Members of the European Union (EU) have long attempted to unify their monetary policies, whether by fixing exchange rates or moving toward a single currency. The success of these attempts has varied over time, and among EU member states. This article argues that the degree to which a country is integrated into EU trade and finance has a major impact on its willingness to make the sacrifices necessary to pursue monetary integration, especially stability against Europe's anchor currency, the Deutsche Mark (DM). Higher levels of intra-European trade and investment increase the desirability of stabilizing exchange rates between European countries. Statistical evidence indicates that greater integration of goods and capital markets is associated with greater success in fixing national exchange rates against the DM. This implies that pressures for monetary integration will continue but will vary among countries, along with the degree to which they are economically linked to European trade and investment.

THE IMPACT OF GOODS AND CAPITAL MARKET INTEGRATION ON EUROPEAN MONETARY POLITICS

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European monetary integration has long been a goal of the European Union (EU).[1] However, attempts at monetary integration have a checkered history. They failed quite miserably from their inception in the early 1960s through the early 1980s. During the 1980s, however, the European

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1. Throughout this article, I refer to the organization that has variously been known as the European Economic Community, the European Communities, and the European Union with this last (currently preferred) name. This may be somewhat misleading at times, especially in reference to historical developments, but it has the attraction of consistency.

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Monetary System (EMS) and its exchange rate mechanism (ERM) began to resemble a binding fixed-rate regime. Today, the future of the process is very much in doubt. On the one hand, several members of the EMS appear committed to continued monetary integration, leading eventually to a single European currency. On the other hand, especially in the wake of the 1992-1993 currency crisis, there is little confidence in the ability of other EMS and EU members even to maintain stable exchange rates, let alone to move toward a single currency. A wide variety of alternative futures for European monetary integration have been discussed, from abandonment through a two-stage union to a single currency.

Monetary integration, as used here, refers to a range of policies to achieve convergence among national monetary conditions. It includes measures to stabilize exchange rates, through formal fixed exchange-rate regimes (such as the Bretton Woods system or the EMS) to a single currency. At whatever level, monetary integration is difficult because stabilizing exchange rates, and at the limit adopting a single currency, can require national governments to implement politically unpopular economic policies in the interests of macroeconomic convergence. It is not surprising that the willingness and ability of national governments to take the measures necessary to reduce exchange-rate fluctuations vary a great deal and that the policies of particular countries have varied over time.

To understand the prospects for European monetary integration, it is important to understand its past trajectory. One way of doing so, particularly important for looking toward the future, is to examine the degree to which different European countries have been able and willing to take the steps necessary to hold their exchange rates constant against one another. This is of special importance because all plans for further monetary integration in Europe involve some degree of exchange rate stabilization, ranging from target zones through a single currency. Although the possible outcomes differ widely, they can all be seen as points on a continuum that measures the degree of permanence and rigidity of the fixed exchange-rate agreement.

In this light, this article argues that a major determinant of national propensities to fix exchange rates is the degree to which the country in question is integrated into EU trade and finance.[2] The more important are a country's trade and investment ties with the EU, especially with the DM bloc around Germany, the more costly are fluctuations of its currency against the DM, and the more likely the government is to stabilize the exchange rate.

2. There are, of course, other potential explanations for the course of monetary integration. For a general survey, see Eichengreen and Frieden (1994a).

Higher levels of capital mobility and intra-EU trade increase economic and political pressures for monetary integration. Closer links among EU financial markets heighten the trade-off between national monetary policy independence and exchange rate stability, forcing countries to choose between them. More cross-border trade and investment within the EU expose more economic agents to currency risk and increase the demand to stabilize exchange rates. This effect is evident both over time and across country. As the EU has become more integrated, the demand for stable exchange rates has grown; and national support for monetary integration is correlated with national reliance on intra-EU trade and payments. The argument presented here grows out of, and is broadly consonant with, the economics literature on optimal currency areas and related macroeconomic policies.

In section 1, I describe the history of attempts at European monetary integration. In section 2, I present various factors important in explaining European monetary politics, then develop my argument that the level of trade and capital market integration is a crucial determinant of currency policy. In section 3, I show how changes in the levels of intra-EU flows of goods, finance, and direct investment over time and across countries are correlated with Union-wide and national measures to reduce exchange rate variability. I conclude with some observations about the implications of this analysis for the future of monetary plans in the EU.

1. THE DIFFICULT COURSE OF EUROPEAN MONETARY INTEGRATION: FROM THE WERNER REPORT THROUGH THE EMS

Fixing exchange rates between countries with different social, political, and economic conditions can be difficult. Although the determinants of exchange rates are still hotly debated among economists, there is little doubt that for the value of the currency of one country to be stable against that of another, the two countries' macroeconomic conditions cannot be too divergent. This is true, with varying degrees of stringency, whether the monetary integration in question involves simply stabilizing national currencies, or a more formal fixed exchange-rate system, or a single currency. In the case of the EU, in which the monetary anchor has long been Germany and the DM, monetary integration requires that other nations bring their macroeconomic conditions into line with those of Germany. This has typically meant reducing inflation, and—again, without entering the debates about *this* issue—the policies necessary to do so often have costs, typically involving recessionary measures that increase unemployment and reduce real wages and consumption.

Although virtually everyone in the EU, then, gives lip service to the desirability of stable currency values, only in some countries and only at some times has rhetoric been backed up by the national sacrifices necessary to implement a stable exchange rate against the DM. The course of European monetary politics since the late 1960s illustrates this fact.

Although stable exchange rates were a goal of the EU from its beginning, serious discussion of the matter began only once fissures appeared in the Bretton Woods system. Early talks led to the 1969 Werner Report, which recommended beginning a process of monetary union among EU members (Tsoukalis, 1977, pp. 51-111; van Ypersele, 1985, pp. 31-45). These recommendations were superseded by the end of the Bretton Woods regime. Over the course of the year that followed the August 1971 American decision to go off gold, EU member states established the *snake*, an arrangement to hold their currencies within a 2.25% band against each other. In addition to the original six, Great Britain, Ireland, and Denmark joined the snake on May 1, 1972, to prepare for their entry into the European Community 8 months later.

Yet the goal of stabilizing EU currencies proved impossible to achieve.[3] Britain and Ireland left the snake in June 1972, just weeks after joining; the Danes left shortly thereafter but rejoined in October. In February 1973, Italy withdrew from the arrangement. In addition, throughout 1973, only a series of parity changes allowed the system to hold together, and even then France chose to exit in January 1974. The French returned in July 1975, only to leave for good 8 months later.

Within 3 years of its founding, then, the only EU members still in the snake were Germany, the Benelux countries, and Denmark. Even within this narrowed arrangement, realignments were frequent, typically to devalue the Danish krone and/or revalue the DM. Norway affiliated with the snake from May 1972 until December 1978, and Sweden from March 1973 to August 1977, even though the two were not EU members. Austria and Switzerland, also not EU members, had their currencies shadow the DM informally but did not join the snake.

In the late 1970s, discussions of EU monetary integration began to gather momentum again, and in March 1979, the EMS and its exchange rate mechanism went into effect. All EU members except the United Kingdom acceded to the ERM, which allowed a 2.25% band among currencies (6% for the lira).[4]

3. Tsoukalis (1977), pp. 112-168; Ludlow (1982), pp. 1-36; Coffey (1987), pp. 6-16. A useful chronology of the snake is in Coffey, pp. 123-125.

4. Ludlow (1982) is especially detailed on the negotiations and early operation of the EMS; see also van Ypersele (1985), pp. 71-95; and Ungerer (1983). Excellent surveys of the EMS experience more generally are Giavazzi and Giovannini (1989); Fratianni and von Hagen (1991); Goodman (1992); and the articles in Eichengreen and Frieden (1994b).

The experience of the 1970s held out few hopes for success in the 1980s. The Union's two major high-inflation countries, France and Italy, had been unable to fix their exchange rates with other EU members. Resistance to austerity measures and pressures to maintain international competitiveness led to continual rounds of franc and lira depreciations against the DM. Therefore, for the first several years of its existence, almost no informed observer believed that the ERM would hold. Indeed, in the first 4 years of its operation, there were seven realignments of EMS currency values.

However, after 1983, exchange-rate variability within the EMS declined substantially, whereas monetary policies converged on virtually every dimension. Between April 1983 and January 1987, there were only four realignments, generally smaller than previous changes, and from January 1987 until September 1992, there were no realignments within the ERM.[5] Meanwhile, Spain, the United Kingdom, and Portugal joined the mechanism and Finland, Sweden, and Norway linked their currencies to the European Currency Unit (ECU). In 1981, the Austrian government announced a unilateral peg to the DM, to which it held firmly.

In the wake of the EMS's apparent success, European integration more generally picked up speed. In 1985 and 1986, EU members discussed and adopted the Single European Act, which called for the full mobility of goods, capital, and people within the Union by January 1, 1993 (Moravcsik, 1991; Sandholtz & Zysman, 1989). Most capital controls were gone by 1991, and barriers to the movements of goods were reduced continually in the run-up to 1993. The 1991 Maastricht Treaty included plans for full monetary union.

But as preparations for currency union gathered force, the 1992-1993 currency crisis called even the less ambitious EMS into question (Eichengreen & Wyplosz, 1993). The German government's massive fiscal effort to finance unification led the Bundesbank to raise interest rates to counter potential inflation. EMS member governments faced the choice of either following tight German monetary policies, in an environment of already high unemployment, or leaving the ERM. Uncertainty about the future course of European integration was exacerbated by the June 1992 failure of the first Danish referendum on the Maastricht Treaty and by the closeness of the September 1992 French referendum. Faced with runs on their currencies, in September 1992, the British and Italian governments took sterling and the lira, respectively, out of the ERM and allowed them to float. In subsequent months, the currencies of Spain, Portugal, and Ireland were devalued, although they remained in the mechanism. In Summer 1993, with the system

5. Relative parity changes are reported in International Monetary Fund (1988), p. 19; information on exchange rate variability is provided on pp. 20-34.

again under attack on currency markets, remaining ERM members agreed to widen fluctuation bands to 15% (the Dutch guilder and DM remained in a 2.25% band). Although the reduced ERM has been stable, questions persist about the future of monetary integration.

This brief survey indicates how varied the fortunes of attempts to reduce exchange-rate variability within Europe have been. For more than 20 years, stable exchange rates have been a stated goal of the EU and its member governments, but success has varied greatly over time. And there has also been wide variation in the degree to which particular European countries have been able to sustain fixed exchange rates against the DM. I now turn to attempts to explain this variation, over time and across countries.

2. EXPLAINING THE COURSE OF EUROPEAN MONETARY INTEGRATION

There is only a small body of thought on the political economy of national exchange-rate policy, of which European monetary integration is a subset.[6] However, two literatures are germane. One is specifically targeted at explaining aspects of European integration, including monetary integration. The other has to do with the national welfare effects of different exchange-rate regimes, including currency union. Both are useful for our purposes. I first summarize them, then go on to present my argument about the impact of goods and capital market integration on European exchange-rate politics.

The first body of knowledge relevant to explaining European monetary integration, not surprisingly, is that designed explicitly for this purpose. Here several factors that help explain the process have been widely commented upon. All played a role, and I do not argue against their importance. I do believe that they must be supplemented with an understanding of the differential impact of goods and capital market integration, to which I turn after summarizing extant views.

One factor that gave impetus to monetary integration was the Common Agricultural Policy (CAP). The EU's agricultural subsidies involve setting Union-wide food prices, and when a currency is devalued, the EU reference price would normally be raised in the devaluing country to counterbalance the devaluation. This "passing through" of the exchange-rate change to food prices would mitigate the devaluation's attempt to restore price competitive-

6. Among the exceptions, disparate in their coverage and concerns, are Destler and Henning (1989), Eichengreen (1992a), Henning (1994), and Gowa (1988). Edison and Melvin (1990) is a good survey.

ness in the nonagricultural sectors. For this reason, the Union devised a series of compensatory arrangements and accounting exchange rates. For our purposes, what is important is that exchange-rate fluctuations complicate Union agricultural policy by changing compensatory farm payments in ways that disrupt EU farm policy. This was indeed one of the original reasons for monetary integration and remained important through the adoption of the EMS (McNamara, 1993). However, the CAP is a constant, and although it explains the persistence of EU attempts at monetary integration, it cannot explain variation in their success. There is, in fact, no evidence that national support for monetary integration is related to reliance on the CAP.

Another reason for variation in the success of monetary integration is institutional variation, both over time and across countries. It is certainly plausible that the EMS was more successful than the snake because of an increase in the amount of money available to EMS members for short- and long-term financing of payments deficits, as well as 5 billion ECU in concessionary development loans made available, essentially to Ireland and Italy, as a side payment to the two countries with the largest adjustment burden (van Ypersele, 1985, pp. 61-64; the subsidy component of the concessional loans was a billion ECU). All told, the resources committed to the EMS were about three times those committed to the snake, which made affiliation with the system that much more attractive to potential members. However, there is little evidence that the funds involved were particularly important to the process—Italy did not even use its concessionary finance, and the other funds were rarely central to EMS developments. And again, with the exception of the concessionary funds to Ireland, this factor cannot explain variation among EU members. It might be argued that the more institutionalized nature of the EMS helped cement its effects, but again this does not help much to explain differences in behavior among members of the system. Indeed, one of the more successful exchange rate pegs in Europe has been that of the Austrian schilling to the DM, engineered at a time when Austria was not even contemplating EU membership.

A third, less tangible, but nonetheless crucial, explanation for monetary integration—and especially for the greater success of the EMS than of the snake—was the relationship between them and broader EU participation. There was never a sense that the snake was an essential component of the EU; neither national politicians nor Union leaders staked much political capital on the arrangement. The EMS was different. The French and German heads of state launched the attempt with great publicity, and the Commission regarded the EMS as of paramount importance.

This linkage of the EMS with broader EU participation was important. In the early 1980s, with the European economies beset by stagnation and unemployment, many segments of society began to look upon an intensification of European economic integration as the last best hope for the region (Katseli, 1989). The threat of relegation to second-tier status within Europe led many to reconsider their position on monetary integration. Previously, it had been possible to oppose national policies to stabilize the exchange rate while evincing great enthusiasm for the EU generally. With the 1992 program tied to monetary integration, such a division of the question was less feasible. In many real and prospective EU members, participation in the EMS was seen as critical for full EU membership. This was important and has been dealt with in detail elsewhere (Frieden, 1994b; Garrett, 1994; Martin, 1994).

The second literature of relevance, which is very large, is that which analyzes the circumstances in which national welfare is improved by a fixed exchange rate, and at the limit, by a monetary union (see Genberg, 1990, for a survey). Fixing the exchange rate imposes costs—the monetary authorities give up a policy instrument—and is only desirable from a national welfare standpoint if counterbalanced by greater benefits.

One crucial observation is that in an economy financially integrated with the rest of the world (or the relevant region), the government is faced with a choice between monetary policy independence and exchange-rate stability. In a financially open economy, interest rates are constrained to world (or regional) levels.[7] Monetary policy largely involves the exchange rate: Monetary expansion drives the exchange rate down, makes locally produced goods cheaper in comparison to imports, and stimulates the demand for domestically produced tradable goods. Fixing the exchange rate forgoes this instrument, removing the possibility of an independent monetary policy. Put differently, as countries become more financially integrated, the effectiveness of national monetary policy declines. In this sense, the social welfare gains to be had from a stable exchange rate tend to rise along with financial integration.[8]

7. To be precise, it is covered (exchange rate-adjusted) interest rates that are constrained to be equal. The insight is that of the famous Mundell-Fleming approach, which originated with Mundell (1962 and 1963). The basic model can be found in any good textbook discussion of open-economy macroeconomics; a useful survey is Corden (1986).

8. Or, what is the same thing, the costs of forgoing the exchange rate as a policy instrument tend to fall with financial integration. This is a bit oversimplified and assumes that exchange-rate stability is desirable in and of itself. However, there is no question that the trade-off between exchange-rate stability and monetary autonomy, absent or weak in a financially closed economy, grows in importance as the economy becomes more financially open.

A related argument comes from the literature on optimal currency areas. Such areas, which are tantamount to monetary unions, can be regarded as particularly binding fixed exchange-rate regimes. In this framework, currency union makes economic sense for regions among which factors are mobile and economic shocks are correlated (Mundell, 1961, and McKinnon, 1963, are the classic statements). If two regions are so economically integrated that market conditions are closely linked between them, having a common monetary policy is efficient (and having separate monetary policies may be impossible).[9]

Here, too, the integration of goods and capital markets plays a crucial role. The more integrated economies are among themselves, the less effective independent monetary policies will be (due to the ability of factors and goods to move in response to different policies), and the more desirable is monetary union. The economic analysis is therefore quite clear: The attractiveness of fixed exchange rates rises with the level of economic integration. This does not address the differences between full monetary union and other fixed-rate regimes. For the sake of this analysis, the two can be regarded as points relatively close on a continuum that runs from complete floating up to currency union.

These efficiency-based arguments for fixing exchange rates confront problems as explanations of European monetary integration in practice. There is, in fact, plenty of evidence that Europe has not met the criteria by which fixed exchange rates would improve social welfare; social welfare grounds do not support Economic and Monetary Union (EMU) as an economically efficient policy for EU members (Eichengreen, 1992b, pp. 4-25). Before the late 1980s, the EU was not very integrated financially—capital controls were common.[10] Factors remain only imperfectly mobile among the members of the EU, and EU economies are not so integrated that they share common macroeconomic conditions. Neither fixed exchange rates nor currency union are clearly welfare-improving at this stage within the EU. Put differently, even if government policies were driven entirely by efficiency criteria, this could not explain the movement toward monetary integration in the EU, for neither fixed rates nor currency union are economically efficient policies for EU members. Certainly, as the EU has become more integrated over time,

9. Of course, economic integration and currency union can interact: Having one currency makes it easier for factors to move within a region. On such interactive effects in international monetary relations, see Frieden (1993).

10. Since the middle 1980s, capital controls have been removed and the EC has become more integrated financially. This, however, does not explain the course of the EMS *before* financial integration.

monetary integration is somewhat more economically defensible than it once was, but efficiency-based economic principles cannot be evinced to explain the EMS, EMU, or variations in national policy toward them.

Although these factors are important, they are not sufficient to explain change over time or across countries in willingness to fix exchange rates within Europe. I present below, and evaluate empirically in what follows, an argument that variations in the level of trade and investment with potential currency-regime partners is a crucial contributor to explaining variations in exchange rate policy.

Although current levels of goods and capital market integration do not make stabilizing exchange rates unambiguously welfare-improving for members of the EU as a whole, they do make it attractive to stabilize exchange rates for those economic agents heavily involved in intra-EU trade and payments. Currency arrangements have a differential effect on firms and individuals, which can be expected to translate into cross-cutting political pressures on national policy makers. The crucial political issue typically has to do with how important currency predictability is, relative to the ability of national monetary authorities to depreciate the exchange rate to stimulate the local economy or increase the competitiveness of national producers.[11] Relinquishing this option is not popular, other things being equal, even if it does lead to more stable currency values.

However, higher levels of cross-border trade and investment increase the size and strength of domestic groups interested in predictable exchange rates. Firms with strong international ties support a reduction of currency fluctuations. These effects are especially important to banks and corporations with investments throughout the EU. In addition, tradable producers with EU-wide markets, and for whom price competition is relatively less important—those whose appeal is based primarily on quality or technological prowess—may be less concerned about ability to devalue than about currency stability.[12]

11. In this context, it is important to keep in mind that eliminating the ability to devalue for high-inflation countries typically leads to a transitional (inertial) real appreciation of the exchange rate. This is especially troublesome for producers of tradable goods that compete primarily on price, as fixing the exchange rate in conditions of inflation above the EU average exposes import competitors to substantial price pressure.

12. It is often objected that forward markets allow firms to protect themselves against potential currency fluctuations. Although this is true for short- and medium-term exchange-rate movements, it is not true over the longer time horizon typically of concern to investment planners. Indeed, the existing literature on corporate finance distinguishes clearly between *transaction exposure*, which can be effectively hedged, and *operating exposure*, which cannot. See, for a typical example, Shapiro (1992), chapter 10. I am indebted to Rich Lyons for bringing this to my attention.

As economies become more open on current and capital account, more economic agents develop cross-border trade and investment interests. Those involved in cross-border investment, traders, and exporters of specialized manufactured products all tend to favor exchange-rate stability to reduce the risk associated with their business interests in other countries. In this way, whatever the effects of economic integration on efficiency considerations associated with monetary union, it is likely to increase domestic political pressures for monetary integration.[13]

In some ways, it is hard to distinguish national from subnational (group) factors in this analysis. Although current levels of intra-European trade and investment may not be high enough to make currency union economically efficient, the national welfare gains are certainly higher (or the losses smaller) than they would be in less integrated economies. So the likelihood that EU members will undertake monetary integration is greater the more economically integrated they are, both for broad national reasons and for the sorts of domestic-group reasons discussed above. A more detailed analysis would be necessary to differentiate fully between the two forces; this article simply presents argumentation and evidence that is consonant with either.

Economic integration should increase pressures to stabilize exchange rates. Financial integration heightens the trade-off between exchange-rate stability and monetary independence. Integration of trade and investment makes the region in question more likely to meet the criteria for an optimal currency area. Whatever the social welfare implications of these trends, at a domestic political level, economic integration swells and strengthens the ranks of those who favor currency stability.

The positive relationship between goods and capital market integration and the economic and political desirability of monetary integration should hold over time and across countries. As countries in and around the EU have become progressively more integrated on current and capital account, I expect interest in monetary integration to grow. By the same token, I expect support for monetary integration to be stronger in those countries with higher levels of intra-EU trade and investment. In the section that follows, I present evidence about the relationship between currency policy and the level of economic integration in Europe.

13. Again, the nuances are important. Most developing countries are quite trade-open, but exporters typically do not favor a fixed exchange rate. This is normally because the exports in question are either commodities or standardized manufactured products for which price competitiveness is paramount. The ability to maintain or restore competitiveness by way of devaluation, in these circumstances, tends to outweigh whatever advantage exchange-rate predictability may hold. In the EC, however, almost all exports are of specialized manufactured products. I have dealt with these issues in a more general context in Frieden (1994a).

3. TRADE, FOREIGN INVESTMENT, AND EUROPEAN MONETARY INTEGRATION

European monetary integration is a complex phenomenon involving developments at the international, regional, and national levels, in both political and economic spheres. I do not pretend to present a full explanation of the process, only to outline a factor I regard as crucial, the importance of trade and investment ties for monetary integration. This is not, in other words, an argument that this variable is the only one that matters.

I believe that increased levels of intra-European trade and capital flows played a major role in leading EU members toward monetary integration. I also believe that those EU members whose economies were more integrated with that of Germany, the monetary leader of the Union, were more likely to pursue monetary integration.

To analyze the relationship between economic integration and exchange rate policy, it is useful first to present some summary measures of the currency movements observed in the period in question. Two measures of exchange rate variability are presented in Table 1. Panel A shows the average rate at which each currency in the EU, and in four countries not then EU members, depreciated in nominal terms against the DM during the snake (1973-1978), the EMS (1979-1993), and over the two periods combined (1973-1993). I also show two subperiods of the EMS, from 1979 through 1989, and the crisis years between 1990 and 1993. Panel B presents the coefficient of variation (multiplied by 100) of each EU currency against the DM during all these periods. The coefficient of variation is the standard deviation divided by the mean; in this instance, I use the standard deviation of quarterly rates against the DM and the mean rate over each period. This provides a standardized measure of variability of each exchange rate for the period in question.

For ease of exposition, the countries are divided into four groups. Hard-currency countries are those that stayed in both the snake and the EMS. Soft-currency countries are those that left or never joined the snake, and whose participation in the EMS has been limited or troubled. The two intermediate countries, France and Ireland, left the snake but have been relatively stable members of the EMS. The non-EU members are the European Free Trade Association countries for which data were available (that is, excluding Switzerland and Iceland); since 1993, of course, all of them except Norway have entered the EU.

Differences among the countries are clear from both statistical measures used. In addition, a general trend to reduce annual average depreciations can be noted between the snake and the EMS, as is to be expected. The only slightly anomalous case is that of sterling, which appears more stable against

Table 1
EU Currencies During the Snake and the EMS

Country[a]	1973-1978	1979-1993	[1979-1989]	[1990-1993]	1973-1993
Average annual percentage depreciation of nominal exchange rates against the Deutsche Mark, select periods					
Hard currencies					
Belgium/ Luxembourg	0.72	2.02	2.62	0.52	2.06
Denmark	4.24	2.43	3.10	0.81	2.94
Netherlands	1.13	0.26	0.35	–0.02	0.49
Intermediate currencies					
France	6.23	2.77	3.62	0.56	3.76
Ireland	11.83	3.14	3.13	2.68	5.46
Soft currencies					
Greece	9.68	14.18	14.85	11.14	13.56
Italy	11.52	5.34	4.53	7.40	8.11
Portugal	17.38	9.71	11.70	3.87	12.50
Spain	10.94	5.30	4.98	5.92	6.84
United Kingdom	11.83	2.69	2.42	2.79	5.20
Non-EU members					
Austria	0.22	–0.26	–0.36	1.63	–0.12
Finland	8.06	3.18	0.53	10.43	4.59
Norway	4.38	3.13	2.86	3.43	3.59
Sweden	7.20	5.00	3.54	7.91	5.69
Average	7.53	4.21	4.10	4.22	5.33
Coefficients of variation of nominal exchange rates against the Deutsche Mark, select periods					
Hard currencies					
Belgium/ Luxembourg	2.93	9.27	10.27	1.13	13.71
Denmark	7.34	8.91	9.27	1.42	18.05
Netherlands	2.05	1.22	1.35	0.15	3.13
Intermediate currencies					
France	11.43	13.36	13.99	0.94	22.76
Ireland	20.66	4.59	12.86	4.58	7.49
Soft currencies					
Greece	18.52	57.5	50.53	13.63	77.08
Italy	24.24	19.85	16.55	11.46	34.78
Portugal	32.92	40.42	42.45	5.8	63.21
Spain	23.35	20.35	20.85	9.87	34.57
United Kingdom	20.66	18.29	15.03	7.85	24.24
Non-EU members					
Austria	1.46	0.99	1.15	0.07	1.4
Finland	14.3	16.52	7.78	15.24	22.14

(*continued*)

Table 1—*continued*

Country[a]	1973-1978	1979-1993	[1979-1989]	[1990-1993]	1973-1993
Norway	8.27	17.32	14.08	4.36	22.92
Sweden	12.6	20.58	15.42	11.54	29.69
Average	14.34	17.80	16.54	6.29	26.80

Source: International Monetary Fund, International Financial Statistics Data Base. Periods run from first quarter in the first year to fourth quarter in the last year of the periods.
Note: In Panel A, a negative sign indicates the currency appreciated against the Deutsche Mark in the period in question. Coefficients of variation are expressed in percent terms, that is, multiplied by 100 simply for ease of exposition.

the DM than most accounts would have it. This is largely because North Sea oil and the Thatcher administration led to a significant appreciation of the pound in the early 1980s, which was reversed with a vengeance in the middle and late 1980s (and with even more of a vengeance after September 1992). In any event, the evidence in Table 1 is meant simply to indicate that data reinforce the more discursive story told above. This is particularly worth doing because in the statistical evaluations that follow, the coefficient of variation figures are used as the dependent variable.

The first step is to try to explain increased interest in monetary integration within the EU and among the four non-EU members.[14] Again, I argue that higher levels of commercial, financial, and investment flows within the Union should strengthen the position of those most interested in stabilizing currency values. The statistical record does indeed indicate a major increase in the importance of intra-EU trade and payments over the 1970s and 1980s.

By far the most reliable intra-EU economic figures are those having to do with trade. Table 2 shows the relationship between manufactured exports within subgroups of EU members, on the one hand, and their combined gross domestic product (GDP), on the other. Manufactured exports are the relevant consideration for my purposes: Agricultural trade is mostly controlled by the CAP, and other nonmanufactured trade is relatively unimportant. And, as explained above, it is exporters of relatively specialized manufactured products (rather than standardized commodities) whom I expect to care about currency stability. (Unfortunately, such disaggregated data are not available for the late 1980s and early 1990s, for which total exports are used throughout this study.)

As Table 2 indicates, intra-EU manufactured exports have become increasingly important since the early 1970s. This is true whether one looks at

14. For ease of exposition, I refer to these as non-EU members throughout, even though three of the four are now members of the Union.

Table 2
Comparison of Intra-Group Manufactured and Total Exports of EEC6, EC9, and EU12, as Percentage of GDP

Group	1972	1978	1985	1990
Manufactured exports				
EEC 6	8.18	9.35	10.05	
EC 9	9.95	12.17	14.01	
EU 12	9.95	11.98	14.25	
Total exports				
EEC 6	9.08	10.0	11.0	11.35
EC 9	9.37	11.47	13.13	13.16
EU 12	9.45	11.5	13.94	13.8

Sources: For manufactured trade, OECD Compatible Trade and Production Data Base (COMTAP) 1971-1986. Manufacturing is as defined by the International Standard Industrial Classification of all Economic Activities (code 3) and *Basic Statistics of the Community* v. 15, 22, and 25 (Brussels: Office for Official Publications for the European Communities, various dates).
For all trade, Eurostat, *External Trade and Balance of Payments Year Book, 1992* and *Statistical Recapitulation: 1958-1991, 1991* (Brussels: Office for Official Publications for the European Communities, various dates).
The inconsistencies between the two panels (i.e., total trade is typically a smaller percentage of GDP than manufactured trade for certain periods) are apparently due to incomparabilities between the two sets of sources.
Note: The EEC 6 are the Community's founding members: Belgium, France, Germany, Italy, Luxembourg, and the Netherlands. The EC 9 are these countries plus Denmark, Ireland, and the United Kingdom, which joined in 1973. The EU 12 are these countries plus Greece, which joined in 1981, and Spain and Portugal, which joined in 1986.

the founding members of the Union or at its expanded size. The increase is continual, and although the several percentage points in question might appear small, they are, in fact, quite significant by most standards, and as trends.

Table 3 presents more detailed information on the importance to individual countries of trade with the EU, and with the DM bloc. Manufactured exports as a share of national GDP are used for the reasons discussed above. However, total exports are used for the late 1980s due to data unavailability, so that these last figures are not strictly comparable with earlier ones. Two sets of figures are shown, one indicating the importance of trade with the EU as a whole (i.e., the 12 countries that were members as of 1993). The other shows the importance of trade with the DM zone, defined as Germany and Benelux. This last figure is of interest for an analysis of monetary integration, which has, since the start, implied tying the national currency to that of Germany. Inasmuch as European monetary integration has implicitly or explicitly involved linking national currencies to the DM, the most relevant consideration for my

Table 3
Manufactured Exports of EU Members to the EU and the DM Zone (Germany + Benelux), as Percentage of GDP

	Manufactured Exports to EU/GDP			Manufactured Exports to DM Zone/GDP		
Country	1970-1973	1979-1982	1987-1989	1970-1973	1979-1982	1987-1989
Hard-currency countries						
Belgium/ Luxembourg	30.77	35.51	48.78	17.81	17.62	22.58
Denmark	7.86	10.59	15.04	2.37	4.42	6.53
Netherlands	21.46	25.74	37.78	13.52	15.3	20.51
Intermediate countries						
France	6.7	8.27	10.65	4.2	4.52	5.46
Ireland	15.78	29.94	40.68	1.74	7.97	8.72
Soft-currency countries						
Greece	2.48	4.27	10.28	1.36	2.23	4.37
Italy	7.32	9.46	8.72	4.05	4.4	3.7
Portugal	6.45	10.2	19.21	1.58	3.63	6.48
Spain	2.62	4.33	7.46	0.99	1.3	2.21
United Kingdom	4.85	7.08	8.52	2.08	3.37	4.04
Non-EU members						
Austria	8.84	12.22	19.83	4.63	7.52	8.57
Finland	9.74	10.19	9.1	3.95	3.12	3.14
Norway	11.06	7.32	12.24	2.3	3.49	3.22
Sweden	10.33	12.17	14.31	3.23	4.65	5.62

Source: OECD Compatible Trade and Production Data Base (COMTAP) 1971-1991.
Note: EU trade includes trade to all 12 pre-1995 members of the EU. Data for 1987-1989 are for *total* exports, not manufactured exports, due to the unavailability of more disaggregated data. Data on exports to the DM zone from non-EU members are for 1984-1986 rather than 1987-1989; more recent data are not available. Manufacturing is as defined by the International Standard Industrial Classification of all Economic Activities (code 3) and *Basic Statistics of the Community* (Office for Official Publications for the European Communities) v. 15, 22, and 25.

argument is the importance of national trade and investment with the DM zone. The Benelux countries are included in the DM zone as they have been in a virtual fixed-rate system with Germany since the early 1970s. Data are presented for three time periods, the early 1970s before the advent of the snake; 1979-1982, during the early years of the EMS; and 1987-1989, once the EMS had stabilized.

The data in Table 3 show clearly that the importance of intra-EU and DM zone trade has risen in almost every country. The increase has been quite remarkable in some cases, notably such smaller economies as Ireland, Portugal, and Austria.

Data on financial and investment flows within the EU are far less readily available than those on trade. However, Frankel, Phillips, and Chinn (1993)

have done statistical studies that indicate the level of financial integration within the Union. They evaluate covered interest-rate differentials with Germany. This incorporates both interest-rate differences and market expectations of exchange-rate movements; the remaining differential is presumably the result of country risk, capital controls, and other forms of incomplete market integration. These data are only available for the 1980s (the relevant forward currency markets largely did not exist before then). They do indicate that financial markets in Benelux, the United Kingdom, Ireland, and the four non-EU members were very closely tied to those of Germany during the 1980s. Their data also indicate that financial conditions in Europe were converging rapidly. By the early 1990s, indeed, most observers believed that financial markets within the EU were very closely linked.

A third dimension of economic integration has to do with foreign direct investment (FDI). However, reliable data on intra-EU FDI are only available from about 1980 on. Table 4 presents a synopsis of these data, which indicate the importance of stocks of intra-EU FDI as a share of GDP in the early and later 1980s. The data are for a scattered set of years, and quite a few observations are missing. There are far better data available on both stocks and flows of FDI after the late 1980s, but this is too late to play any part in *explaining* monetary integration. Despite their shortcomings, the data in Table 4 are both indicative and the best available.

The data in Table 4 also demonstrate the increase in intra-EU direct investment over the course of the 1980s (I evaluate intercountry differences below). FDI stocks in fact grew at striking rates in some countries. For example, Danish direct investment in the EU, and in the DM zone, as a share of GDP grew by a factor of more than 10 in just 8 years; EU investment in Spain and Portugal as a share of their GDPs grew approximately threefold in just 6 and 8 years, respectively. However, with some exceptions, these data are difficult to use in evaluating the impact of changing levels of intra-EU FDI on incentives for EU monetary integration: To a great extent, the FDI in question was *responding* to existing currency arrangements.

Higher levels of international goods and capital market integration within the EU had several effects. First, increased financial integration raised the probability that divergent macroeconomic policies would lead to countervailing trends on capital and currency markets. This is another illustration of the point that higher levels of capital mobility make independent monetary policy inconsistent with a fixed exchange rate. Greater financial-market integration within Europe tended to quicken the rate at which divergent national monetary policies led to substantial capital flows and eventually currency crises. Financial integration made the resolution of the conflict between national monetary autonomy and exchange-rate stability pressing.

Table 4
Stock of Intra-EU Foreign Direct Investment by EU Member States, Early and Late 1980s, as Percentage of GDP

	Inward		Outward		Total	
	DM Zone	EU 12	DM Zone	EU 12	DM Zone	EU 12
Hard-currency countries						
Netherlands						
1984	2.29	5.35	5.34	10.73	7.63	16.08
1989	3.80	8.58	6.13	13.57	12.38	22.15
Belgium/Luxembourg						
1980	3.6	5.39	.62	2.02	4.22	7.41
1988	4.47	10.04	1.6	4.83	6.07	14.87
Denmark						
1982	.31	.40	.14	.34	.45	.74
1990	.54	.95	1.48	3.81	2.02	4.76
Intermediate countries						
France						
1982	.99	1.49	.41	1.01	1.40	2.50
1989	1.26	2.89	1.66	3.45	2.92	6.34
Ireland						
1981		4.71				
1986		5.01				
Soft-currency countries						
United Kingdom						
1981	.67	1.03	.78	2.33	1.45	3.36
1989	3.32	4.72	3.02	5.85	6.34	10.57
Italy						
1980		.99		.82		1.81
1989		2.79		2.44		5.23
Spain						
1983	.79	1.84	.02	.07	.81	1.86
1989	2.64	7.07	.03	.88	2.67	7.95
Portugal						
1980	.37	.90	.06	.42	.43	1.32
1988	.87	2.95	.01	.27	.88	3.22
Greece						
1978		1.23				
Non-EU members						
Austria						
1980	1.41		0.22		1.63	
1988	1.36	1.71	0.38	0.44	1.74	2.15
Finland						
1980	0.11	0.24	0.31	0.56	0.42	0.80
1989		0.76		2.27		3.03
Norway						
1980	0.16	0.55	0.26	0.60	0.42	1.15
1988	0.43	1.13	0.48	1.51	0.91	2.64

(*continued*)

Table 4—*continued*

	Inward		Outward		Total	
	DM Zone	EU 12	DM Zone	EU 12	DM Zone	EU 12
Sweden						
1980	0.10	0.42	0.56	1.36	0.66	1.78
1988	1.17	1.62	1.80	6.93	2.97	8.55

Source: Table 9, Country Tables in *The World Investment Directory: Volume 3, Developed Countries* (New York: United Nations Publications, 1993) and *Basic Statistics of the Community* (Eurostat: Brussels) v. 27, 25 and 22.
Note: Blank spaces indicate data were not available.

Second, greater cross-border mobility of goods and capital within Europe made stabilizing exchange rates more attractive. This is true both in terms of the broad social welfare effects discussed above and inasmuch as higher levels of economic integration affected the interests of domestic economic actors. As trade and capital flows within the EU grew, ever larger segments of European business communities developed more important markets and investments in EU nations. The growth of intra-EU trade and investment increased the real or potential support base for economic policies to facilitate and defend such economic activities. Stabilizing exchange rates would benefit the growing ranks of economic actors with EU economic interests, whether these were export markets or investment sites.

The expectation that interest in stabilizing European exchange rates be correlated with the level of intra-EU trade and investment over time appears supported by the data. The next question is whether national support for monetary integration is correlated with different levels of integration in EU goods and capital movements. To evaluate this, we can again examine data on cross-national variation in trade and investment within the EU.

Casual inspection of Tables 3 and 4 shows a general relationship between commercial and investment integration and commitment to exchange-rate stability. This is especially true with trade, and it is worth reiterating that one cannot read too much into the FDI data. This is both because there are too many gaps (especially for FDI in the DM zone) and because the time period is in the middle rather than at the beginning of attempts at monetary integration. For example, it is quite plausible that the high levels of Benelux investment in and from Germany is due at least in part to the fact that their currencies were stable against the DM during the snake, before a large part of the stocks measured in the table were accumulated.

At this point, it is worthwhile to raise the more general problem of simultaneity in these data. It is widely believed that stabilizing exchange rates

Table 5
Explaining Exchange-Rate Variability Against the Deutsche Mark During the Snake and the EMS: The Role of Trade With the DM Bloc

	Variability Against the DM			
	1973-1978	1979-1993	1973-1993	1973-1993
Constant	19.69[a]	27.80[b]	35.49[b]	38.53[b]
	(7.81)	(13.44)	(19.85)	(19.13)
DM bloc trade, 1970-1973	−1.17[a]		−1.91	
	(0.44)		(1.12)	
DM bloc trade, 1979-1982		−1.68[b]		
		(0.78)		
DM bloc trade average 1970-1973/1979-1982				−2.23[b]
				(1.11)
Degrees of freedom	12	12	12	12
R^2	0.372	0.280	0.195	0.252

Note: Standard errors in parentheses. Dependent variable: Coefficient of variation of the nominal exchange rate against the Deutsche Mark during the period.
a. Statistically significant at the 95% confidence level.
b. Statistically significant at the 90% confidence level.

between countries tends to increase trade and payments between them.[15] In this case, the correlation between levels of trade and investment flows, on the one hand, and currency stability is picking up the reverse causal mechanism to what I posit. It may not be that trade and investment increase political support for monetary integration, but rather that policies for currency stability adopted for other reasons encourage higher levels of trade and investment.

Two points can be made in this regard. First, in the statistical evaluation presented below, I try where possible to use levels of economic integration *before* the monetary agreements to explain policy and performance *during* them. If the pattern of economic integration in the early 1970s, before any serious monetary initiatives, can explain currency policy between 1973 and 1993, I am on relatively solid ground. Unfortunately, data for the early 1970s are only available for trade and not for FDI.

Second, there is no necessary contradiction between my argument and its reverse. Indeed, the reason I expect EU-oriented economic agents to support monetary integration is precisely that they anticipate it will increase the level of intra-EU trade and payments. Put somewhat differently, I expect that high

15. However, this point receives only partial support from the relevant economic literature. In fact, currency fluctuations are often given as an explanation for *increased* FDI, and it is frequently argued that their impact on trade is substantially mitigated by the existence of a wide variety of hedging instruments. Kumar and Whitt (1992) survey studies concerning trade. Despite the lack of consensus, in the European case, the connection seems relatively well established.

Table 6
Explaining Exchange Rate Variability Against the Deutsche Mark During the Snake and the EMS: The Role of Intra-EU Trade

	Variability Against the DM			
	1973-1978	1979-1993	1973-1993	1973-1993
Constant	21.56[a]	28.78[b]	42.67[a]	43.19[a]
	(8.16)	(13.49)	(18.48)	(17.42)
EU trade, 1970-1973	−0.69[a]		−1.52[a]	
	(0.29)		(0.67)	
EU trade, 1979-1982		−0.82[b]		
		(0.38)		
EU trade, average of 1970-1973/1979-1982				−1.38[a]
				(0.60)
Degrees of freedom	12	12	12	12
R^2	0.315	0.275	0.302	0.310

Note: Standard errors in parentheses. Dependent variable: Coefficient of variation of the nominal exchange rate against the Deutsche Mark during the period.
a. Statistically significant at the 95% confidence level.
b. Statistically significant at the 90% confidence level.

levels of trade and payments will be correlated with currency stability *both* because more trade and investment increase political support for monetary integration, and vice versa. Of course, I would like to be able to disentangle cause and effect, especially chronologically, but data limitations make this difficult. In any case, it should be kept in mind that monetary, commercial, and investment integration probably feed back to increase each other, and that where early-1970s data are not available, I have trouble breaking into this feedback process.

Simple statistical methods help evaluate my argument about correlation between the importance of a country's trade and investment with the DM zone and its willingness to stabilize its currency against the DM. In Tables 5 to 9, I attempt this with regressions in which the dependent variable is the variability of the national exchange rate against the DM (as discussed above), and the independent variables measure the importance of DM zone and EU trade and investment for the country.

In Tables 5 and 6, I measure the impact of the importance of a country's manufactured exports to the DM zone and the EU, respectively, at the outset of the snake and the EMS, on the variability of the country's currency against the DM during the snake and EMS.[16] The results indicate that the higher the

16. It might be objected that the 1979-1982 trade data are from the first years of the EMS, and it is thus wrong to treat them as exogenously determined. The reason this was done was,

country's DM-zone trade and intra-EU trade as a share of its GDP before the currency agreement, the less likely its currency was to fluctuate against the DM. The results are statistically significant, and the coefficients are quite large.[17]

The substantive implications of the regression results in this and the following tables can be interpreted quite simply. For example, in column 2 of Table 5, a 1 percentage point increase in a country's manufactured exports to the DM zone between 1979 and 1982 was associated with a 1.68-unit decrease in the national currency's coefficient of variation against the DM between 1979 and 1993. Looking back to Panel B of Table 1, it is easy to see that this is a relatively large decrease; a 5 percentage point increase in Italian DM-zone exports would have implied a reduction in lira variability to below franc levels.

Perhaps the most striking result is that contained in the third columns of both tables. These regression results look at the impact of trade with the DM zone and the EU in the early 1970s on national currency variability from 1973 until 1993. Although the results for DM zone trade do not quite reach statistical significance, the relationship is still impressively strong (especially in light of the preceding discussion of simultaneity).[18] Obviously a great deal

however, that earlier trade data would have been during the snake, and thus conceivably determined by *it*. It might also be pointed out that currencies varied a great deal in the first few years of the EMS. In any case, when the regression is recalculated using 1976-1978 trade data as the explanatory variable, the results are essentially identical to those reported. In this context, it is especially important to point out how strong the impact of 1970-1973 trade patterns is on subsequent currency policies (see below). This is a powerful argument *against* the endogeneity of trade patterns.

17. Removing Spain, Portugal, and Greece, which were not EC members in the 1970s and which are outliers on both dimensions in both periods, does not affect the results.

18. Although I use the coefficient of variation of the nominal exchange rate against the DM in the regressions reported here, essentially identical results are obtained by using the annual rate of nominal depreciation against the DM. The substantive implications are of somewhat easier interpretation. For example, analogous regressions to those in column 3 of Tables 5 and 6 give the following results: for DM bloc exports, a coefficient of –.42 (standard error .2), r^2 of .27; for EU exports, a coefficient of –.28 (standard error .13), r^2 of .29. This means that 1 less percentage point of trade with the DM bloc in the early 1970s (as a share of GDP) was associated with a .42 percentage point increase in the average annual rate of depreciation against the DM. Looked at over a 5-year period, this translates into a 2.1% additional depreciation for every percentage point less DM-bloc trade; and a 1.4% additional depreciation for every percentage point less EU trade.

This is significant for two reasons. First, the nominal depreciation rate is somewhat easier to interpret than the coefficient of variation. Second, there is a possibility that the coefficient of variation is a random walk (some modern exchange-rate theories would indeed argue that it is), which would make it a problematic measure to use. No such difficulties arise with the nominal rate of depreciation. I use the coefficient of variation here because I believe it is a more accurate measure of the variability of nominal exchange rates.

Table 7
The Impact of Trade Integration and ERM Membership on Exchange-Rate Variability Against the Deutsche Mark, 1990-1993

	Variability Against the DM During 1990-1993			
	(1)	(2)	(3)	(4)
Constant	10.08[a]	11.19[a]	10.40[a]	11.46[a]
	(4.43)	(4.46)	(4.58)	(4.60)
DM-bloc trade, 1987-1989	–0.51[a]	–0.45[b]		
	(0.20)	(0.21)		
EU trade, 1987-1989			–0.22[a]	–0.19[b]
			(0.09)	(0.10)
ERM membership		–2.42		–2.52
		(2.62)		(2.71)
Degrees of freedom	12	11	12	11
R^2	0.356	0.402	0.313	0.363
Adjusted R^2		0.294		0.247

Note: Standard errors in parentheses. Dependent variable: Coefficient of variation of the nominal exchange rate against the Deutsche Mark between the beginning of 1990 and the end of 1993.
a. Statistically significant at the 95% confidence level.
b. Statistically significant at the 90% confidence level.

went on over the 2 decades, yet it seems clear that trade patterns before 1973 had a systematic impact on the likelihood that countries would stabilize their currencies against the DM after 1973.[19]

In Tables 7 and 8, I attempt to assess the potential importance of institutional membership in the snake and the EMS for exchange rate variability. Table 7 looks at currency volatility in the 1990-1993 period, which includes the 1992-1993 currency crisis. Columns 1 and 3 show that national trade with the DM bloc and the EU in 1987-1989 is strongly associated with more currency stability during the crisis years. When a dummy variable for ERM membership is included, although the sign is as expected (membership reduces volatility), the coefficients are not statistically significant, and they

19. It might be argued that early-1970s trade patterns were themselves a result of pre-1970 differences in currency variations. This is empirically incorrect. There were few currency movements between 1960 and 1969—this was the heyday of the Bretton Woods system—and those there were ran largely in the *opposite* direction of explaining early-1970s trade. For example, in the 1960s, the currencies of Italy, Greece, and Portugal varied *less* against the DM than did those of all other EU currencies except the Dutch florin.

Carrying out the analysis with *both* DM-zone and intra-EU trade would be meaningless, as the two are highly correlated. Correlation coefficients for DM-zone and intra-EU trade varied across the 20-year period from a low of .87 to a high of .93.

Table 8
Pooled Analysis of the Impact of Trade Integration and Institutional Membership on Exchange Rate Variability, 1973-1993

	(1)	(2)	(3)	(4)
Constant	13.16	14.62	13.85	15.21
	(9.03)	(8.92)	(9.36)	(9.15)
DM-bloc trade	–0.92[a]	–0.70[a]		
	(0.27)	(0.31)		
EU trade			–0.40[a]	–0.28[b]
			(0.14)	(0.16)
Institutional membership		–4.83		–5.85
		(3.45)		(3.48)
1973-1978	5.35	3.92	4.70	3.26
	(3.51)	(3.61)	(3.73)	(3.74)
1979-1989	8.84[a]	8.15[a]	8.08[a]	7.52[a]
	(3.44)	(3.43)	(3.62)	(3.55)
Degrees of freedom	38	37	38	37
R^2	0.362	0.394	0.315	0.363
Adjusted R^2	0.312	0.328	0.261	0.294

Note: Standard errors in parentheses. Dependent variable: Coefficient of variation of the nominal exchange rate against the Deutsche Mark during 1973-1978, 1979-1989, and 1990-1993. The explanatory variables are DM-zone or intra-EU trade ratios for 1970-1973, 1979-1982, and 1987-1989, respectively. Institutional membership is a dummy variable that takes the value of 1 for members of the snake or the ERM in each of the three time periods, 0 otherwise.
a. Statistically significant at the 95% confidence level.
b. Statistically significant at the 90% confidence level.

actually reduce the overall explanatory power (adjusted *r* squared) of the model.

Table 8 continues this exercise with a slightly different method. Here, I pool national characteristics for three time periods (1973-1978, 1979-1989, and 1990-1993). In other words, the dependent variables were currency variability in each of these periods. This increases the number of observations (three for each country) by treating each currency's behavior during each of the three periods as a separate data point. I start, in columns 1 and 3, by looking at the impact of DM-zone and EU trade (pooled, with data from the outset of the three periods) on exchange-rate fluctuations, along with fixed-effect dummies. Again, the results are strong in the expected direction—more intra-EU and DM-zone trade is highly correlated with lower exchange-rate volatility. The period dummy for 1979-1989 is also significant, which implies a state change during this period involving greater exchange-rate variability, other things held constant. In columns 2 and 4, I add a dummy for institutional membership in the three periods (snake or EMS, according). The institutional

Table 9
Explaining Exchange Rate Variability Against the Deutsche Mark During the EMS: The Role of FDI

	Variability Against the DM			
	1979-1993	1979-1993	1990-1993	1990-1993
Constant	25.11[a]	20.09[a]	9.51[a]	5.49
	(13.66)	(9.93)	(4.91)	(4.37)
Intra-EU FDI, early 1980s	−1.75[a]			
	(0.93)			
DM bloc FDI, early 1980s		−2.70[a]		
		(1.41)		
Intra-EU FDI, late 1980s			−0.39	
			(0.26)	
DM bloc FDI, late 1980s				−0.30
				(0.41)
Degrees of freedom	11	9	9	8
R2	0.242	0.198	0.290	0.063

Note: Dependent variable: Coefficient of variation of the nominal exchange rate against the Deutsche Mark during the period. Independent variables are, as indicated, intra-EU and DM-zone direct investment (FDI) as a share of each country's GDP in the early and late 1980s. Intra-EU data are not available for Austria in the early 1980s, nor for Greece in the late 1980s. Total FDI for Greece and Ireland is assumed equal to inward FDI. DM-zone data are not available for Ireland, Italy, and Greece for both periods, nor for Finland in the late 1980s. Specific dates are as indicated in Table 5.

variables have the expected effect, but they do not reach conventional levels of statistical significance—although that in column 4 comes quite close.

Despite the unsatisfactory nature of the data available on intra-EU direct investment, regression results on this dimension are presented in Table 9. It can be seen that levels of intra-EU and DM-zone direct investment in the early 1980s are correlated with currency stability between 1979 and 1993. Results for the impact of direct investment on currency variability between 1990 and 1993 are far weaker, and not statistically significant.[20] With all the warnings already expressed about the data on FDI, and the unavailability of information before the currency arrangements (due to the absence of FDI data before 1973), these results should be regarded with wariness. Nonetheless, they do tend to confirm my argument about the impact of intraregional investment on the incentives to fix regional currency values.

20. Omitting observations for Greece and Ireland, for which data are incomplete, does not affect results. Attempts to use both intra-EC trade and FDI as explanatory variables in a multivariate regression are complicated by the small number of observations. Perhaps more important, the two are very strongly collinear. Correlation coefficients for intra-EU and DM-zone trade and investment in the early 1980s are, for example, .73 and .86, respectively.

These analyses appear to support the contention that higher levels of intra-European trade and investment are associated with a greater propensity to stabilize exchange rates within the EU.[21] This is consonant with the argument that as policy makers faced an ever starker choice between giving up monetary independence to maintain a fixed exchange rate, on the one hand, and floating away from the EMS, on the other, the rising importance of intra-EU trade and investment helped tip them toward the EMS. It is also consonant with the idea that increased European economic integration, by expanding the ranks of integrated and export-oriented EU producers, led to pressure to reduce currency unpredictability.

It is probably unsurprising to many observers that countries more reliant on intra-European trade and investment have been more willing and able to stabilize their currency against the EU's monetary anchor, the DM. The argument for this is intuitive, and it accords with received wisdom. However, it has not been made or tested systematically. The purpose of this article has been to state and present evidence for this relatively straightforward hypothesis. Although there is no doubt that the course of European monetary integration has responded to many factors, this study demonstrates that increased goods and capital market integration have raised the likelihood of a commitment to stable exchange rates.

4. IMPLICATIONS, BOTH GENERAL AND FOR THE FUTURE OF EUROPEAN MONETARY INTEGRATION

My assertion that the level of economic integration has systematic effects on pressures for stabilizing exchange rates has both general significance and clear implications for the future of monetary integration in Europe. Generally speaking, my argument is not specific to Europe but should be applicable to other countries' exchange-rate policies. The hypothesis in its simplest form leads to the expectation that the more a nation is linked by trade, financial, and investment ties to a potential anchor-currency country or area, the more likely it is to fix its exchange rate to the anchor currency.

More directly germane are the implications of this study for the future of European monetary integration. The past 20 years have indeed seen many twists and turns on this road. The snake was only a very modest success, and

21. This conclusion is complementary to one finding of Dalton and Eichenberg (1993), who show that differences in national public support of European integration are closely related to the country's level of intra-EU trade. Indeed, this is found to be the most important economic factor in their model: The inflation rate has a strong negative effect, but when the two are comparably scaled, intra-EU trade is more powerful.

early expectations for the EMS were similarly modest. Following an early period in which this pessimism appeared warranted, the exchange rate agreement seemed to become credible after 1985. As success gave rise to plans for full monetary union by 1999, however, the 1992-1993 currency crisis called even the less ambitious EMS into question.

Although the perspective presented here cannot explain this trajectory in much detail, it does help shed light on the subject. Higher levels of intra-European trade and investment over time did lead to greater interest in monetary integration. The countries most linked to EU members by goods and capital flows were the most interested in monetary integration.

However, much cannot be explained on this basis. Changes in the level of economic integration over time, for example, cannot explain the 1992-1993 currency crisis. The members of the ERM were certainly more integrated in 1992 than they had been a decade earlier, yet the system did not hold together. Other factors, already discussed above, were undoubtedly central to the crisis. However, three observations can be made. The first is that economic objections to monetary integration were borne out by the crisis. German unification subjected Europe to an asymmetric economic shock—it directly affected Germany but almost no other country. Germany's subsequent attempt to counteract expansionary fiscal measures with tight money only proved that a monetary policy appropriate for Germany could be inappropriate for its EMS partners. This indicates the truth of the assertion that the EU is far from being an optimal currency area.

Second, the higher levels of financial integration obtaining in the Europe of 1992-1993 did, as anticipated, heighten the conflict between monetary independence and exchange-rate stability. Germany's EMS partners found themselves with stark choices: either follow Germany into recession, or leave the ERM and allow their currencies to depreciate.

Third, given this choice, the responses to the crisis were roughly in line with the cross-national expectations indicated above. The EMS members most fully integrated into EU trade and payments—Belgium, the Netherlands, and Luxembourg—held fast, as did Austria. France, quite strongly tied to the DM bloc, generally stuck to its guns. Those at the lower end of trade and investment integration, the United Kingdom and Italy, dropped out. Spain, Portugal, and Ireland, with relatively high levels of integration, were forced to devalue but stayed in the ERM. Denmark is something of an anomaly, as it is relatively less integrated than the other northern European EMS members but was able to avoid a devaluation. The Nordic countries, intermediate in their ties to German markets and investments, were intermediate in their currency policy response. In any case, and as the data in Table 7 show, the crisis appears to bear out most of my expectations: The stability

of national exchange rates was roughly proportional to the level of national economic integration with the rest of the EU, and especially the DM zone.

It is also legitimate to ask what my analytical framework leads us to expect about the future of European monetary integration. My analysis leads to expectations that efforts to stabilize currency values, and at the limit create monetary union, will continue; but it also leads to a differentiation among countries more and less likely to participate.

The level of intra-European trade and investment is high and growing, and the completion of the single market will spur this process. I thus believe that the general pressures for monetary integration will continue to grow over time. If the link I posit between economic integration, on the one hand, and broad economic and domestic political pressure for currency stabilization, on the other hand, is present, we should see a continuation—in fact, an increase—in interest in monetary integration.

However, there is no doubt that interest in monetary integration varies across countries. Those most tied to the EU—and especially to its economic and financial anchor, Germany—should be most enthusiastic about moving forward with plans for monetary union. To get a rough indication of this, we can compute predicted values of the coefficient of variation of national currencies from the regressions in columns 1 and 3 of Table 7, which are based on intra-European and DM bloc trade in the late 1980s. These yield projections that Belgium-Luxembourg, the Netherlands, Ireland, Austria, Denmark, Portugal, Sweden, and France are (in descending order) likely to have the most stable currencies. Countries whose currencies are expected to be less stable are Greece, the United Kingdom, Italy, Finland, Spain, and non-EU member Norway. Although serious predictions would have to include many other variables, this does not appear too far from the kind of ranking informed observers might develop.

This implies that a multitier EMU process is likely to ensue. Those countries most closely integrated on current and capital account are most likely to proceed toward monetary union. Those least integrated are likely to remain behind. This leaves, of course, great room for variation and discretion, as well as for an intermediate group of countries not clearly in either category. All that I expect is a tendency in this direction; specifics will be determined by a combination of domestic political developments within EU members and strategic interaction among them.

The argument and evidence presented here imply that the level of European goods and capital market integration will be crucial to the future of European monetary integration in two ways. First, the high and growing level of goods and capital movements within the Union increases the likelihood of *some* sort of monetary integration. Second, variations in national reliance

on EU markets and investments will affect national debates and policies concerning European monetary politics.

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