear of a generalized euro-zone financial crisis triggered by a government liquidity crisis.

But is it plausible that the stability pact limits will ever become a serious issue? EMU optimists like Eichengreen and Wyplosz (1998) suggest not, and EMU pessimists like Jochimsen (1997) agree. I am not so sure. Much depends on the zeal of the Ecofin Council in enforcing the pact, of course, and that zeal will be procyclical and may decline permanently under a future socialist German chancellor. But it is hard to believe, given the nature of the fiscal adjustments made to satisfy the EMU entry hurdles, that intractable deficits are entirely a thing of the past, even if countries such as Italy do not revert to their old dissolute ways.

A major concern is the *composition* of the fiscal adjustment that has taken place--an issue acknowledged by the Commission but not adequately addressed in its report. In a study of OECD countries after 1960, Alesina and Perotti (1995) find that fiscal consolidations based on cuts in government wage bills and transfer payments tended to be relatively durable; those based on tax increases or cuts in government capital outlays typically were much more quickly reversed.

Alesina and Perotti's empirical model would predict that much of the fiscal consolidation in preparation for EMU is not durable. Table 2 summarizes patterns of fiscal adjustment between 1991 and 1997 (figures are based on June 1998 OECD data).¹³ Roughly speaking, the countries fall into several groups. Austria, France, and Germany have generally been moderate deficit countries, but rising public debt and unemployment over the 1990s would have left them wide of the Maastricht reference deficit in 1997 had they not taken corrective measures. To offset increases in social benefits and interest payments, they have mainly raised taxes and cut capital outlays. Of the three countries, only Germany has made an effort to cut the politically sensitive government wage bill. In France that item actually increased by nearly a percent of GDP, and the

Jospin government has proposed to expand public employment and cut the work week. The Alesina-Perotti findings thus would lead one to question the sustainability of current public deficit levels, especially in the French and German cases.

Finland, Ireland, and the Netherlands form a second group of countries where adjustment, to differing degrees, looks more durable. Facing problems similar to those of France (but more severe), Finland has slashed both categories of government consumption, though tax collections have simultaneously risen somewhat and capital outlays have been cut. Ireland's successful fiscal turnaround has been rewarded by lower interest rates on its still sizable public debt. The Netherlands has cut government consumption and taxes. With the help of labor-market reforms, it has also been able to cut social spending and subsidies sharply (by 3.3 percent of GDP). Not surprisingly, these three countries, along with Luxembourg, were the only first-round EMU entrants not subject to prior excessive deficit findings by the Ecofin Council.

Belgium, Italy, Portugal, and Spain make up the final group of generally high-structural deficit countries. For these countries the durability of their adjustments will be especially important for life under the EMU stability pact. Belgium's deficit reduction comes from a sizable tax increase coupled with smaller cuts in social benefits and government nonwage consumption. Government wage payments actually have risen, but the country has benefited from falling interest rates. Italy has so far profited somewhat less from lower interest rates, but it has cut wage consumption by more than a percent of GDP. The bulk of its deficit reduction comes, however, from lower capital outlays and much higher tax revenues. In Portugal government wages and social spending have risen. The large deficit reduction in table 2 is due to sharply increased tax revenues and a big cut in the interest bill as inflation dropped from over 12 percent per year in

Table 2 Changes in EU Government Budgets, Selected Countries, 1991-97							
(Percent of GDP)							
	Wage consumption	Nonwage consumption	Benefits, subsidies, and transfers	Net interest and property payments	Net capital outlays (5)	Taxes (6)	Change in public-sector deficit (1)+(2)+(3)+(4)+(5)-(6)
	(1)	(2)	(3)	(4)	(5)	(6)	(1)+(2)+(3)+(4)+(5)-(6)
Austria	0.0	0.4	1.5	0.3	-0.5	1.8	-0.2
Belgium	0.4	-0.3	-0.4	-1.7	0.2	2.4	-4.2
Finland	-2.7	-0.6	0.5	3.8	-1.3	0.2	-0.4
France	0.9	0.0	2.6	1.1	-0.7	2.6	1.3
Germany	-0.5	0.3	0.9	1.3	-2.1	0.6	-0.6
Ireland	-1.2	0.0	-0.2	-2.4	0.7	0.3	-3.3
Italy	-1.2	-0.1	0.1	-1.2	-1.8	3.2	-7.4
Netherlands	-0.4	-0.1	-3.3	1.0	-0.7	-2.1	-1.5
Portugal	1.9	0.1	1.7	-3.3	-0.1	4.6	-4.3
Spain	-0.2	0.1	0.5	0.8	-2.2	0.8	-1.8

Source: OECD, *Fiscal Positions and Business Cycles on Diskette*, 1998/1 (June). Each entry represents the difference between a 1997 budget item, as a percent of 1997 GDP, and the corresponding 1991 item, expressed as a percent of 1991 GDP. Figures have been rounded. Taxes in column (6) are sum of direct taxes, indirect taxes, and social security contributions.

1991 to only 2.2 percent for 1997.¹⁴ In Spain a cut in capital outlays has been the main force driving the fiscal deficit down. None of these four countries' efforts comfortably meets the Alesina-Perotti prescription for durability.

One might argue that in the larger European countries cyclical factors make current fiscal deficits look artificially high. But the observation that throughout the 1990s this has generally been true limits the solace one can draw. As the EMI pointed out, demographic trends imply a worsening fiscal trend for countries with unfunded pension systems, as in the United States. Furthermore, in France, Germany, and Italy, unemployment has played a dominant role in determining the evolution of social insurance spending (and vice versa). Europe's fiscal problem will remain a live issue as long as its structural unemployment problem is not seriously addressed. France for one, with its remarkably high share of government outlays in GDP, shows no sign of doing this. The other major EMU countries have been moving slowly as well.

As has often been noted, EMU will lack the natural shock absorbers provided by fiscal federalism in politically-unified currency areas (see Obstfeld and Peri, 1998, for a survey). With national fiscal policy hobbled, these stabilizers would be missed even more in Europe than in the United States due to greater structural rigidities, lower geographic and occupational mobility, and the more limited state of private risk diversification. It has been reported that 43 percent of Americans own stock shares outright or through mutual funds. In contrast, the corresponding percentages in Europe are 25 percent in the U.K., 16 percent in France, 11 percent in Italy, and 7 percent in Germany.¹⁵ And even these limited holdings reflect a home bias in equity choice. The euro surely will promote greater financial integration, and the the investment habits of European

households are changing visibly already. But will they change quickly enough?

7. Conclusion: The Future of the ECB

The ECB is the centerpiece institutional innovation of EMU, an arrangement unprecedented in history: a common central bank for major sovereign nations with distinct national traditions. It is already clear that some of these nations harbor different visions of how the ECB should function. Such conflicts lay behind the very public and, in the longer term, probably damaging dispute over the first ECB presidency at the 1998 Brussels summit. If any of the pitfalls I have discussed materialize, the ECB will attract blame and there will be intense pressure to modify its statutory independence, formally or informally.

Even though the ECB has no formal monetary role until Stage Three starts, a debacle in setting the “irrevocable” conversion rates would fall at its door, and it will inherit any macro imbalances accentuated by faulty monetary policy coordination in the final months of Stage Two. Any systemic credit problems in Stage Three will damage the ECB’s prestige, and the stability pact, when it binds, probably will make matters more difficult for the ECB. Indeed, whenever the single monetary policy of Stage Three fits badly with the needs of major EMU members, the ECB will come under more intense political fire than that the U.S. Federal Reserve Board would draw in a similar case. The European identity is not yet fully forged; arguably, the very success of European institutions like the ECB will play an integral role in forging that identity. Europe therefore has taken a gamble in placing monetary unification so far ahead of political unification. If the ECB is weak, the cause of European unification will be fatally impaired.

In principle it could turn out otherwise. Money, as James Tobin has observed, is a language. France seems determined that it be a *lingua franca*, in the literal, Italian sense. The ongoing Franco-German dispute over “economic government”--code for a significant political influence over monetary policy--will be resolved by events and the voters’ reaction to them. It is hard to believe that the Euro-11 club of EMU finance ministers will refrain from forceful comment on ECB policy, including but not limited to exchange-rate developments. In its turn, the ECB will surely weigh in on fiscal matters. It is not unthinkable that ongoing policy frictions could transform the ECB’s political “interlocutor” into an inquisitor.

Along several key dimensions Europe is not ready for EMU, and the euro zone’s future economic performance and political cohesion are more than usually uncertain. The Europeans’ arguments for proceeding nonetheless are two: To prepare completely would be to postpone EMU forever, and EMU economies and institutions will in any case evolve to make the single currency fit all fairly comfortably. The first argument is clearly right, although some might argue, with Feldstein (1997), that indefinite postponement would be a good thing. The second argument is based on a pure leap of faith. If it is wrong, EMU could come apart or evolve into an institution very different from what its architects intended.

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Endnotes

1. An unfortunate reminder of the labor-market problem was the one-day strike called by the European Commission staff the day before the Brussels summit. The strike was a protest against management proposals that Commission employees feared would reduce job security and benefits.

2. To see this implication, let $S_{DM/ECU}$ be the market price of the official ECU basket in terms of DM on December 31, 1998, let $C_{DM/E}$ be the Stage Three conversion rate for DM into 1 euro, and let a_i be the number of currency i units in the ECU basket. In order for the equality 1 euro = 1 ECU to govern the euro's introduction when both sides are reckoned in DM, say, the condition

$$C_{DM/E} = S_{DM/ECU} = \sum_{i=1}^{12} a_i S_{DM/i}$$

must hold (as confirmed in European Union, 1998). This constraint must hold equally, however, for any other EMU currency, for example, the French franc, so that

$$C_{FF/E} = S_{FF/ECU} = \sum_{i=1}^{12} a_i S_{FF/i} = S_{FF/DM} \sum_{i=1}^{12} a_i S_{DM/i},$$

where triangular arbitrage among the end-1998 market rates has been assumed. The last two equations imply, however, that

$$C_{FF/E}/C_{DM/E} = C_{FF/DM} = S_{FF/DM}.$$

Thus the Stage Three bilateral conversion rates must equal the December 31, 1998 market rates.

3. The Madrid Council's decree gave rise to some confusion in markets, but has now been clarified. Council Regulation (EC) No. 1103/97 of the Council of Ministers, approved on June 17, 1997, provides, in the words of European Monetary Institute (1998), that "contracts making reference to the Community definition of the ECU (i.e. 'basket' ECU) will be converted into euro at the 1:1 rate and establishes a presumption that the same will happen in the case of contracts without such a definition of the ECU, although this presumption will be rebuttable taking into account the intention of the parties, thereby preserving the principle of contractual freedom."

$$C_{FF/DM} = S_{FF/DM}^{central}$$

4. Note that if markets expect *with certainty* that the future bilateral conversion rates will equal current bilateral ERM central rates, in the notation of footnote 1, then for any annualized FF and DM nominal interest rates i_{FF} and i_{DM} on instruments of duration T maturing after January 1, 1999, arbitrage guarantees that

$$\frac{S_{FF/DM}^{central}}{S_{FF/DM}} = \frac{1 + Ti_{FF}}{1 + Ti_{DM}}$$

(Obviously, interest differentials must converge to zero as $T \rightarrow \infty$ in given certainty about the conversion rates.) However, covered interest parity ensures that the forward exchange rate $F_{FF/DM}$ (for any duration T maturing in Stage Three) also must satisfy the preceding displayed relationship, implying that

$$F_{FF/DM} = S_{FF/DM}^{central}$$

This implication is the basis for the test in figure 2. Notice that current spot exchange rates need not be very close to central rates, even if forward rates equal central rates, when there are sizable interest differentials and Stage Three is still some time away.

5. See Obstfeld (1998) for discussion.

6. After the Brussels summit the *Financial Times* dropped its Monday front-page EMS exchange-rate grid feature in favor of a “Euro Interest Rate Convergence” grid promising to track how the eleven national official short-term interest rates will converge to a common value forecast by Money Market Services (initially 3.75 percent per year).

7. My implicit presumption is that the December 31 market exchange rate used to calculate Stage Three conversion rates (in line with the last section’s discussion) is the rate for transactions with a January 4 value date. Covered interest parity can hold between December 31 and January 4 despite over-the-weekend interest-rate differentials if the December 31 exchange rate for same-day settlement differs slightly from the day’s next-business-day settlement rate. See footnote 4.

8. For the contrary view, see Lane (1997).

9. Ireland’s finance minister “was . . . adamant that the decision [to revalue] was taken at Ireland’s request,” not under EU pressure. See John Murray Brown, “Irish ‘Judgment Call’ on

Revaluation,” *Financial Times*, March 16, 1998.

10. Footnote 4 implies that if markets had revised their expectation of the Stage Three punt/DM conversion rate by the full 3 percent of the central parity realignment, the punt should have appreciated by the same 3 percent at unchanged interest rates, and not by roughly 1 percent. It did not because, as figure 2 shows, markets had already settled upon a nearly 2 percent expected revaluation of the punt’s central rate prior to that event. (Actually longer-term Irish interest rates did fall by about 50 basis points just after the punt realignment, but they soon rose back to pre-revaluation levels.)

11. The Treaty does not forbid an LLR role either, although the Bundesbank, upon which the ECB is modeled, offers little or no precedent in this regard.

12. For an excellent description of alternative payments systems and the attendant risks, see Shen (1997).

13. The table updates the similar one in Obstfeld (1997), which was based on OECD projections of 1997 outcomes.

14. An implication is that the fall in Portugal’s real (inflation-adjusted) government deficit is much smaller than the 4.3 percent figure in table 2.

15. See John Tagliabue, “Selling Europe on the Stock Market,” *New York Times*, March 1, 1998, section 3, p. 1. The Italian numbers refer to direct stock ownership only.