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Economics, University of California at Berkeley

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The crisis in the European Monetary System, culminating in July 1993 in events that forced European policymakers to abandon the narrow bands of the pre-existing EMS, poses a fundamental challenge for advocates of the Maastricht way to EMU. The Maastricht Treaty sketched an extended transition to monetary union, characterized by growing financial integration and steadily increasing exchange rate stability. Before September 1992 it was widely believed that everything was proceeding according to plan. The EMS had seen no realignments since the beginning of 1987. Capital controls had been removed on schedule by all countries not granted derogations by the Single European Act. Inflation differentials between Germany and other EMS countries, while not eliminated, had been greatly reduced (see Figure 1). Europe appeared to be advancing smartly down the Maastricht path to EMU.

The September 1992 crisis cast these developments in a new light. The British pound and the Italian lira were driven from the Exchange Rate Mechanism. The Irish punt, the Spanish peseta and the Portuguese escudo suffered speculative attacks and were realigned. Although the French and

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Prepared for the conference on Economic Policy Issues in Financial Integration, University of Helsinki, September 20-21, 1993. I thank Charles Wyplosz for comments and for allowing me to draw on our joint research. A first draft of this paper was written during a visit to the Institute for International Economic Studies of the University of Stockholm in June; it was revised following the events of July and, given the pace at which conditions continue to evolve, is best considered work in progress. In particular, it has not been possible to do more than make passing reference to M. Delors's mid-September proposals for measures to discourage speculative capital flows.
Annualized Inflation Rate: Germany / ERM Partners

- ERM Partners
- Germany

1.30
1.25
1.20
1.15
1.10
1.05
1.00


--- ALL ---- GEANIN
Belgian francs and the Danish krone were successfully defended on this occasion, a second attack on these currencies the following July could not be contained. European officials maintained the pretense of operating a mechanism to limit exchange rate fluctuations only by sacrificing the reality, widening the narrow ERM band from 2 1/4 to 15 per cent.

The lesson drawn from the 1992 crisis by European policymakers was straightforward: to stabilize the ERM it is both necessary and sufficient for countries to rededicate themselves to harmonizing their policies. Modest inflation differentials, if allowed to persist, can cumulate into significant competitive imbalances. Forward-looking markets have incentives to attack the currencies most likely to be affected in advance of the development of overt competitive difficulties. This is what officials concluded was necessary to avoid.

In fact, the crisis also laid bare more subtle, less well-appreciated problems with the operation of the EMS and the transition to EMU. For EC member states with large public-sector debts and deficits and recent histories of inflation, the Maastricht blueprint requires an extended period of monetary and fiscal austerity to bring debts, deficits, inflation and interest rates down to the treaty’s reference values (or "convergence criteria" as they are popularly known) and to convince the markets that the policy regime has changed. Until these targets are met and the message is communicated, restrictive policies translate into unemployment and output losses. Even if an infinitely-lived social planner would be willing to endure unemployment now in return for qualifying for monetary union later, mortal governments that attach a positive probability to leaving office before the deferred benefits are reaped may hesitate to commit to this
intertemporal tradeoff. Thus, the weakness of European governments, by raising policymakers’ discount rates and shortening their planning horizons, disrupted the transition to EMU. Insofar as governmental weakness in Europe reflects abiding social and political tensions, there is no reason to think that increased discount rates and shortened time horizons are just passing problems.

These factors had already combined by the summer of 1992 to create serious financial difficulties which recession then compounded. Persisting in policies of austerity became that much more painful as unemployment rates rose. Doubts deepened about the willingness of governments to trade austerity now for the carrot of monetary union later as unemployment rates scaled new heights. In the summer of 1992, speculators sold the currencies of countries like Britain where the recession surfaced relatively early, anticipating that the Major Government would be forced by political pressure to reduce interest rates in response to unemployment. By the summer of 1993 recession had spread to the continent, and France was subject to the same pressures. Insofar the current recession may not be the last of the 1990s, there is reason to worry that this same factor will again disrupt the lengthy transition to EMU.

Even if governments were still prepared to suffer the costs of austerity now in return for qualifying for monetary union later, the crises of September 1992 and July 1993 revealed that speculative pressure could itself destabilize the balance of costs and benefits. Britain in 1992 and France in 1993 may in fact have been prepared to suffer German-style interest rates in return for qualifying for EMU. What they were not willing to suffer was a significant premium over German rates. Had no
speculative attack occurred, the British government might have happily maintained the prevailing level of interest rates and the prevailing exchange rate, paying current costs (unemployment now) in return for deferred benefits (qualifying for monetary union later). But once the attacks occurred, it became necessary to raise rates above German levels to defend the currency, aggravating unemployment, increasing debt service costs, undermining the stability of the banking system, and demoralizing the housing market. Even if abandoning the ERM would have been neither desirable nor necessary in the absence of the speculative attack, it became rational once that attack occurred.

An additional reason it was rational, the crisis revealed, was that the convergence criteria of the treaty provide perverse incentives. The treaty makes two years of exchange-rate stability a precondition for participation in the monetary union. Even if a country has its domestic financial house in order and its government is willing to trade austerity now for a ticket to participate in the monetary union later, an exchange-market crisis that forces the country to devalue its currency and abandon its ERM peg may still disqualify it from early participation. If it no longer qualifies for EMU, its government has no remaining incentive to continue pursuing the policies of austerity required to gain entry. It is likely therefore to switch to a more accommodating monetary and fiscal stance. Even if in the absence of a speculative attack there is no problem with fundamentals, either current or future, once an attack occurs the government has an incentive to modify policy in a more accommodating direction, validating speculators’ expectations of capital gains. In this setting, in other words, a speculative attack can be self-fulfilling. The
disturbing implication is that for European governments to get their economic fundamentals in order and to rededicate themselves to convergence thus may not guarantee a safe passage to EMU.

The remainder of this paper analyzes the crisis and its implications in more detail. It shows how European officials failed to draw the right lessons from the instability of September 1992 and questions whether they have drawn the right lessons from the July 1993 sequel. Sections I and II provide a narrative and assessment of the 1992 crisis, while Section III is a critique of the lessons from this episode drawn by European officials. Sections IV and V provide a narrative and analysis of the 1993 sequel, while Section VI concludes with the lessons that should now be drawn. At the time of writing the 1993 crisis is too recent to be fully digested. The response of markets and governments is only beginning to unfold. As a consequence the first half of the paper is necessarily more complete than the second.

I. An Overview of the 1992 Crisis

The 1992 crisis was preceded by exchange-rate turmoil at the fringes of the European Community. In the second half of 1992, Finland had experienced capital outflows due to the collapse of its Soviet trade and a domestic banking crisis. The Bank of Finland, which had maintained an ECU peg, was forced on November 14, 1991 to devalue the markka by 12 per cent. Pressure spilled over to Sweden, which exported many of the same products and maintained a similar ECU peg, forcing the Riksbank to raise its marginal lending rate by fully six points, to 17 1/2 per cent.

Despite these events, a striking feature of the 1992 EMS crisis was
the absence of difficulties in the EC itself toward the beginning of the year. The British pound, though relatively weak early in 1992, remained comfortably within its fluctuation band. On April 6th the Portuguese escudo joined the wide band without incident. Divergences between ERM exchange rates actually moderated, with the French franc moving up from the bottom of its band and the DM, Belgian franc and Dutch guilder moving down.

The Danish referendum on June 2nd was a turning point. The Italian lira, which had been maintained within the narrow band since January 8th, 1990, fell toward its lower limit despite intramarginal intervention. The Bank of Italy raised interest rates repeatedly but to no avail. The three currencies of the wide band (sterling, the peseta and the escudo) weakened. All this occurred against the backdrop of mounting exchange rate tensions in the Nordic countries, depreciation of the U.S. dollar (which fell by fully 17 per cent against the DM between mid-March and early September), and the weakness of the yen against the EMS currencies (the Bank of Japan’s official discount rate having been lowered to 3 1/4 per cent in late July). See Figure 2.

Pressure mounted in August and September with the approach of the French referendum. On August 26th the pound fell to its ERM floor despite intervention. Other ERM member countries intervened in support of their currencies. On August 28th the ECOFIN Council concluded that a realignment of ERM currencies was not appropriate. This conclusion was echoed a week later by the informal ECOFIN meeting in Bath.

On September 8th, the Finnish markka’s unilateral ecu peg was suspended. This appeared to heighten investors’ doubts about other exchange rate pegs. Currency traders, some of whom are said to have been
Figure 2

Market Exchange Rates

$I$ US per DM  $¥$ Yen per DM
unable to distinguish Sweden from Finland, turned their attention to the krona; over the subsequent week the Riksbank, to defend its ECU peg, was forced to raise its marginal lending rate to triple digit levels. The Italian lira was the most prominent target within the ERM. Despite the Bank of Italy's willingness to allow short-term rates to rise to more than 30 per cent and heavy marginal intervention by German, Dutch and Belgian authorities, whose currencies reached their maximum permissible divergence against the lira, a 3.5 per cent devaluation of the lira and 3.5 per cent revaluation of other ERM currencies followed on September 13th.

What European monetary officials hoped would end the crisis only marked its start. The first discontinuous realignment in five years reminded observers that changes in the relative prices of EMS currencies were still possible, while the small size of the cut in German interest rates that followed the Italian action signalled that the burden of adjustment remained squarely on the shoulders of weak-currency countries. Pressure mounted on Britain, Spain, Portugal and Italy (whose September 13th realignment, many observers believed, had been not only too late but too little). Despite further interest rate increases and marginal intervention, on September 16th, at the end of the trading day, British ERM membership was suspended and the two interest rate increases taken by the Bank of England earlier in the day were reversed. Italy announced to the Monetary Committee that evening that the inadequacy of its reserves forced it to suspend foreign exchange market intervention and to allow the lira to float; at the same meeting the Committee authorized a 5 per cent devaluation of the peseta.

In the subsequent period, speculative pressure was felt by the French
franc, the Danish krone and the Irish pound. The outcome of the French referendum, a narrow "oui," was not enough to vent this pressure. The Bank of France was forced to raise interest rates, and fears for the stability of the franc spilled over to Belgian currency markets. Though the French franc remained above the bottom of its band, the Bank of France and the Bundesbank felt impelled to undertake intramarginal interventions. A total of 160 billion French francs ($32 billion) was spent on the currency's defense in the week ending on September 23rd. Renewed pressure on the peseta forced the Spanish authorities to reimpose deposit requirements for banks with open foreign exchange positions, while threats to the escudo and the punt induced Portugal and Ireland to tighten the capital controls which they had been permitted to retain temporarily under derogations granted them by the provisions of the Single European Act.

The next wave of instability followed the decision by Sweden, another of the Nordic countries unilaterally pegging to the ECU, to abandon that link on November 19th following the government's failure to obtain all-party support for fiscal austerity measures. The Riksbank had lost extensive reserves in the course of the September crisis; these had not flowed back subsequently, despite its maintenance of relatively high interest rates. Massive reserve losses were incurred in the six days preceding the devaluation, reportedly $26 billion or more than ten per cent of Sweden's GNP. Pressure spread next to Sweden's neighbor, Denmark, forcing its central bank to raise official interest rates, and to Iberia. Although the krone was successfully defended, three days later it proved necessary to devalue the peseta and escudo by 6 per cent. Having failed to hold back the tide, Spain then removed its deposit requirements, Portugal
its capital controls.

Again, this was not the end of the story. Norway was forced to abandon its unilateral ECU peg on December 10th, and pressure spread to Ireland and France. Though the franc was successfully defended, the punt was not. In the face of Ireland’s removal of capital controls on January 1st, 1993 (as mandated by its derogation to the Single European Act) and the continued descent of the pound sterling (fueled by British interest rate cuts), increases in Irish market rates to triple digit levels did not suffice. (Between September 16th and the end of the calendar year, sterling declined by 13 per cent against the DM.) The punt was devalued by ten per cent within the ERM on January 30th. The Danish krone and then the Belgian franc came under renewed attack, but this was successfully rebuffed.

II. Analytical Perspectives on the 1992 Crisis

Explanations for the 1992 crisis essentially fall into four categories. The first emphasizes inadequate convergence. Inflation differentials across EMS countries remained large in the early years of the system’s operation. These had been accommodated by capital controls which averted immediate reserve losses and balance-of-payments crises, and by periodic realignments which adjusted exchange rates to restore competitive balance. After 1986, controls were gradually removed and realignments grew infrequent. Although the variability of inflation rates across ERM countries declined relative to the preceding period, significant divergences remained. (See Table 1.) And even small inflation differentials, if allowed to persist, could cumulate into large changes in
Table 1

Inflation in Europe

(Average Annual Inflation Rates in Per Cent)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Av. EMS</td>
<td>9.9</td>
<td>10.4</td>
<td>4.6</td>
<td>2.3</td>
</tr>
<tr>
<td></td>
<td>(3.6)</td>
<td>(4.4)</td>
<td>(2.3)</td>
<td>(1.1)</td>
</tr>
<tr>
<td>Av. EC non EMS</td>
<td>16.3</td>
<td>16.1</td>
<td>12.6</td>
<td>6.6</td>
</tr>
<tr>
<td></td>
<td>(3.5)</td>
<td>(3.6)</td>
<td>(5.9)</td>
<td>(2.5)</td>
</tr>
<tr>
<td>Ac. Europe non-EC</td>
<td>8.4</td>
<td>8.8</td>
<td>5.2</td>
<td>3.7</td>
</tr>
<tr>
<td></td>
<td>(3.5)</td>
<td>(2.0)</td>
<td>(1.8)</td>
<td>(0.9)</td>
</tr>
</tbody>
</table>

Note: Europe non-EC includes Switzerland, Norway, Sweden, Finland (not Austria because its currency is linked to the DM). Standard deviations are in parentheses.

relative national price levels. Eventually these developed into significant competitiveness problems, raising doubts about the sustainability of overvalued currencies and culminating in speculative attacks.

Table 2 shows several measures of producer prices and labor costs in different ERM countries. Of the countries that participated in the ERM from the beginning of 1987 (the date of the last significant realignments prior to the 1992 crisis), only Italy showed a significant deterioration in competitiveness. Unit labor costs in Italy rose by 7 per cent relative to other EC countries, by 10 per cent relative to other industrial countries. (The difference reflects the decline in the U.S. dollar and the slow rise in U.S. labor costs over the period.) The latter figure is larger only for Greece, which had not yet succeeded in controlling its inflation sufficiently to join the ERM. The only other country in this group whose labor costs rose at anything approaching Italian rates was, ironically, Germany. There is nothing here, in other words, obviously justifying the attacks on France, Belgium, Denmark and Ireland.

The situation in Spain, Portugal and the UK, three countries that entered the ERM between June of 1989 and April of 1992, is less clear cut. There is little evidence of a labor cost problem in the UK. Even on the basis of the relatively unfavorable comparison with all other industrial countries, relative unit labor costs rose cumulatively by only 1.7 per cent. One might object that the problem lay in the period prior to the country entering the ERM in October 1990. But, in contrast to the 20-20 hindsight of post-crisis analysts, it is hard to find British press commentary prior to the crisis indicating perceptions of a competitiveness
Table 2
Indicators of Cumulative Competitiveness Changes (a)
(in per cent)

<table>
<thead>
<tr>
<th>Country</th>
<th>Producer Prices</th>
<th>Unit Labour Costs (c)</th>
<th>Relative to other EC countries (b)</th>
<th>Relative to industrial countries</th>
<th>Producer Prices</th>
<th>Unit Labour Costs (c)</th>
<th>Relative to other EC countries (b)</th>
<th>Relative to industrial countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>4.0</td>
<td>5.6</td>
<td>1.3</td>
<td>2.7</td>
<td>0.9</td>
<td>1.9</td>
<td>-0.3</td>
<td>0.3</td>
</tr>
<tr>
<td>Denmark</td>
<td>3.6</td>
<td>6.4</td>
<td>-0.5</td>
<td>3.8</td>
<td>-1.9</td>
<td>4.1</td>
<td>-4.9</td>
<td>1.9</td>
</tr>
<tr>
<td>Germany (western)</td>
<td>1.7</td>
<td>0.5</td>
<td>-3.8</td>
<td>-5.5</td>
<td>-4.3</td>
<td>-6.6</td>
<td>-5.5</td>
<td>-8.6</td>
</tr>
<tr>
<td>Greece</td>
<td>n.a.</td>
<td>n.a.</td>
<td>-10.2</td>
<td>-15.6</td>
<td>n.a.</td>
<td>n.a.</td>
<td>-10.8</td>
<td>-13.4</td>
</tr>
<tr>
<td>France</td>
<td>7.9</td>
<td>13.3</td>
<td>3.3</td>
<td>7.2</td>
<td>3.1</td>
<td>8.1</td>
<td>1.7</td>
<td>5.1</td>
</tr>
<tr>
<td>Ireland</td>
<td>6.4</td>
<td>35.7</td>
<td>1.3</td>
<td>27.9</td>
<td>-0.6</td>
<td>26.6</td>
<td>-1.9</td>
<td>23.6</td>
</tr>
<tr>
<td>Italy</td>
<td>-3.0</td>
<td>-7.0</td>
<td>-6.4</td>
<td>-9.8</td>
<td>11.1</td>
<td>5.7</td>
<td>8.2</td>
<td>4.6</td>
</tr>
<tr>
<td>Netherlands</td>
<td>1.5</td>
<td>5.2</td>
<td>-1.4</td>
<td>1.9</td>
<td>-2.6</td>
<td>2.1</td>
<td>-3.9</td>
<td>0.1</td>
</tr>
<tr>
<td>Since ERM entry (d) - August 1992</td>
<td>Since ERM entry (d) - December 1992 (e)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spain</td>
<td>-2.1</td>
<td>-7.5</td>
<td>-8.1</td>
<td>-13.8</td>
<td>4.2</td>
<td>-2.2</td>
<td>0.5</td>
<td>-6.2</td>
</tr>
<tr>
<td>Portugal</td>
<td>n.a.</td>
<td>-4.6</td>
<td>n.a.</td>
<td>-6.9</td>
<td>n.a.</td>
<td>-9.5</td>
<td>n.a.</td>
<td>-9.5</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>-1.7</td>
<td>-0.4</td>
<td>-4.0</td>
<td>-1.7</td>
<td>8.3</td>
<td>13.2</td>
<td>8.7</td>
<td>13.2</td>
</tr>
</tbody>
</table>

Source: BIS, except for the Spanish and Italian data, which were provided by the respective central banks.

(a) Negative numbers indicate losses. (b) Excluding Greece. (c) Manufacturing sector. (d) Spain: June 1989; Portugal: April 1992; United Kingdom: October 1990. (e) Estimates
problem. Sterling was not weak on forward markets, as it all but certainly would have been had market participants perceived the existence of a competitiveness problem."

Although Spain and Portugal display rising relative unit labor costs, this evidence is hard to interpret because of the Balassa-Samuelson effect. One would expect prices to rise in the rapidly-growing economies of Southern Europe, due to the tendency for price levels to be relatively low in low-income countries. Spanish and Portuguese unit labor costs would rise as the two countries trade up toward the production of more sophisticated, higher value-added goods. Dornbusch (1993) argues that the peseta remained overvalued even when the Balassa-Samuelson effect was taken into account. Yet this does not appear to have been the market’s assessment; in Spain as in Britain, the one-year ahead forward rate was well within the ERM band until the crisis struck, which does not suggest that market participants perceived a competitiveness problem.

Once the crisis erupted, competitive positions changed as a result of market pressures and official responses. Once the U.K. devalued, the situation facing Ireland, the largest single share of whose exports were destined for British markets, was transformed. Gerlach and Smets (1993) model contagious balance-of-payments crises, showing how devaluations in one country can spill over to another by eroding the latter’s international competitiveness. Evidence on the generality of this mechanism is mixed, however. The statistics in Table 2 indicate only modest post-September changes in relative producer prices and unit labor costs as a result of the initial realignments. On the other hand, the survey of foreign-exchange market participants conducted by Eichengreen and Wyplosz (1993a) suggests
that contagion was considerable. 90 per cent of respondents reported that the weakness of some ERM currencies led them to anticipate weakness of others (Table 3). Of these, more than half cited the ability of devaluing countries to undercut competitors, and an even larger number suggested the existence of contagion operating through other channels.

While the importance of differential rates of producer-price and labor cost inflation cannot be dismissed, the preceding evidence suggests that they constitute only part of the story. Efforts to salvage this approach (viz. Branson 1993) have led to a second category of explanation emphasizing that post-1987 Europe was subjected to a massive asymmetric shock, namely German unification. The increase in German public and private consumption associated with the unification shock raised the demand for German goods relative to demands for goods produced abroad. In the short run this should have pushed up German prices relative to those of other ERM countries. By implication, the fact that prices in most other ERM countries rose no faster than prices in Germany may not indicate the successful maintenance of internal and external balance, since the asymmetric shock actually required that prices in other countries fall relative to those prevailing in Germany.

As is evident from Figure 1, there was some tendency for this to occur in post-1990 Europe. The question is whether the shift in relative prices sufficed. In the absence of a model of the European economy, it is hard to test this hypothesis systematically. Eichengreen and Wyplosz (1993a) attempt to circumvent this problem by focusing on quantities that relative prices affect, namely the current account of the balance of payments and profitability in the business sector. The increase in German demand should
Table 3  
Contagion Within the ERM  
(figures in per cent)

Yes  86.4

*If* yes, *why?* *Because:*

<table>
<thead>
<tr>
<th>Reason</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Devaluing countries are able to undercut competitors</td>
<td>5.0</td>
</tr>
<tr>
<td>(b) Markets &quot;tasted blood&quot; (realize that there are profits to be made)</td>
<td>73.7</td>
</tr>
<tr>
<td>(c) Other (Please specify):</td>
<td>4.2</td>
</tr>
</tbody>
</table>

Question asked: Did the weakness of some ERM currencies late in the summer lead you to anticipate weakness of other ERM currencies?

*Source:* see text.
have strengthened the current accounts of other ERM countries; if their current accounts in fact deteriorated, this is evidence of inadequate disinflation. Similarly, the surge in export demand should have enhanced profitability; if profits in fact declined, competitiveness can be called into question.

Figures 3 and 4 therefore display the evolution of the current account and profitability in the business sector. Italy shows a deterioration in both its current account and profitability, consistent with the implications of price and labor-cost comparisons. Again the evidence for Spain and the U.K. does not speak clearly. Spain displays a deteriorating current account (the mirror image of its capital inflows) but consistently strong profitability, while the opposite is true for the U.K. Perhaps the most noteworthy feature of these figures is that there is no evidence of competitive difficulties for Denmark, France and Ireland, three countries whose currencies were attacked in the course of the crisis. The asymmetric German shock is clearly part of the story, but it cannot explain the difficulties of all the countries subject to speculative pressures in 1992.

The third category of explanation, rather than looking backward for evidence of slowly cumulating competitiveness problems, looks forward at the prospects for their future emergence. Even if governments succeeded through the summer of 1992 in pursuing policies consistent with the maintenance of external balance, the markets may have had reason to anticipate that this would change. The German unification shock, as explained, required a rise in German prices relative to those prevailing elsewhere in Europe. In the presence of pegged exchange rates, this could only be accomplished by faster inflation in Germany or slower inflation
Figure 3. Further Competitiveness Indicators

Current Account to GDP

Italy - Ratio Current Account to GDP

Finland - Ratio Current Account to GDP

Spain - Ratio Current Account to GDP

Denmark - Ratio Current Account to GDP

UK - Ratio Current Account to GDP

France - Ratio Current Account to GDP

Sweden - Ratio Current Account to GDP

Ireland - Ratio Current Account to GDP
Figure 4. Further Competitiveness Indicators

Profit Share in Business Sector

Italy - Profit Share in Business Sector

Finland - Profit Share in Business Sector

Spain - Profit Share in Business Sector

Denmark - Profit Share in Business Sector

UK - Profit Share in Business Sector

France - Profit Share in Business Sector

Sweden - Profit Share in Business Sector

Ireland - Profit Share in Business Sector
abroad. The Bundesbank's preference, predictably, was for the second alternative. It raised interest rates and restricted credit in order to insure that adjustment did not take place mainly through German inflation. Adjustment consequently had to occur through disinflation abroad. Given inertia in labor markets, this disinflation translated into rising unemployment, as Table 4 shows.

Rising unemployment made the policies of austerity required to maintain exchange rate stability vis-a-vis the DM increasingly painful for Germany's ERM partners. Moreover, the weakness of governments in many European countries heightened doubts that politicians would be willing to endure unemployment now in return for the deferred benefits of an enhanced reputation for valuing exchange-rate and price stability. Press accounts in the summer of 1992 featured stories in which prominent public figures in countries like Britain expressed reservations about the prevailing policy regime.

The association of exchange-rate tensions with the shifting prospects for ratification of the Maastricht Treaty lends support to this view. If the treaty was not going to be ratified, it no longer paid for countries to endure unemployment now as a way of demonstrating their commitment to participate in the monetary union later. From this perspective it is no coincidence that exchange market tensions first surfaced when the Danes rejected the Treaty in their June referendum, that they intensified each time an opinion poll was released documenting the extent of opposition to ratification in France, or that they peaked immediately in advance of France's September 20th referendum.

Yet this explanation sits uneasily with the observed behavior of
Table 4
Unemployment Rates (a)

<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>Belgium</td>
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<td>7.5</td>
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<td>8.1</td>
<td>8.9</td>
<td>9.5</td>
</tr>
<tr>
<td>Germany (western) (c)</td>
<td>6.1</td>
<td>4.8</td>
<td>4.2</td>
<td>4.5</td>
</tr>
<tr>
<td>Greece</td>
<td>7.5</td>
<td>7.0</td>
<td>7.7</td>
<td>7.7</td>
</tr>
<tr>
<td>Spain</td>
<td>19.1</td>
<td>16.3</td>
<td>16.3</td>
<td>18.4</td>
</tr>
<tr>
<td>France</td>
<td>9.9</td>
<td>9.0</td>
<td>9.5</td>
<td>10.0</td>
</tr>
<tr>
<td>Ireland</td>
<td>17.0</td>
<td>14.5</td>
<td>16.2</td>
<td>17.8</td>
</tr>
<tr>
<td>Italy</td>
<td>10.9</td>
<td>10.0</td>
<td>10.0</td>
<td>10.1</td>
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<td>1.7</td>
<td>1.6</td>
<td>1.9</td>
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<tr>
<td>Netherlands</td>
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<td>7.5</td>
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<td>6.7</td>
</tr>
<tr>
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<td>7.0</td>
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</tr>
<tr>
<td>EEC:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average</td>
<td>9.7</td>
<td>8.3</td>
<td>8.7</td>
<td>9.5</td>
</tr>
<tr>
<td>Dispersion (d)</td>
<td>2.7</td>
<td>2.6</td>
<td>3.3</td>
<td>3.7</td>
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<tr>
<td>ERM Original Narrow Band:</td>
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</tr>
<tr>
<td>Average</td>
<td>8.1</td>
<td>7.2</td>
<td>7.1</td>
<td>7.4</td>
</tr>
<tr>
<td>Dispersion (d)</td>
<td>2.2</td>
<td>2.2</td>
<td>2.8</td>
<td>2.9</td>
</tr>
<tr>
<td>United States (e)</td>
<td>5.7</td>
<td>5.5</td>
<td>6.7</td>
<td>7.3</td>
</tr>
<tr>
<td>Japan (e)</td>
<td>2.5</td>
<td>2.1</td>
<td>2.1</td>
<td>2.2</td>
</tr>
</tbody>
</table>

Source: Eurostat.

(a) Standardised definition. (b) Estimates. (c) For 1992, unemployment rates (national definition) are: 14.3% for eastern Germany and 7.7% for the whole of Germany. (d) Weighted standard deviation. (e) Percentage of total labour force.
forward exchange rates. If observers attached a high probability to a
shift in policy in a more expansionary direction, why then did the one-
year-ahead forward rates of most of the ERM currencies that were attacked
starting in the second week of September not move outside of their ERM
bands in July or August? Of the major ERM currencies, only the Italian
lira, for reasons explained above, and the Danish krone -- not
surprisingly, given the fact that voters in that country had already
demonstrated their reservations about the monetary provisions of the treaty
-- saw their forward rates fall out of their fluctuation bands prior to
September. If forward rates are any guide, suspicions that rising
unemployment would provoke an inevitable future relaxation of policy were
not sufficiently intense before September to dramatically influence the
behavior of the markets.  

Forward exchange rates are an imperfect measure of realignment
expectations, since they reflect expectations of both exchange rate
movements within the band and movements associated with realignments. But
at intervals as long as one year, movements within the band should be
unpredictable, rendering the forward rate a good proxy for realignment
expectations. Alternatively, one could follow recent empirical work on
exchange rate target zones, estimating the extent of mean reversion within
the band typical of no-realignment periods and subtracting it from the
observed interest differential or forward rate. Rose and Svensson (1993)
do this for the French franc/DM rate and cannot reject the hypothesis of a
zero expected rate of realignment in the late spring and early summer of
1992. Only toward the end of the summer -- that is, in the midst of the
crisis -- do significant devaluation expectations emerge.
Hence the need for a fourth category of explanation building on the work of Flood and Garber (1984a) and Obstfeld (1986) on rational self-fulfilling balance-of-payments crises. This interpretation rests on the existence of multiple equilibria in foreign exchange markets. If the authorities are prepared to alter policy in the event that a speculative attack occurs, two distinct equilibria can arise. If no attack takes place, the stance of policy remains unchanged, and the exchange rate peg can be maintained indefinitely. But if an attack occurs and policy shifts in a more expansionary direction, a second equilibrium with a depreciated exchange rate can obtain. Since the post-attack policy shift is in an expansionary direction and the exchange rate depreciates as a result, the attack is rational (in the sense that speculators' expectations are validated and they reap the capital gains that motivate the attack in the first place) and self-fulfilling (in the sense that no change in the exchange rate would occur in its absence).

Eichengreen and Wyplosz (1993a) suggest that the provisions of the Maastricht Treaty created scope for precisely such self-fulfilling attacks. The convergence criteria that must be met by countries qualifying for monetary union include one requiring them to keep their exchange rate within the normal, narrow EMS fluctuation band without "severe tensions" for the two years preceding entry. Hence, an attack forcing a devaluation might disqualify a country from EMU participation. This in turn would remove the government's incentive to persist with policies whose benefits resided in qualifying the country for EMU. A rational government might shift toward more accommodating policies only if attacked. And knowledge of this fact could provide traders the incentive to undertake it.
This stylized account should not be interpreted too literally. An attack occurring in 1992 might still leave countries time to recover and restore exchange rate stability for two years prior to the inauguration of monetary union, assuming that the latter is delayed into the second half of the 1990s. And the phrase "severe tensions" leaves room for flexible interpretation by the signatories to the treaty. Still, it seems unlikely that countries which suffer exchange-market crises and are forced to devalue during the run-up to monetary union will be regarded favorably when the time comes to decide who qualifies for participation, especially by countries like Germany particularly concerned about inflation and exchange rate stability.

Still, there are indications that a number of governments had these concerns in mind in 1992. Of Ireland, for example, it is said that the authorities "were anxious that the Irish pound be taken seriously as a candidate for membership of an inner circle or fast track within the ERM. It was argued that this prospect would have been jeopardized by devaluation."\textsuperscript{16}

Even if the Maastricht convergence criteria are dismissed as unimportant, one can still think of other circumstances under which rational self-fulfilling balance-of-payments crises might occur. In the Krugman (1979) model, crises will occur if underlying monetary and fiscal policies are inconsistent with the exchange rate peg. Krugman assumes a government budget deficit which is financed with money creation. So long as they possess international reserves, the authorities support the exchange rate by sterilizing that money creation, purchasing with reserves whatever portion of the additional money the private sector is unwilling to
hold at the prevailing exchange rate. Since capital is mobile internationally, domestic and foreign interest rates should be equalized." Eventually, however, reserves approach a critical threshold where their exhaustion is anticipated, and an attack occurs, forcing the currency to be floated or devalued. Now imagine a situation where the budget is balanced, monetization is zero, the external accounts are in equilibrium, so no balance-of-payments crisis looms. If speculators nonetheless anticipate depreciation and attack the currency, the authorities must allow domestic interest rates to rise to ensure its successful defense. Speculators must be rendered indifferent between holding domestic-currency domestic assets, on which the rate of return is the domestic interest rate, and foreign-currency denominated assets, the return on which is the sum of the foreign interest rate and the expected rate of domestic depreciation. If the rise in interest rates induces a budget deficit, then a self-fulfilling attack is possible. If for example much government debt is short-term, higher interest rates can significantly increase debt-servicing costs. If the banking system is already in a fragile condition, higher interest rates which raise default rates on bank loans can further weaken the banks, requiring government expenditure to bail them out. If the budget deficit implies monetization, the initial situation may be transformed in a way that renders rational the expectation on the part of speculators of a crisis and ultimately a depreciation.

One cannot rule out the possibility that these mechanisms came into play in the autumn of 1992. There was much public discussion over the course of the summer of the added debt servicing costs suffered by the Italian government as a result of the need to jack up interest rates. It
was reported, for example, that every percentage point increase in the Bank of Italy's discount rate added 13 billion lire to the budget deficit, and that every percentage point increase in short-term market rates added 15 billion lire. These relationships received considerable publicity at early stages of the crisis. In other countries, the plight of the banking system was prominent. In all three Scandinavian countries, non-performing loans as a share of all loans had reached double-digit levels (Table 5); more loan defaults, increasing the fiscal burden, were sure to follow further interest rate increases.

All these variants of the self-fulfilling crisis model have the same implication. For European countries to get their fundamentals in order and rededicate themselves to convergence does not suffice to prevent balance-of-payments crises. Certain conditions, like large public debts and weak banking systems, heighten significantly the inevitable tension that exists between pegged exchange rates, international capital mobility, and even the option of pursuing independent national policies. And the peculiar incentives built into the Maastricht Treaty via the convergence criteria heighten these dangers further.

Nothing is necessarily incompatible about these four explanations. Several of them could have simultaneously contributed to the difficulties of particular countries. Indeed, the various factors could have interacted. Imagine for example that the fourth possibility -- a self-fulfilling balance-of-payments crisis set off by the incentives built into the Maastricht Treaty -- was responsible for driving one or more countries, say Britain and Italy, from the ERM. This then reduced the likelihood that a majority of EC member states would qualify for EMU prior to 1999. By
Table 5

Banks' non-performing loans in selected countries

1992

<table>
<thead>
<tr>
<th>Countries</th>
<th>Non-performing</th>
<th>Restructured</th>
<th>Net Problem</th>
<th>Memo: Property</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>as % of loans</td>
<td>as % of assets</td>
<td>as % of loans</td>
<td>as % of tier I</td>
</tr>
<tr>
<td>United States</td>
<td>3.1</td>
<td>1.8</td>
<td>0.6</td>
<td>0.3</td>
</tr>
<tr>
<td>Peak (1991)</td>
<td>3.7</td>
<td>2.2</td>
<td>0.5</td>
<td>0.3</td>
</tr>
<tr>
<td>Norway</td>
<td>11.5</td>
<td>9.3</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td>Finland</td>
<td>12.9</td>
<td>7.7</td>
<td>1.0</td>
<td>0.6</td>
</tr>
<tr>
<td>Sweden</td>
<td>13.4</td>
<td>8.3</td>
<td>3.9</td>
<td>2.4</td>
</tr>
<tr>
<td>Japan</td>
<td>3.1</td>
<td>2.0</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
</tbody>
</table>

1 Non-consolidated accounts except for the United States and Finland. Unless otherwise specified, both loans and assets are measured gross of accumulated provisions.  
2 United States: at least ninety days past due on an accrual basis plus loans on a non-accrual basis; Norway and Finland: over ninety days past due; Sweden: over sixty day past due plus other credits whose repayment is doubtful; Japan: over 180 days past due.  
3 Loans whose terms have been renegotiated because of a deterioration in the financial position of the borrower.  
4 Non-performing and, where available, restrucutred loans net of accumulated provisions.  
5 Property taken over on loans foreclosed.  
6 Commercial banks only.  
7 Preliminary data.  
8 Including non-performing guarantees.  
9 Twenty-one large banks; end-September.

Source: BIS (1993).
lowering the probability that monetary union would commence at an early
date, this in turn reduced the attractiveness to other governments of
trading austerity now for participation in monetary union later; it thereby
brought the third set of factors into play. This is but one example of the
various mechanisms through which the four sets of destabilizing influences
could have fed on one another.

III. Official Assessments

To what extent were these lessons absorbed in official assessments of
the crisis? With notable exceptions, only the first two of these factors
received much attention. This led official bodies to conclude that to
stabilize the EMS it was both necessary and sufficient for participating
countries to do no more than rededicate themselves to the task of
convergence.

The report of the Committee of Governors of the Central Banks of the
Member States of the European Economic Community (1993b) is
representative. As causes of the crisis, it cited divergent price and
cost developments, excessive wage claims and fiscal imbalances. It
mentioned the upward pressure on interest rates caused by the German
unification shock and, in what was perhaps the one significant departure
from an otherwise uncritical tone, suggested that the rise in interest
rates was aggravated by lack of policy coordination within Germany,
specifically between that country’s monetary and fiscal authorities. The
Committee recommended increased convergence, adjustments to the monetary-
fiscal mix (to insure that European interest rates were maintained at
levels more suited to the needs of the majority of countries), and freer
recourse to the realignment option.

This last recommendation raised obvious difficulties in a Europe characterized by high capital mobility and no capital controls." The Committee of Governors warned against allowing the ERM to degenerate into a crawling peg system but provided no advice on how orderly realignments could be organized given the incentives the markets have to anticipate them and force the authorities' hand. It encouraged active use of the interest rate to defend weak currencies but at the same time warned that sustained interest-rate increases might not be supportable politically or economically. It portrayed concerted intervention as helpful but not necessarily adequate to sustain weak currencies. Allowing weak exchange rates to appreciate within the band was its preferred way of preventing speculators from enjoying one-way bets. Unfortunately, this was wishful thinking for perennial weak-currency countries.

The conclusions of the Monetary Committee of the European Community (1993) were little different, although they transcended those of the Committee of Governors by offering specific suggestions for implementing more frequent realignments. In addition to mentioning the special problems of countries like Italy and the U.K. and the difficulties caused by the unification-induced rise in German interest rates, the Monetary Committee highlighted the decline of the U.S. dollar as a cause of selective pressures on EC currencies, effectively placing much of the blame on factors beyond European policymakers' control. It acknowledged the change in the international financial environment owing to the removal of exchange controls. Its main recommendation was for faster progress toward convergence, although, in an allusion to the German monetary-fiscal mix, it
acknowledged that strengthening the convergence process might not be enough in the absence of improved coordination of economic policies. It warned that an inappropriate policy mix in any one country could overburden the entire system.

Like the Committee of Governors, the Monetary Committee emphasized the need for timely realignments and warned against allowing the EMS to deteriorate into a system of crawling pegs but failed to come to grips with the difficulty of running a system of pegged but adjustable exchange rates in an environment of high capital mobility. It concluded that current institutional and technical arrangements remained on the whole appropriate. It recommended "frank discussion," improved policy coordination, rededication to the pursuit of price stability, and sound public finances.

The Monetary Committee suggested breaking new ground in dealing with market pressures by realigning in advance of the development of market expectations of a change. The Spanish realignment in May 1993, which was taken in the middle of the trading day, can be seen as an attempt to implement this approach. The problem, obviously, is that market participants learn: a tactic which surprises them once is unlikely to work twice. Perhaps in recognition of this fact, EC finance ministers reportedly agreed, in May 1993, to develop an "early warning system" in which the Monetary Committee or central bankers would use confidential economic indicators to strengthen the case for a country to devalue.22

Unfortunately, as one newspaper editorial put it, "markets read the same statistics as policy-makers, but react far faster."23

The Directorate-General for Economic and Financial Affairs of the Commission of the European Communities (1993) was more pessimistic about
the structure and operation of the ERM. The most important cause of exchange-market turmoil in 1992, it concluded, was Denmark's failure to ratify the treaty and uncertainty surrounding the September referendum in France. In the same breath it cited weak economic growth and recession starting in 1991, thus acknowledging the third category of explanation distinguished in Section II of this paper. It included obligatory references to high short-term interest rates in Germany, the sharp depreciation of the dollar, and inadequate progress toward nominal convergence. But it went beyond these factors by emphasizing the problems for the ERM posed by free capital mobility and monetary policy autonomy. It thus came close to acknowledging the existence of multiple equilibria and scope for self-fulfilling attacks by suggesting that interest rate hikes may not succeed in defending currencies under attack due to a lack of "political credibility -- whether because of a weak cyclical position, the political sensitivity of lending rates or the vulnerability of the public finances..." But it did not clearly see that the problem was one as much of economics as politics: it is not merely that high interest rates may be politically insuperable but that their maintenance may so weaken the economy, the banks and the public finances as to fail to achieve their desired objective, irrespective of the strength of the government's political will.

The Commission's policy recommendations were less rich than its diagnosis: countries should rededicate themselves to convergence, surveillance should be strengthened, and the instruments at the disposal of the participating countries should be used more flexibly. The Commission did emphasize the need for greater symmetry, implicitly urging countries
like Germany to more systematically adapt their interest-rate policies to the needs of other members.

The Report of the Group of Ten (the Dini Report, after its chairman, Lamberto Dini) provided a particularly eclectic analysis of the causes of the crisis. It cited the fixed date of the French referendum as a focal point for speculative attention, the tendency for a weak dollar to strengthen the DM against other EMS currencies, and the destabilizing impact on the markets of remarks by "official sources" indicating the likelihood of EMS realignments. It concluded that the major causes of the crisis resided with the ERM countries themselves; these included lack of convergence of national monetary policies and high German interest rates. The political and economic sustainability of policies of austerity was also questioned; as the report put it, "the vulnerabilities of sterling and the Swedish krona were linked to financial pressures, on private sector borrowers in the first case and on financial institutions in the second, which limited the scope for a lasting and credible further tightening of monetary policy in defense of the parities." The Dini Report was less satisfying when it turned to implications for policy. It concluded antiseptically that "the best way to avoid exchange market pressure is through the pursuit of sound medium term policies." It came down against exchange controls, which, though capable of temporarily relieving pressure on a currency, are likely to grow increasingly ineffective the longer they are maintained. It pointed out that the lack of monetary policy autonomy implicit in the maintenance of an exchange rate peg will be easier to bear for countries that succeed in enhancing the flexibility of wages and prices, in reducing structural rigidities, and in
strengthening the operation of automatic fiscal stabilizers.

The Annual Report of the Bank for International Settlements provided yet another analysis of the crisis. Though attributing the difficulties of 1992 to exchange-rate misalignments, the weak dollar and high short-term interest rates in Germany (which it in turn blamed on that country’s inappropriate monetary-fiscal policy mix), it acknowledged the existence of attacks against currencies whose fundamentals were sound and where the determination of the authorities was unequivocal, albeit without explaining how and why attacks on such currencies could occur.24

Rather than simply instructing countries to rededicate themselves to convergence, the BIS recommended concerted support for countries with sound fundamentals. Foreign exchange market intervention, it argued, should be accompanied by changes in interest rates which demonstrate the multilateral nature of the commitment to exchange rate stability. This suggestion of the need for more symmetry in use of interest rate policies to defend ERM policies was at odds with Germany’s official position, although limiting the applicability of the recommendation to currencies with sound fundamentals was perhaps intended to minimize the conflict. The problem, of course, is just how to determine whose fundamentals are sound. The ex post test -- that currencies that had to be devalued could not have had sound fundamentals -- has the nature of a self-fulfilling prophesy if these are also the currencies that do not receive the appropriate multilateral support.

The only official assessment that took seriously the scope for self-fulfilling attacks was that of the IMF (Goldstein et al., 1993). In addition to rehearsing the standard economic analysis of speculative
attacks, the Fund pointed to the possibility of multiple equilibria in foreign exchange markets. It cited the "disturbing possibility" that an attack can succeed in destabilizing an exchange rate even when economic fundamentals are sound. But it stopped short of offering positive suggestions for dealing with self-fulfilling attacks. In particular, it rejected the idea of resorting to capital controls (and, implicitly, deposit requirements and foreign exchange transactions taxes). "It would be neither desirable nor effective," it concluded, "to attempt to deal with capital market pressures on exchange rates by introducing restrictions or taxes on international capital flows." The policy recommendation of this study, that ERM countries must harmonize their interest rate policies and rededicate themselves to convergence, is hard to square with its recognition of the problem of self-fulfilling attacks and other sources of intrinsic fragility.

Viewed from the perspective of academic studies, then, official responses to the EMS crisis failed to pursue their analyses, however well founded, to their logical conclusion. With few exceptions, they stressed the obvious -- overt problems of misalignment and high interest rates -- to the neglect of subtler sources of instability. And they did not permit their analyses to lead them to awkward policy recommendations, even when the internal logic of their arguments would seem to have so dictated.

IV. An Overview of the 1993 Crisis

European countries such as France subsequently did everything asked of them in these official post mortems of the crisis. According to the view articulated in the official reports, all should then have been well. Yet
another, still more severe crisis afflicted them less than a year later. Nothing could more clearly reveal the limitations of the first round of official assessments.

Like its predecessor, the 1993 crisis surfaced first at the fringes of the European Community, in this case Iberia. Spanish unemployment had risen steadily toward 20 per cent. The release in mid-February of disappointing employment figures for the final quarter of 1992 triggered selling pressure, and then the calling of elections on April 12th heightened uncertainty about the identity and orientation of the prospective Spanish government. Weakness of the peseta and extensive reserve losses prompted a further 8 per cent devaluation on May 13th. Although Portugal was subject to no such electoral uncertainty, it felt it necessary (and the Monetary Committee agreed) to devalue the escudo by 6 1/2 per cent to prevent Portugal’s competitive position from being eroded by the actions of its Spanish neighbor. The two countries then cut interest rates significantly.

This further depreciation of the peseta and the escudo, matched by little increase in Spanish or Portuguese demand, did not enhance the competitive positions of countries like France, Belgium, Holland and Denmark still linked to the DM at their pre-1992 parities. Their unemployment rates rose as the recession already evident in the U.S. and the U.K. spread to the Continent. But officials, including members of the new Balladur Government in France, affirmed in the strongest possible terms their commitment to the prevailing policies. The markets appear to have taken them at their word: the franc was strong within the ERM through the spring and the first part of the summer.

27
The turning point came on June 24th when Edmond Alphandery, the French economy minister, demanded a meeting with his German counterpart, Theo Waigel, for the purpose of coordinating reductions in French and German interest rates. Waigel cited pressing business and declined. Two weeks later INSEE released a gloomy report on the French economy, and the franc tumbled, dragging down the Danish krone with it. On July 13th the Bundesbank was forced to intervene in support of the franc as the currency approached its maximum permissible divergence against the DM. Bundesbank support of the franc continued the next day, while the Dutch and Danish central banks intervened to support the krone. The Bundesbank and the other ERM central banks continued to support weak currencies with extensive foreign exchange market intervention. In the third week of July alone, the Bundesbank’s foreign exchange reserves rose by DM 8 billion, or 7 per cent.

The markets were clearly waiting to see whether the Bundesbank would cut interest rates, allowing other countries to do likewise without destabilizing their ERM pegs or to limit the rise in rates needed to defend weak currencies. Sales of francs and other currencies for deutschmarks took place during the run-up to each regularly scheduled meeting of the Bundesbank Council. Pressure intensified with the release of German money supply figures on July 21st, which showed that the Bundesbank’s targets had been overshot again, stoking German inflation fears.

Observers warned that a cut of a full point in German rates was now needed to limit the magnitude of the French rate increases necessary to defend the franc to the point where the latter were politically tolerable. But on the last Thursday of July, following its final regular meeting of the summer, the Bundesbank Council declined to lower its discount rate.
The question was whether the Bundesbank was prepared to work behind the scenes, preferring to intervene on the foreign exchange market rather than cutting the discount rate on the grounds that the effects of the first approach were easier to unwind later through repurchase agreements while the second would send dangerous inflationary signals, or whether the Bundesbank was in fact unwilling to compromise domestic objectives to sustain the EMS. Though the answer was uncertain, speculators were essentially offered a one-way bet, and chaos broke loose on the foreign exchange market.

Massive intervention ensued. The Bank of France expended $32.25 billion of reserves over the last week of July. It was estimated that 80 per cent of this total was spent on July 29th, the last trading day of the month. By that time the Bank of France had already more than exhausted its reserves, which had gone deeply negative through foreign borrowing. Although the Bundesbank was prepared to provide extensive support, it may have underestimated the amount of intervention required. Germany's foreign exchange reserves rose by nearly DM 40 billion (or 33 per cent) in the last week of July. If not sterilized, Germany's reserve gains implied a dramatic increase in the money supply.

This was the background to the historic meeting of central bank governors and finance ministers over the final weekend of July. Full details of their negotiations have yet to emerge. The Monetary Committee reportedly presented the ministers with two options: widening the narrow ERM band from 2.25 to 5 or 6 per cent or allowing the deutschmark to leave the ERM and float upward against the currencies of the remaining participants. France, its reserves exhausted, was understandably skeptical.
that 6 per cent bands were defensible. The Netherlands, joined by Belgium, refused to allow its deutschmark link to be ruptured. Thus, permitting the deutschmark to leave the ERM would have reduced the system to no more than four currencies -- those of France, Denmark, Spain and Portugal -- which to the French smacked embarrassingly of devaluation.

Two further options were brought to Brussels by Spain and Belgium. Spain proposed abandoning the ERM altogether in favor of generalized floating. Belgium offered a scheme for "reserve coefficients," under which banks with open foreign exchange positions would be required to place non-interest-bearing deposits at their central banks as a way of slowing down foreign exchange speculation. Both options were too radical for the assembled officials. The decision finally taken, to retain the ERM but to widen the bands to 15 per cent, is best understood as a result of deadlock -- a decision taken almost in panic just minutes before foreign exchange trading was to open in Tokyo.

V. Analytical Perspectives on the 1993 Crisis

How are the events recounted in the previous section to be understood? They reinforce doubts that price competitiveness was at the root of the 1992 crisis. France, the country on which speculative pressures centered in 1993, had enjoyed persistently lower inflation than Germany. Until the speculative outflows of summer, its external position remained strong; the Bank of France was repeatedly able to reduce interest rates in advance of the Bundesbank.

Popular accounts of the 1993 crisis emphasize the third category of explanation: that mounting unemployment due to Europe’s deepening recession
would eventually force the Balladur Government to capitulate to political pressure for lower interest rates." Speculators sold francs in anticipation. Yet it is hard to imagine what more the Balladur Government could have done to resist. It precommitted to defending the franc by tying its political reputation to the policy. Still, it is possible that the market were right to be skeptical about its staying power and correct in believing that once the Bundesbank refused to lower its discount rate the writing was on the wall.

The problem with this explanation is that there was nothing unanticipated about the rise in unemployment in France, Denmark and other European countries. Unemployment had clearly been on its way up in May and June, but the franc had been strong within the EMS. The pressure on policy caused by high unemployment could have been responsible for the sudden weakening of the franc only if the rise in unemployment was much greater than expected. And evidence that this was true is far from clear.

There is another explanation which is equally plausible a priori, if difficult to distinguish empirically from the alternative just described. This is that the Balladur Government should be taken at its word. It was prepared to hold out -- that is, to live with German interest rates despite their consequences for unemployment, indefinitely if necessary in order to defend the narrow bands of the ERM and continue down the Maastricht path to EMU. In the absence of speculative pressure, doing so would have been a political equilibrium, in that the benefits of the franc fort policy, which maximized the chances that a relatively early monetary union would be achieved, more than compensated French politicians for the costs. In the absence of speculative pressure, this was also an
economic equilibrium, in that there were no problems of price competitiveness producing balance-of-payments deficits and leading to the eventual exhaustion of reserves.

But what the Balladur Government was not capable of doing was living with interest rates significantly above German levels. Once speculative pressure was brought to bear, defense of the franc required a significant increase in French interest rates above and beyond German levels. A devaluation expected to occur in a matter of days or weeks offers speculators extremely high annualized rates of return. To render them indifferent between holding francs and marks, it would have been necessary to raise French interest rates dramatically.

This tipped the balance of costs and benefits for French policymakers. Once speculative pressure was brought to bear, a political equilibrium in which current costs (in terms of unemployment) were dominated by deferred benefits (in terms of early inauguration of monetary union) was transformed into a political disequilibrium in which the costs (still higher unemployment provoked by the requisite increase in interest rates) now dominated. In Krugman's model of balance-of-payments crises, the speculative attack only anticipates events that would occur eventually in any case. This, in contrast, may have been a situation in which the attack provoked events that would not have occurred in its absence.

Much press commentary in the month of July was consistent with this view. For example, on 9 July the Financial Times attributed the weakness of the franc to the fact that "[a]gainst a backdrop of rising unemployment, France cannot possibly raise interest rates to defend its currency." On 14 July it warned that under present circumstances "the last thing the
government wants to do is raise interest rates..."

At the time of writing, it is not yet clear whether this was a rational self-fulfilling balance-of-payments crisis -- a case of multiple equilibria. If the crisis passes and France chooses not to reduce its interest rates below German levels, there will be no reason for the franc to depreciate significantly relative to the mark, and the speculators will have been proven wrong, to their expense. France’s refusal to reduce rates in the first days following the crisis has been interpreted in this light. Alternatively, the Bank of France may simply be rebuilding its reserves in preparation for loosening monetary policy once this process is complete. Having forfeited much of the credibility gained by its franc fort policy, the Bank of France no longer has sunk costs to deter it from cutting official interest rates and allowing the franc to depreciate. The July fiasco having left a cloud over the Maastricht blueprint for EMU, it has less reason to hold the franc stable against the mark in order to maximize the chances of early participation. For both reasons the Bank has good reason to cut rates and render the July crisis rational and self-fulfilling.

VI. Policy Implications

Where does the Community go from here? In this final section I suggest that it possesses only very limited options for completing the transition to monetary union and sustaining the Single Market Program. A radical rethinking of the Maastricht strategy is therefore required.

These conclusions follow from three premises. The first one is that a system of pegged but adjustable exchange rates like the EMS of the 1980s is
no longer feasible given the elimination of capital controls and the extent of international capital mobility. European officials have reiterated their desire to move back to narrow bands perhaps as early as the beginning of 1994. Unfortunately, there is no reason to think, given open capital markets, that this will work better in the future than it has in the recent past. A realignment constitutes an offer to the market of a massively profitable one-way bet, which traders, by taking up, transform into a balance-of-payments crisis. As the 1997 and 1999 deadlines for monetary union approach, the scope for self-fulfilling crises will only increase. Countries wishing to maintain German-style interest rates in order to qualify for EMU will have less time to repair the damage to their reputations caused by an attack. They will have more incentive to relax policies in the event that they experience "severe tensions" due to a speculative attack; knowing they have this incentive, the markets have an equally compelling incentive to attack. More fertile ground for self-fulfilling balance-of-payments crises is hard to imagine.

The second premise is that a permissive ERM with 30 per cent top-to-bottom bands (or narrower band with continuous realignments -- that is, realigning within the band by shifting the margins before they are reached) threatens successful completion of the Single Market Program. Wide exchange rate swings cause severe sectoral dislocations in very open economies, a fact which, after all, has provided much of the impetus for policies to buttress exchange rate stability in Europe since the 1930s. Those dislocations become more severe with the continued integration of European markets. Sectors suffering surges of import competition as a result of intra-European exchange rate changes can be expected to appeal to
Community authorities, as they did following the late-1992 descent of 
sterling and lira. The rise of protectionist pressure in the French 
Parliament following devaluations by other EC countries is symptomatic of 
this tendency. Ultimately, countries suffering the adverse effects of 
competitive devaluations abroad can be expected to insist on slowing down 
the integration process. For those value the completion of the Single 
Market, the current wide bands are not a permanent solution.

The third premise is that Germany will resist a radical shortening of 
the transition to EMU. As Horst Kohler, German state secretary of finance, 
told EC finance ministers in May, German officials doubt that the requisite 
majority of EC member states would be ready for monetary union by 1997. 
Chancellor Kohl's post-crisis statements suggest that German officials view 
delaying the timetable as more likely than accelerating it. Denmark 
evines deep reservations regarding monetary union; Britain, Italy and 
Greece are not even ERM members; Spain and Portugal have not yet succeeded 
in joining the narrow ERM band, two years of membership in which are one of 
the Maastricht preconditions; and German negotiators are unlikely to look 
favorably on other countries that experienced crises and were forced in 
1992-93 (not only Ireland but, significantly for enlargement aficionados, 
Finland, Sweden and Norway as well). Germany itself may seek a deferral on 
the grounds that it violates the reference value for budget deficits.

For all these reasons the pessimistic view is hard to dispute as a 
matter of political arithmetic. Proceeding before 1999 without a majority 
of EC member countries requires moving beyond the confines of the 
Maastricht Treaty; this is unlikely to be acceptable to Germany, which 
insisted at Maastricht on a variety of safeguards -- fiscal restrictions
and sanctions as well as central bank statutes guaranteeing monetary independence and a priority for price stability -- as a condition for initialing the treaty.

Events may invalidate this forecast. Perhaps Germany will accede to an early monetary union of the few. Perhaps the Single Market Program will maintain its momentum in the face of wide exchange rate swings. But if the forecast is accurate, business as usual is not viable.

If so, what extraordinary steps should be taken? Insulating the Single Market Program from political pressures requires restoring exchange rate stability in Europe. Political sustainability may be achievable with bands of, say, 6 per cent rather than the 2 1/4 bands of the past. But illustrated by the French franc, which declined by 8 per cent against the DM in the first half of August, such bands will not go untested. New measures will be required to defend them. More frequent discontinuous realignments are merely an invitation to more frequent crises. For the Community and its member states to attempt to develop an "early warning system" will not help, for the market possesses an even more sophisticated early warning system, namely the incentive speculators have to seek out profits.

Charles Wyplosz and I have therefore proposed the temporary imposition of non-interest-bearing deposit requirements for banks and other financial intermediaries taking open foreign-exchange positions ("reserve coefficients" in the parlance of Brussels) or a Tobin tax on foreign exchange transitions. These measures would provide protection against self-fulfilling speculative attacks and other destabilizing impulses capable of derailing progress toward EMU.
Such proposals elicit a number of objections. Deposit requirements on open positions are regularly deemed infeasible in a world of capital mobility. In fact, the concept of open positions is tailor-made to such a world. It is precisely what currency traders and financial institutions themselves calculate at the close of business. In the days not too long ago when they administered non-interest-bearing deposit requirements, the German Bundesbank, the Bank of Spain and the Bank of Italy possessed divisions whose responsibility it was to monitor such positions. That expertise still exists. Financial liberalization may have gone a long way since Germany and Italy administered such regulations, but there is no reason to suppose that it will make the calculation of open positions either impossible or meaningless.

The relevant question in this context is "whose open position?" If banks are penalized for the maintenance of open positions and pass on the cost to their customers, the latter will have an incentive to divert their business to nonbank intermediaries. To be effective, therefore, such measures will have to be applied to banks and quasi-banks alike.

It is sometimes asserted that, to be effective, deposit requirements need to be implemented by all countries; since this is unlikely to occur the proposal is not worth considering. This belief reflects a fundamental misunderstanding of how foreign exchange markets work. The central problem is that the supply of a currency available for sale by speculators is not bounded -- in other words, that supply is perfectly elastic. When a speculative attack takes place, commercial banks obtain supplies of the currency to be lent to speculators by borrowing it from the central bank; speculators bet against the currency by borrowing it from commercial banks
in order to sell it. The central bank must purchase the currency in exchange for reserves in order to support it, only to relend it to the banks. This process is limited only by the foreign exchange reserves of the central bank. Although there are stocks of European currencies in New York, Tokyo and the Bahamas, their quantity is strictly limited. Once European central banks have bought them, this source of speculation is eliminated. Further speculation requires the acquisition of additional units of the European currency to be sold short. These are available only in Europe. By imposing deposit requirements on borrowing in Paris, for example, the Bank of France can effectively increase the cost of speculating against the franc. To stabilize an EMS currency, it would be enough for the issuing country to impose deposit requirements.

It is objected that banks and other financial institutions typically close their open positions at the end of the day. Perhaps they do in placid periods, but not during speculative crises. If the banks had closed their open positions during the 1992 crisis, they could not have made the extensive trading profits which helped them to recover from the banking crisis of 1990-92. Even if some banks close their positions, the positions of others must be open by definition when a speculative attack is underway. And if adding deposit requirements induces financial institutions to close their positions at the end of the day, by doing so it would succeed in reducing speculative pressure.

A variant of this objection is that banks with foreign subsidiaries can shift their open positions to New York or Tokyo at the end of the European trading day. Say Credit Lyonnais has an open position in deutschmarks because it anticipates a devaluation of the franc. To avoid
having to place non-interest-bearing deposits with the Bank of France, it could attempt to shift that position to a subsidiary in New York at the end of the European trading day. The subsidiary would happily buy the Paris branch’s deutschmarks in return for francs. But this transactions would be attractive to the Paris branch only if it was assured of the profits that would accrue to the New York subsidiary in the event that the franc was devalued while the Paris market was closed. In reality, as a matter of book-keeping the Paris branch would be embarrassed by capital losses on its francs if it closed its open position in this way. More fundamentally, the ability of the New York subsidiary to absorb the deutschmark position of the Paris branch would be limited by the offshore francs in the possession of the former. As explained above, while the Paris market was closed these francs would be in very limited supply.

A last major objection is that deposit requirements are contrary the spirit if not the letter of the Single Act. No one would deny that financial integration is an important part of economic integration. The question is whether completely unfettered, unregulated financial integration is compatible with national monetary policy autonomy and fixed exchange rates over an extended transition to EMU. If not, and if an extended period of exchange rate stability, perhaps punctuated by occasional orderly realignments, is a necessary prerequisite for successfully completing that transition, as argued above, then some temporary compromise of this ideal may be required.

It is sometimes objected the imposition of deposit requirements would represent a very significant departure from the ideal of financial integration. Deposit requirements would in fact to little to discourage
international flows of productive capital. The cost of deposit requirements may be prohibitive for a 48 hour speculative round trip, but it quickly becomes irrelevant when discounted over the 10 or 20 year horizon relevant for fixed investment.44 Here it is important to distinguish deposit requirements from the reimposition of capital controls, as mooted by Jacques Delors in September of 1993. A control is an attempt to prohibit market participants from undertaking certain transactions. A deposit requirement, in contrast, is an implicit tax; it is still possible for agents to undertake any transaction they wish so long as they pay the tax. Those with high return investment projects will still wish to implement them and, in contrast to a situation featuring controls, will retain the option of doing so.

Deposit requirements are not perfect, or it would not have been necessary to devote so much space to discussing objections to them. But it is not sufficient to register objections. It is also necessary to offer a realistic alternative for completing the transition to monetary union. Individuals who advocate a return to narrow bands without any change in underlying market structures simply fail to recognize economic realities; they refuse to acknowledge the lessons of the crises of 1992-93. Those who prefer the indefinite continuation of floating until some mythical juncture when European governments suddenly feel ready to leap to monetary union similarly fail to acknowledge political realities. Like it or not, the lengthy period of exchange rate stability enshrined in the Maastricht Treaty continues to be a precondition for German participation in EMU.
Footnotes

1. Throughout, I use EMU to refer to European monetary union rather than to Economic and Monetary Union.

2. As will be familiar to most readers, the Treaty specified a three-stage transition. Stage I, which commenced in 1990, was to be marked by the continued convergence of national economic policies. Stage II, which is to open at the beginning of 1994, will see the establishment of the European Monetary Institute, an entity charged with overseeing the transition to monetary union, the fortification of central bank independence in the potential participating countries, continued convergence and increased exchange rate stability. Stage III, to begin no later than January 1st, 1999 assuming that at least two countries satisfy the Treaty's convergence criteria at that time, will mark the formal establishment of monetary union.

3. This is a corollary of the literature in the new political economy on the connections between governmental stability and economic policy outcomes. See for example Grilli, Masciandaro and Tabellini (1991).

4. More precisely, exchange rates must remain within their normal EMS fluctuation bands without undue tensions. I return to the significance of this qualification.

5. The concept of self-fulfilling speculative attacks was developed by Flood and Garber (1984a) and Obstfeld (1986). The points made in this paragraph are elaborated in Eichengreen and Wyplosz (1993a) and in Section III below.

6. The Norwegian krone was also supported by very extensive intervention. The story of the exchange rate crisis in the Nordic countries is an interesting one, especially for a Scandinavian audience. It differs from that of other ERM members by virtue of the fact that, among other things, Nordic countries were not able to draw on the EMS's Very-Short Term Financing Facility. Given the focus of this paper, it is unfortunately not possible to pursue that story here.


9. Here I follow the taxonomy developed by Eichengreen and Wyplosz (1993a).

10. This is the argument of Williamson (1993). More generally, it raises the question of the appropriate base period from which to calculate the evolution of relative prices and costs. Eichengreen and Wyplosz (1993a) provide time series plots of the relevant data for each ERM country, effectively allowing the reader to choose the base period.

11. Below I provide further discussion of the behavior of forward rates.
12. See Eichengreen and Wyplosz (1993a) for further details on survey design and implementation.

13. I return to the nature of these other channels later in this section.

14. Admittedly, German monetary aggregates grew quickly in the post-1990 period. The point, however, is that the Bundesbank restricted the supply of money and credit relative to the demand.

15. Admittedly, this statement glosses over the marked weakening of forward rates for some currencies, the pound sterling for example, although these still remained within their ERM bands.


17. Krugman's early version of the model did not treat interest rates explicitly. For extensions in which they appear directly, see Flood and Garber (1984b).


19. Critical to the operation of these mechanisms is the assumption that the government does not raise taxes to close the fiscal gap. This is the assumption that drives the Krugman model, of course. It is not innocuous; it applies more plausibly in some times and places than in others. But in present-day Europe, where countries already face considerable resistance to further tax increases, it is entirely plausible.

20. All of the reports described here were published in 1993 prior to the second outbreak of instability in the summer months.

21. A fact which is explicitly acknowledged by the authors of the report; see p.2.


25. These "official sources" were, of course, Bundesbank officials. For a list of the relevant reports, see Eichengreen and Wyplosz (1993a). On the weak-dollar-strong-DM-within-the-EMS regularity, see Frankel (1986).


28. In this context, it refers to dimming prospects for the ratification of the Maastricht Treaty and the consequent threat to the political "bonus" factor, consistent with the third category of explanation in the preceding section. Bank for International Settlements (1993), p. 192 and passim.

30. This was the first time the Bank of France had allowed the franc to drop to its ERM floor, requiring compulsory Bundesbank intervention; it had avoided allowing this to occur in 1992 and indeed had criticized Italy and Spain for allowing their currencies to hit their respective floors. One interpretation of the shift in Bank of France policy is that the French, following the Alphandery-Waigel incident, were feeling frustration with Germany and compelled Bundesbank intervention as a way of signalling this.


32. It cut the repurchase rates and lombard rates but this was regarded as inadequate.

33. *Financial Times*, 13 August 1993, p.1. This one-day total was more than the Bank of France had spent in the entire September 1992 and January 1993 crises combined. Overall, France is estimated to have spent more than $50 billion supporting the franc during the July crisis.

34. Just why German officials regarded this increase as unacceptable is not entirely clear. Insofar as the crisis reflected a portfolio shift from other currencies toward the DM, there was no reason why the intervention-induced increase in the German money supply should have been inflationary. Presumably German officials worried that the increase in current money supplies would be taken as a negative signal about future monetary policy. The logic for this view would run as follows. Barring realignment, the asymmetric German unification shock required an acceleration in German inflation relative to inflation in other countries such as France (as explained in Section II). French inflation had to fall or, if French officials resisted this eventuality, German inflation had to rise. Forcing Bundesbank intervention in support of the franc was a way for countries like France to validate their own inflation rates and thereby to put an (unacceptably high) floor under German inflation. This interpretation is compatible with the portfolio-shift view mentioned above if it is assumed that the shift toward DM was temporary and would be reversed as soon as realignment expectations passed.

35. Here I refer to the Balladur Government as shorthand for all European governments subject to analogous pressures.

36. These costs were incurred by France in the form of the need to raise interest rates still further and by Germany in the form of the need to extend additional intervention.


39. Thus, on May 25, 1993, Erik Hoffmeyer, the Danish central bank chief, complained that the devaluations of sterling and the lira had allowed Britain and Italy to steal an unfair competitive advantage by manipulating their exchange rate. *Financial Times*, 26 May 1993, p.2.

40. These concluding paragraphs draw on Eichengreen and Wyplosz (1993b).
41. It is true that a country which unilaterally imposes margin requirements may see some financial business migrate to other centers. For a country like the UK which has invested more heavily in London’s status as a financial center than it has in the EMS, the logical response may be to let sterling float. For other countries the stakes are different. They have good reason to choose otherwise.
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