Real sources of European currency policy: Sectoral interests and European monetary integration

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Abstract

In the thirty years before Economic and Monetary Union was Iachieved, European currency policies varied widely among countries and over time. This article argues that the sectoral impact of regional exchange rate arrangements, in particular their expected real effects on European trade and investment, exerted a powerful influence on the course of European monetary integration. The principal benefit of fixing European exchange rates was that it would facilitate cross-border trade and investment within the EU; the principal cost of fixed rates was the loss of national governments' ability to use currency policy to improve the competitive position of their producers. Empirical results indeed indicate that a stronger and more stable currency was associated with greater importance of manufactured exports to the EU's hard-currency core, while depreciations were associated with an increase in the net import competition faced by the country's producers. This suggests a powerful impact of real factors related to trade and investment, and of private interests concerned about this factors, in determining national currency policies.

For over thirty years, until the completion of Economic and Monetary Union (EMU), the member states of the European Union attempted to fix regional exchange rates. Most explanations of this process, naturally enough, emphasize its monetary sources and effects. Some focus on how creating a multi-national currency area might increase the efficacy of monetary policy. Others stress how fixing a national currency to a low-inflation monetary anchor, or adopting a single low-inflation currency, might enhance the anti-inflationary credibility of national monetary policies.[1] In these views, European monetary integration was motivated by the belief that by themselves national monetary authorities would be unable or unwilling to pursue appropriate monetary policies.

This article focuses, in contrast, on what might be called *real* as opposed to monetary sources and effects of European currency policies – that is, their expected impact on cross-border trade and investment. Exchange rates regulate the relationship between foreign and domestic prices, and thus the predictability and profitability of cross-border trade and investment. Rather than restrict ourselves to monetary reasons for exchange rate policies, the paper suggests that we look for motivations that come from the country's trade, financial, and investment ties. In this view, policymakers weighed the costs and benefits of

[1] Another, broader, perspective looks at how EMU was linked to the general drive for European integration. Accurate as this may be – and for an argument in its favor see Frieden 2001 – it still relies on some implicit assertions about the ultimate costs and benefits of monetary integration itself. Most such assertions focus, as the two mentioned here, on the monetary (anti-inflationary) aspects of the process.

fixed exchange rates with regard to their impact on national trade and investment. The principal benefit of fixed rates and a single currency was to facilitate intra-European trade and investment; the principal cost was losing the ability to manipulate currencies to change the relative prices of foreign and home products and thus the competitive position of national producers. The various weights that different economic interests gave to these costs and benefits help explain the political economy of European monetary integration.

While this "real" interpretation of national currency policies is not entirely inconsistent with explanations based on their monetary-policy effects, it does lead to a very different emphasis, particularly with regard to the interest-group supporters and opponents of monetary integration. Arguments based on anti-inflationary credibility and optimal currency areas emphasize very broad constituencies with different degrees of inflation aversion, or economic efficiency; the "real" argument here implicates much more specific distributional factors. In particular, it predicts support for monetary integration from cross-border investors and exporters of specialized manufactures who stood to lose from currency volatility. It anticipates opposition from those, especially import competers, who stood to lose from the inability of national governments to engage in depreciations to gain international competitiveness.

The European experience provides a useful laboratory to investigate these claims. Over the course of three decades, European currency relations experienced a great deal of variation. The snake and early European Monetary System (EMS) had only limited success, while the later EMS went through a cycle of optimism, crisis, and renewed optimism in the runup to EMU. And while some countries were generally able to persist in pegging their exchange rates to the DM, others were quite unsuccessful for long periods of time. This allows us to assess both why the fortunes of fixed rates varied over time, and why their

attainment varied so much among European countries. I suggest that the answers to these questions require prominent consideration of the sectoral implications of currency policy's real impact, especially how fixing the exchange rate was expected to affect those with strong interests in expanding inter-regional trade, finance, and investment; and those with strong interests in limiting the impact on them of foreign competition.

The paper looks at the statistical record of exchange rate movements in Europe from 1973 until 1995. Although it is extremely difficult to find good proxies for interest-group pressures, especially in a cross-national context, I use two measures as indicators of private-sector concerns about the real effects of currency policy. The first is the level of manufactured exports to Germany, as a proxy for the interests of internationally engaged producers and investors who wanted to stabilize exchange rates. The second such measure is changes in the trade balance (controlling for the state of the current account), which should reflect the level of concern about import and export competition. These measures turn out to have empirically important and statistically significant effects on both the rate of devaluation of national currencies against the Deutsche mark and on their volatility (two closely related policy outcomes). Countries with more manufactured exports to Germany were more likely to sustain a currency fixed to the Deutsche mark, consistent with the argument that exporters of complex manufactures were interested in currency stability. Periods of deterioration in the trade balance were associated with more subsequent floating and depreciation, consistent with the argument that difficulties on import and export markets led affected interests to support depreciation to improve their competitive position.

Other factors also affected exchange rates. Positive macroeconomic trends – economic growth, a payments surplus, improvements in the terms of

trade– reduced the propensity to devalue and currency volatility. However, there is little evidence for the explanatory importance of purely monetary considerations, such as the need for national anti-inflationary credibility – although admittedly the demand for credibility is extremely hard to measure. For example, countries with left-wing governments, presumably in greater need of anti-inflationary credibility, were *not* mor likely to fix their currencies; and fixing the exchange rate was *not* more likely to be used when the country lacked an independent central bank. This is not to say that anti-inflationary credibility was never a reason why governments fixed their exchange rates, only that it is difficult to find evidence of its significance in the case of European monetary integration. Nor is much support found for optimal currency area factors, specifically the similarity of industrial structure among countries and thus their propensity to face conditions that would call for similar monetary responses.

These results indicate that European currency policies were strongly affected by their expected real effects, that is their impact on trade and investment. The results do not support – but cannot conclusively reject – monetary interpretations of European currency relations based on the anti-inflationary credibility-enhancing features of a fixed exchange rate, or on Optimal Currency Area considerations. The paper begins with a summary of possible explanations of European monetary integration, and how they relate to broader political economy arguments. Then I argue for the role of real factors, and their distributional impact, in the evolution of European currency policies, and go on to present statistical evidence relating to the argument.

European monetary integration: variation and explanation

The ultimate success of European monetary integration has tended to obscure the variegated history of the region's currency policies. In fact,

exchange rate arrangements in the EU have gone through many stages, and the policies of EU member governments have varied widely. The first formal attempt to create a European zone of monetary stability came as the Bretton Woods system collapsed, with the 1973 formation of the "snake in the tunnel."[2] Within a few months only Germany, the Netherlands, and Belgium/Luxembourg (which share a currency) were full participants, with Denmark sometimes included, and this remained the case until 1979. In that year, a new European Monetary System and its exchange rate mechanism (ERM) came into operation. The EMS appeared to have added little to the snake for its first five years: only Germany and the Benelux countries, and now more reliably Denmark, were able to keep their currencies more or less aligned. But between 1983 and 1985 France, Italy, and Ireland began to lock their currencies to the Deutsche mark.

From 1985 until 1992 the monetary unification process gained momentum, eventually attracting such improbable candidates as the United Kingdom (long unwilling) and Spain and Portugal (long unable). The Nordic countries and Austria, not EU members but considering joining, also tied their currencies to the EMS. In this setting, member states began to plan for a common European currency within a broader Economic and Monetary Union

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[2] Indeed such expressions of intent go back to before the Treaty of Rome, although their relevance was limited before the Bretton Woods system began to collapse. For the purposes of this paper, I call the organization in question the European Union, despite its several names in the period under review. For a somewhat less telegraphic survey of these developments, see Frieden 1997a. For a more detailed analysis, which is roughly consistent with the argument here, see Moravcsik 1998, 238---313.

(EMU). Progress toward this goal was interrupted in 1993-1994, as tight German monetary policy in the aftermath of German unification drove many EMS members to let their exchange rates move – with at least a widening of the acceptable target zone, at most a substantial depreciation. Momentum for EMU was rebuilt after the currency crises faded. Eleven EU members started the final steps toward a single currency in 1999, Greece joined in 2000, and these twelve finalized full currency union in 2002.

We can use these dimensions of variation to evaluate explanations of European monetary integration specifically, and of currency policy more generally. Attempts to hold to fixed exchange rates[3] were more successful at some times than at others in Europe. In addition, EU members had highly varied experiences within the snake and EMS. This means that there is meaningful variation both over time and among countries.

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[3] For simplicity, I consider the target zones of the snake and ERM equivalent to a fixed rate system. This raises two problems. First, target zones imply fixing within a much broader range than is usually associated with fixed rates. However, the general policy problem is roughly similar, especially when – as has been the case – currencies have often reached the limits of their bands. Second, the acceptable bands were substantially widened in the aftermath of the 1992-1993 crises, so that this first point may be less valid recently. However, with the exception of the Irish pound most currencies that stayed within the wider-band ERM kept roughly inside to their previous narrow band, and the Irish pound *appreciated* (as sterling rose), which represents a less troubling policy problem than the more common pressure to depreciate.

The dependent variables. The policy choice most in need of explanation can be expressed simply: the degree of fixity of the nominal exchange rate to the Deutsche mark. This definition of the thing to be explained, which might be questionable in other historical and regional contexts, is justifiable in post-1973 Europe. First, exchange rate stability was a publicly stated goal of all European Union members. Second, it was clear early on that such stability implied fixing against the Deutsche mark. Third, the attention of all relevant actors – policymakers, observers, economic agents – was on nominal exchange rates.[4]

The statistical analyses use two simple measures of trends in national currency values against the Deutsche mark. The first is the annual rate of nominal depreciation, which directly measures the general trend of the currency against the DM anchor (all European currencies decline relative to the DM over the period, so there are no appreciating currencies). The second measure is the annual coefficient of variation of monthly exchange rates. This gauges shorter-term volatility within each year, rather than the trend of the currency's value.

Table 1 shows these two measures of the stability of European currencies against the Deutsche mark. The table includes the thirteen pre-EMU European Union currencies other than the DM (Luxembourg shared a currency with

[4] I put it this way to avoid the stronger claim that nominal and real exchange rates were tightly linked in the period, even though there is substantial evidence for this in almost all European countries.

Belgium), plus that of Norway.[5] The table is divided among four groups: hard-currency countries are those that were always members of both the snake and the ERM, soft-currency countries are those which were not reliable members of either, and intermediate countries are those which were members of the ERM but not the snake. The four countries that were not in the EU before 1995 (one of which, Norway, remains a non-member) are shown separately.

The simplest way to measure the relationship between exchange rates is the rate of change in their nominal values, in this case the average annual rate of depreciation against the DM, as presented in panel A of Table 1. This has the advantage of transparency of interpretation; however, it does not indicate potential currency *volatility.* For this purpose, the coefficient of variation of national currencies against the DM is presented in panel B of Table 1.[6] The two

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[5] There might be an argument for including Iceland and Switzerland, except that neither has expressed real commitment to *European* currency stability. Iceland has had relatively high and variable inflation, and Switzerland's international financial role makes purely European considerations somewhat less relevant.

[6] The coefficient of variation is the standard deviation divided by the mean; in the case of Table 1 currency values are taken at monthly intervals so that the volatility being measured is monthly over the time periods in question, which are of five or six years. For the statistical analyses the value is the volatility of monthly exchange rates over each country-year. This picks up both overall declines against the DM and general volatility, so that differences between the two dependent variables are presumably ascribable to different determinants of volatility itself (as opposed to depreciation).

measures produce very similar classifications of countries and country-years, and when they are used in statistical analysis they give rise to virtually identical results. However, the differences are also interesting, as they pick up (inasmuch as they differ) differences between determinants of broad currency policy and of shorter-term policy toward volatility.

Explaining European currency policies. The varied progress and nature of European currency arrangements has brought forth much analysis. Three common explanations of European MI are relevant; they can be considered in the rough order in which they gained academic currency.[7] The first set of explanations emphasized criteria associated with the theory of optimal currency areas or OCAs.[8] OCA theory specifies circumstances under which it is optimal for a nation to give up its exchange rate autonomy.[9] This is the case where exchange rate policy would otherwise be superfluous, either because it would be ineffective or because it could better be carried out by a bloc of national monetary authorities than alone. High levels of factor mobility among countries make individual national currency policies by any one of them ineffective, while production structures that imply correlated exogenous shocks

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[7] The European literature discussed here parallels that described in Bernhard, Broz, and Clark 2001.

[8] Mundell 1961, McKinnon 1963, and Kenen 1969 are early classics; Masson and Taylor 1993 and Tavlas 1994 are more recent surveys.

[9] Although the theory is about currency unions, it applies – albeit perhaps less stringently – to fixed-rate systems. Canzoneri and Rogers 1990 discuss optimal-taxation (seignorage) based evaluations of currency union, but these seem unlikely to have been empirically particularly important.

makes such policies unnecessary. In other words, the more mobile factors are across countries and the more similar their susceptibility to external shocks, the more desirable is a monetary union.

Scholars quickly concluded that this was unlikely to explain very much of European currency policy. There was too little labor mobility among European countries, and too little correlation among exogenous shocks, to justify the level of interest in currency unification. Europe was not an optimal currency area, and even the "hard core" of the EMS may not have been one at the time it was established.[10] Of course, on both dimensions there is variation among EU member states, so that some might be more appropriate members of a currency union than others. Optimal currency area criteria may have had differential effects on different countries that are worth considering. To assess the degree to which OCA criteria affected currency policy, I examine the impact of the similarity of each nation's industrial structure to that of Germany (details on this, and other measures used in this study, are in the Appendix). This is the measure least likely to be endogenous to currency policy: such things as factor movements to and from Germany, another popular OCA proxy, are much more

[10] Capital is more mobile than labor, but its relevance to adjustment is not so clear; and capital controls were very common until the late 1980s. Two representative and influential studies are De Grauwe and Vanhaverbeke 1993 and Bayoumi and Eichengreen 1993. Frankel and Rose 1998 present the intriguing possibility that if "unsuitable " countries form a currency union they might evolve to be more suited over time, as their factor markets become more integrated and their production structures more similar.

likely to be affected by real or anticipated currency policy than national industrial structure.

A second set of arguments, motivated in part by the generally recognized failure of the optimal currency area approach to explain European MI, focused on the possibility that European countries pegged to the Deutsche mark in order to "import" German anti-inflationary credibility.[11] Various arguments have been proposed as to why a currency peg might itself be more credible than simply committing to lower inflation.[12] Along these lines, it is commonly argued that European exchange rate arrangements served as a nominal anchor for credibility-enhancing purposes.[13]

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[11] Giavazzi and Pagano 1989, Weber 1991.

[12] Most plausible are that the exchange rate is much more visible to market operators than is monetary policy, and the possibility that deviating from a peg imposes more costs on policymakers because of its impact on both inflation and on cross-border relative prices. Broz 2001 presents one version of the argument, and some evidence about its applicability. It must be said that the logic of the argument is not fully worked out: it is hard to see why a stated commitment to a currency target is more credible than a state commitment to a domestic monetary target. Indeed, Fratianni and von Hagen 1991 argue against any substantial independent effect, but the evidence is hard to evaluate.

[13] Milesi-Ferretti 1995, however, discusses how policymakers may have partisan electoral incentives not to tie their hands, inasmuch as precommitment strategies might reduce the electoral disadvantages of potential opponents. If, for example, Left parties have a bad inflationary reputation, anything that

Certainly this could not explain German support for monetary integration, which is why some scholars focus on geopolitical rather than economic-policy grounds to explain German policy.[14] It is also irrelevant to the important cases of Austria, Belgium/Luxembourg, Denmark, and the Netherlands, all of which were low-inflation countries that stood only to lose monetary credibility from linking their currencies to those of high-inflation countries. But there are undoubtedly European countries for which an attraction of the currency peg and single currency was its link to monetary-policy credibility.

There are no good proxies for government desire for anti-inflationary credibility. Just about anything which might increase the demand for credibility will also increase the difficulty of attaining it. For example, the rate of inflation presumably raises both the value of a credibility-enhancing peg and the cost of implementing one – so its impact is likely to be indeterminate. However, the literature suggests that governments with independent central banks have less need for the credibility enhancements a fixed exchange rate might bring. And others have argued that left-wing governments, who have a generally inflation-acceptant reputation, are particularly likely to need the credibility a peg can provide.[15] I thus assess the credibility argument, quite imperfectly, by seeing whether fixed rates are associated with the absence of central bank independence, or with leftist governments.

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reduces a government's ability to inflate reduces the electoral disadvantage of the Left.

[14] Garrett 2001

[15] On central bank independence, Broz 2001 is a good example; on left governments, see Simmons 1994.

More recently, an alternative (or perhaps a supplement) to these monetary policy-based approaches has arisen, emphasizing the real effects of currency stability and currency union on cross-border trade and investment. Many scholars had been skeptical of such effects, as the prevailing wisdom held that deep forward and futures markets made currency volatility a trivial matter. But more recent research has found that reducing currency fluctuations, and especially sharing currencies, has a very substantial impact on cross-border trade. One controversial study found that currency unification tripled trade among union members.[16] This has refocused attention on the ways in which currency policies can affect the environment for international trade and investment. By extension, it reinforces the plausibility of explanations of currency *policy* that focus on its impact on a country's trade and financial ties.

The argument made here builds on this third body of thought, emphasizing the real effects of currency policy and thus its impact on trade and investment. The effects of most importance to policy choice are of two sorts. First, just as currency volatility increases the riskiness of cross-border transactions, exchange rate *stability* reduces uncertainty about a price of great importance to those involved in cross-border economic activity. Second, currency movements affect the relative prices of home and foreign goods and services, and currency *flexibility* allows policymakers to vary the exchange rate, especially to devalue and make domestic products cheaper relative to foreign goods.[17] Policymakers thus face a tradeoff between exchange rate flexibility

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[16] Rose 2000.

[17] Governments cannot affect the real (inflation-adjusted) exchange rate at will, of course, but available evidence is strong that policy can have a powerful impact

and exchange rate stability, and political economy factors – especially the relative importance of groups in society who stand to gain from one or the other side of the tradeoff – have a powerful impact on their ultimate choice.[18]

The tradeoff between exchange rate stability and the freedom to vary the currency's value tends to pit two broad groups against one another, based on how highly they value the two conflicting goals. Both import-competing and exporting firms are helped by depreciation. For this reason, I expect opposition to fixing exchange rates to have come especially from import-competing and exporting sectors. Conversely, the less threatening is import- and export-market competition to national producers, the less they likely they are to oppose fixing the exchange rate.

On the other hand, exchange rate volatility principally affects those with substantial cross-border contractual interests. Foreign investors, lenders and borrowers dislike the unpredictability associated with substantial fluctuations in currency values, which are often not amenable to hedging at longer time horizons. In addition, exporters of goods with limited pass-through – that is, goods whose prices to consumers do not fully reflect exchange rate movements,

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over the medium run, usually estimated as four to seven years. For surveys, see Frankel and Rose 1995 and Rogoff 1996.

[18] The argument here is closely related to that made in Frieden and Stein 2001, and tested in the Latin American context in Frieden, Ghezzi, and Stein 2001. It is not inconsistent with the long-term neutrality of money and the efficiency of forward markets: short- and medium-term factors are politically relevant, and forward markets are limited in their ability to protect economic agents far into the future.

usually due to substantial product differentiation – are also typically harmed by volatility.[19] I expect those with cross-border economic interests to have been more oriented toward fixing the value of the national currency.[20]

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[19] Pass-through refers to the extent to which movements in exchange rates are reflected in product prices. Some goods, especially highly standardized ones sold in highly competitive markets (wheat, textiles), reflect exchange rate changes immediately. Producers of other sorts of goods, especially more specialized and differentiated products in which quality, service, customer loyalty – things related to market share – matter, are more reluctant to vary prices. This has been observed in such goods as transport equipment (think of the non-responsiveness of the prices of Japanese cars in the US to the dollar-yen exchange rate), commercial aircraft, machine tools, and the like. An excellent survey is Goldberg and Knetter 1997.

[20] I recognize that there are somewhat heroic assumptions underlying these assertions, and do not defend them here. Certainly currency volatility is less costly when it is mean-reverting, and forward contracts are valuable, uncertainty is simply a part of doing business, some firms make money on currency fluctuations, and limited pass-through cuts both ways (to mention a few of the most common objections). However, relatively simple models with some price stickiness can easily provide the results I assert. In any case, whether these effects are present, and are politically relevant, is an empirical question – one which I attempt to assess here.

There is one category of firms that can be torn in confusing ways by this tradeoff, manufactured exporters. In general, exporters favor maintaining the exchange rate as an active policy instrument. The exporters and import competers most sensitive to nominal exchange rate levels are those whose product prices are more or less fully passed through, typically standardized products – commodities, clothing, footwear, steel. But the impact of the level of the exchange rate is mitigated in the case of industries with little pass-through; an appreciation does not cause an analogous rise in the (foreign-currency) price of exports, nor does a depreciation significantly increase (domestic-currency) export prices. In these instances, the exchange risk is carried by the export-producer, so that currency volatility can be quite costly. A common example is that of automobiles, which are priced to local market conditions. If the yen appreciates against the DM, studies find, Japanese car exporters hold their German prices steady, out of fear that price increases would lose them market share. For this reason, exporters of specialized, product-differentiated manufactured goods – typically the most important European exporters – are less likely to want a weak exchange rate and more likely to value currency stability.

To summarize, then, I expect division between economic actors who support and oppose fixed rates for *real* rather than monetary reasons. In favor will be cross-border investors and financial actors, as well as export-competing producers of specialized manufactured goods. Against fixed rates – in favor of maintaining the national ability to depreciate the currency – will be producers of standardized import-competing and export goods. This reflects the tradeoff mentioned before, between stability and a predictable currency value, on the one hand, and the flexibility to alter currency values to facilitate competition with foreigners, on the other.

This masks much nuance and complexity, of course. There are firms for which the trade-off between reduced currency volatility and the loss of exchange rate autonomy is not clear, either because both are important or because neither is important. And I have (largely for the sake of brevity) ignored the interests of nontradable producers, such as public sector employees and small businesses, which typically favor maintaining monetary policy autonomy rather than sacrificing it to stabilize currency values which have little direct impact on them.

The principal argument of this study, then, is that exchange rate policy has prominent enough real economic and distributional effects to matter politically. Specifically, principal supporters of fixing European exchange rates were firms and industries with major cross-border investments, markets, or other business interests; while principal opponents were producers of standardized import-competing and export products. In national political debates, this sometimes took the form of allegations that MI was a tool of big business, or that opposition to MI came from more backward and uncompetitive sectors. I expect the support of the former for fixing exchange rates to be relatively constant, while the opposition of the latter should increase at times of a real appreciation and associated competitive difficulties for national producers.[21] This distributional

[21] Again, all this ignores much detail. One of the more interesting features of the past few years is that in the runup to EMU import competers in the likely core have increasingly come to insist on including the periphery – especially Italy and Spain – in order to eliminate the possibility of such "competitive depreciations" as those of 1992-1993. Perhaps most striking in this regard is the position of import-competing French industries, which went from opponents of the EMS in the early 1980s to strong suppporters of a broad EMU today. In the former

aspect of European currency politics has been absent in most analyses of European monetary integration, and contrasts with the general focus on the anti-inflationary effects of the thirty-year process of currency unification.[22]

My focus on special-interest considerations is not meant to deny the potential importance of other factors, but to redress an imbalance in the scholarly literature. While special interests are a natural starting point for most analyses of economic policy, this has not been the case for exchange rate policy. In fact, many analysts are skeptical of the view that there are constituencies for and against currency policy. Prominent macroeconomists believe that the distributional effects of currency regimes are unclear, small, or both, while Many political scientists believe that substantial collective action problems preclude serious politicking over currency values.[23] Both positions are open to challenge. Economically, almost every attempt to fix exchange rates involves substantial real appreciations, with equally substantial distributional implications. Even in the steady state, it is not obvious that volatility is distributionally neutral, both in

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period, EMS membership ruled out a French devaluation and led to a real appreciation; in the latter period, Italian and Spanish non-membership in EMU would have allowed them to depreciate against the Franc, again causing a real appreciation of the French currency. The result was that potentially affected firms switched from opposition to French membership in the EMS to strong support for the inclusion of the entire EU in EMU.

[22] For some exceptions, see the essays in Jones et al., editors 1998, Pisani-Ferry et al. 1997, and Hefeker 1997.

[23] See Giovannini 1993 for an example of the former, and Gowa 1988 for a classic statement of the latter.

general and with regard to exchange rates; at the very least, this is a hypothesis for which clear evidence has not yet been presented.[24] Politically, the extraordinary political prominence of exchange rates in history and today seems to call the assertion into question. From the 1860s until the 1930s, the gold standard was a major, and mass, political issue in most countries; and since 1980 exchange rates have been domestic "high politics" in many developed and developing countries as well.[25]

The principal explanatory variables. Attempts to evaluate arguments based on the distributional effects of exchange rate policies are hampered by the general unobservability of special-interest politics. In this paper, I use two variables that can be interpreted as affecting policy by way of their differentiated and distributionally relevant effects on particularistic groups. The first attempts to pick up the interests of manufacturers with significant intra-European export interests; the second tries to capture the interests of those facing significant import and export competition. Neither is unproblematic, but there are no readily available superior alternatives. The two variables are as follows:

1. *Exports to the German currency bloc*. As discussed above, I anticipate that producers of specialized manufactured products will be concerned to keep exchange rates stable. Of course, this is countered by concern for the level of

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[24] An interesting perspective on the potential costs – including distributional effects – of volatility is Inter-American Development Bank 1995. For arguments that currency volatility does in fact matter see Hefeker 1997 and Neumeyer 1995.

[25] Frieden 1994 and 1997b discuss the issue in historical and contemporary perspective.

the real exchange rate. Keeping this in mind, manufacturers where pricing to market is common tend to oppose currency volatility. This should be of special importance in European monetary politics to the extent that manufactured exports to Germany are significant. Here I use exports to the DM bloc, defined as Germany plus Benelux. The higher the share of manufactured exports to the DM zone as a share of GDP, the more support I expect for stabilizing the currency with the DM. The use of the DM bloc as the relevant region is unimportant: overall manufactured exports to Germany alone, or to the broad EU, as a share of GDP are highly correlated with this, and their use yields nearly identical results. Variable name: *manufactured exports to DM zone as percent of GDP (-)*. Expected sign: negative. (A negative sign implies that a higher value of the variable is associated with less devaluation and less volatility. All variables are described in detail in the Appendix.)

2. *Import competition*. On the other hand, some of the most significant pressures to depreciate (or not to join the snake or ERM) came from producers that stood to lose from their government's forgoing the ability to change the exchange rate to affect "competitiveness." There is no ready way to measure concern about competitive pressures, but one reasonable proxy is the rate of change in import and export competition. That is, where a country's producers are experiencing a surge in imports or a drop in exports, they are more likely to be interested in a depreciation, and less supportive of fixing the exchange rate. This implies that a deterioration in the trade balance should increase support for depreciation and reduce support for a fixed rate. This is analogous to the

common observation that increased import competition tends to increase protectionist pressures from affected industries.[26]

In using this measure, I control for the state of the current account, for important reasons. It would not be surprising if large current account deficits were to be associated with depreciations, for they put direct currency-market pressure on the exchange rate. However, what I use here is the impact of changes in the trade balance *controlling for the state of the current account*. This measure can only plausibly be picking up particular sensitivity to trade relations, the state of imports and exports. In other words, this variable is *not* simply the economic impact of a trade deficit, for a trade deficit that does not lead to a current account deficit does *not* put pressure on the currency in foreign exchange markets. It thus seems reasonable to regard it as an indicator of the

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[26] It has analogous weaknesses. In fact, if producers can gain from a depreciation, or from trade protection, they should support these no matter how much import competition they face (indeed, even in the absence of import competition). Nonetheless, the virtually universal observation is that support for protection/depreciation is strongly affected by import competition. A variety of explanations for this have been proposed, but serious consideration of these is well beyond the scope of this paper.

position of national import-competers and export-competers.[27] The greater the deterioration in the trade balance (again, controlling for the current account balance), the greater the pressures to depreciate. Here I use the change from the previous year in the trade balance as a share of GDP, so that a positive (negative) number is an improvement (deterioration). Variable name: *Change in trade balance as percent of GDP (-).* Expected sign: negative.

The two proxies for private interests I use here are not as close as we might like to what we want to measure, the lobbying behavior of private interests. Nor do they cover all the private interests I argue should matter, especially those of cross-border investors. Better proxies, however, are difficult even to identify, let alone obtain data on. The extent of intra-European trade is probably a reasonable approximation of the importance of stabilizing exchange rates for traders and export-oriented producers. But this ignores the interests of cross-border financial and investing interests – for the simple reason that data on them is essentially unavailable. One might imagine that foreign direct investment (FDI) among European countries would be easy to obtain. In fact, unfortunately, this measure is only available for a few countries before the early 1980s, and

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[27] Of course, the trade balance picks up exports as well, and this is also a measure of pressures from exporters for a "competitive depreciation." In a sense, the inclusion of overall levels of exports in the previous measure, and consideration of changes in net imports in this measure, provide a contrast between a structural or secular trend in manufactured exports, on the one hand; and year-to-year surges in net imports. It seems legitimate to presume, at least as a first cut, that these are reasonable proxies for specialized exporting and import/export-competing interests, respectively.

even then with much error. When the statistical analysis is performed with FDI data, over half of the observations have to be omitted, and the omitted countries are biased toward Southern Europe. It is thus not clear that these results (which are not reported here but which tend to be similar to those for manufactured exports) are valid. The FDI measures are in any case correlated (correlation coefficient of .54) with the manufactured export figures. It is, by the same token, extremely difficult to come up with reasonable proxies for private-sector concern about the ability to use the exchange rate to affect competitiveness. The strategy used here, to look at increased net imports as an indicator of how much competition producers face, has many flaws, but seems better than available alternatives. All in all, the two measures used are plausible, if imperfect, indicators of important private sector interests in currency policy. In the absence of other indicators that might be used, they constitute a reasonable first cut.

Alternative explanatory variables. As mentioned above, the principal alternative perspective emphasizes currency pegs as anti-inflationary commitment mechanisms; some attention is still paid to Optimal Currency Area theory. The variables I use to evaluate these arguments are as follows.

1. *Credibility concerns.* It is hard to imagine any clean measure of the demand for anti-inflationary credibility. Of course, high inflation implies a greater need for credibility, but it also implies a higher cost of achieving it. In addition, high inflation leads quite directly to currency depreciation when the authorities are not using the exchange rate as an anti-inflationary commitment device, which invalidates any simple expectation that high inflation should be generally associated with currency stability. What we would really like is something that reflects government need for, or use of, currency policy for credibility purposes, but there is no simple way of assessing this. Here I use a series of measures all of which could plausibly associated with government desires to enhance anti-

inflationary credibility. None is a direct measure of the demand for credibility, but all are potentially related to it.

A. Central bank independence. Inasmuch as the independence of the central bank is associated with lower inflation, this should reduce the government's need for the anti-inflationary credibility that a currency peg is purported to provide, and thus the likelihood of such a currency link. A more dependent central bank, on the other hand, should increase the demand for credibility and thus the likelihood of a currency peg. The measure used is the standard one created by a group of scholars in an influential study.[28] Variable name: *central bank independence (+).* Expected sign: positive.

B. Partisan effects. To the extent that the Left is more inflation prone than the Right, we expect the Left to have a greater need for the sort of commitment technology that a currency link is expected to provide. So the further Left is a government, the more likely is it to choose the DM currency peg. The variable used here measures the partisan (Left-Right) nature of the cabinet in power; parties are coded on a widely accepted scale and weighted according to their importance in the cabinet. In this scale, lower numbers are more to the Left. (Alternate measures of the legislative center of gravity, or the government's ideology, which use similar scales, yield nearly identical results.) Variable name: *cabinet center of gravity (+)*. Expected sign: positive.

C. Government instability. It is a commonplace of macroeconomic political economy that less stable and/or more fragmented governments are particularly in need of monetary-policy credibility. So the more unstable and fragmented are governments, the more likely they should be to choose the DM link. I use two measures, which are not closely related in institutional terms. The

[28] Cukierman, Webb, and Neyapti 1992.

first is the share of all legislative seats held by the governing coalition, which indicates roughly the security of the government in office. (A measure that uses share of all votes gives the same results.) The bigger this seat share, the more stable the government, the less likely it is to need the currency as a commitment mechanism, and the less likely is a peg. The second measure is the number of parties in government, which gives a rough sense of the government's stability; more parties in government should increase the need for credibility, and thus the propensity to link to the DM.[29] Variable names: *Percent of seats held by government parties, number of government parties (+, -)*. Expected signs: positive, negative.

None of these variables is, as noted, a direct measure of the demand for credibility. But there is almost certainly no such direct measure, and all of the variables employed here have been used to evaluate credibility-based arguments in other studies. They do seem plausible proxies for a government's desire to use exchange rate policy for anti-inflationary credibility purposes.

2. *Similarity of economic structure.* In the OCA framework the more similar are national economies, the less they need independent monetary

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[29] As any political scientist knows, this last measure has major problems. The number of parties in government is the direct result of the electoral system and will generally increase with proportionality or district magnitude. And inasmuch as we know that small open economies are generally much more likely to have the "purest" proportional representation schemes, this measure may well be closely related to openness. In fact the correlation between the number of parties in government and manufactured exports to the EU as a share of GDP is .18 so that the relationship is present but not particularly strong.

policies. Here I use the correlation of a nation's industrial structure with that of Germany, which should indicate how different the exogenous shocks affecting the two countries are likely to be. Other related measures might be used. The correlation of a nation's trade structure with that of Germany has attractions (as it is more directly related to pressures on the exchange rate), but it risks endogeneity, as trade structure is much more likely to be affected by exchange rate policy than overall industrial structure. In any case, the two measures are highly correlated and give nearly identical results. Other measures of optimal currency area criteria tend to give rise to very similar categorizations of countries.[30] In the case of the measure of industrial structure, the greater the correlation with Germany the more likely the country is, by optimal currency area criteria, to maintain a fixed exchange rate with the Deutsche mark. Variable name: *industrial correlation with Germany (-)*. Expected sign: negative.

Control variables. It is important to control for other factors that could be expected to affect exchange rate movements. Foremost among these are macroeconomic conditions; these, and a couple of other common explanations of currency movements, are included as controls.

Macroeconomic conditions. Developments in national macroeconomic performance affect the propensity of a currency to depreciate. While the arguments for depreciation in each of these instances are not unproblematic, generally speaking, particularly difficult years should be associated with a weaker currency.

A. Growth rates. Recessions may increase the propensity of monetary authorities to use depreciation to stimulate the economy. This depends on the tradeoff between the income and substitution effects of a depreciation, but the

[30] For example, Gros 1996.

consensus is that depreciations can be stimulative in the short run. Variable name: *lagged growth rate of GDP (-)*. Expected sign: negative (i.e. the stronger GDP growth, the less depreciation).

B. Unemployment. This can be expected to be significant for the same reason as the overall rate of economic growth. Variable name: *lagged unemployment (+)*. Expected sign: positive.

C. The current account. The weaker a country's current account, the more downward pressure there will be on its currency and the likelier a depreciation. Note that this is the more or less purely economic effect mentioned above, for which I control to assess the independent impact of trends in imports and exports. Variable name: *lagged current account balance as percent of GDP (-)*. Expected sign: negative.

D. The terms of trade. The difference between movements in the country's terms of trade and those of Germany should affect the currency. The more the country's terms of trade deteriorate relative to Germany, the harder it should be to sustain a fixed exchange rate. A positive number here means that the terms of trade improved in the year relative to Germany's, while a negative number means they deteriorated. This implies that increases in the measure should make it easier to sustain the currency peg, and vice versa. Variable name: *difference in terms of trade relative to Germany (-)*. Expected sign: negative.

As can be seen from the variable names, all these are lagged one year except for the terms of trade figure. This is because policy can be expected to respond to such macroeconomic trends only with something of a delay, except for the terms of trade which is a price-based measure and thus should have nearly immediate effect. In any case, using simultaneous (lagged, in the case of the terms of trade) data makes no difference to the results. The current account

is expressed as a percentage of GDP, unemployment is share of the labor force, GDP growth is a rate of (real) change, and the terms of trade are also a rate of change; all are expressed in percentage points.

Other controls. Three other control variables are included, as they are commonly mentioned in the literature.

A. Membership in the snake or EMS. Of course this is endogenous, but many believe that the snake and EMS as international (regional) institutions may have had a substantial independent impact on government behavior. This is a dummy variable that takes the value 1 if the country was a member of one of the two exchange rate mechanisms, 0 otherwise. Variable name: *member of snake or ERM (-)*. Expected sign: negative.

B. Election timing. In the spirit of the political business cycle, governments may be expected to manipulate the currency in the runup to an election. What in fact they do depends on the relative desirability of the stimulative effect of depreciation, and the income effect of an appreciation. However, the traditional view of inflation and depreciation as similar in source and effect would lead us to expect elections to be associated with depreciations. The measure here is simply whether an election occurred in the year in question, which has its problems but is probably adequate for present purposes. Variable name: *Election (+)*. Expected sign: positive.

C. Capital controls. Controls on capital movements should facilitate the maintenance of a fixed exchange rate. Of course, countries whose exchange rates face market skepticism for other reasons – such as macroeconomic fundamentals or political instability – are more likely to impose capital controls in the first place, so it may not be clear what to expect. However, in general it seems reasonable to expect countries with capital controls to be less likely to depreciate, all else equal. The measure used is a composite created by Dennis

Quinn and drawn from the IMF's categorization of restrictions on capital movements. Variable name: *capital controls (-)*. Expected sign: negative.

Table 2 presents simple descriptive statistics, showing the evolution of the means of all dependent and explanatory variables over the course of the period, divided into four sub-periods (snake, early EMS, late EMS, EMU). Table 3 presents a correlation matrix, which demonstrates several important things. First, the two dependent variables are very closely related (.82 correlation). Second, several alternate measures of similar factors are closely related – for example, exports to the DM zone are highly correlated (.91) with exports to the EU more broadly. Third, where available the correlation between FDI and exports among the same countries is relatively high (.50 to .53). Fourth, there are very few correlations of note among explanatory variables – none above .5, and most substantially below that. This is of particular importance because it would be reasonable to worry about the collinearity of many of the macroeconomic and monetary variables. It is reassuring to know that these problems are minimal.

Analyzing European monetary politics: A statistical assessment

The statistical analysis uses the two measures in Table 1 as dependent variables. The annual depreciation rate is a better indicator of broad trends of currency policy; the volatility measure picks up both overall depreciations and intra-year currency fluctuations. In any case the two are strongly correlated and yield similar results; where results differ this in itself is interesting, as I discuss below. I look at all current EU members except Germany, the anchor country, and Luxembourg, which shared a currency with Belgium. I also include Norway, as it often attempted to stabilize its currency against the DM and there would

have been little *ex ante* justification for excluding it at the outset of the sample. The time period runs from the beginning of 1973 to the end of 1994, with annual observations. I stop the examination in 1995 because at that point the EU was clearly in the run-up to EMU, whose dynamic was quite different from that of the attempts to fix exchange rates that had come before. The explanatory variables are as described above, and in more detail in the Appendix. The regressions using these panel data are all corrected for serial autocorrelation and heteroskedasticity, and panel corrected standard errors are presented.[31]

The results can be seen in Tables 4 and 5. The first column of each table presents the full model, all the variables discussed above. The second model reanalyzes the data, dropping the explanatory variables that do not come close to statistical significance. In the third model, variables from the second model that now fail to reach statistical significance are dropped.

It can readily be seen that the results are quite stable across specifications, as are the coefficients. Starting with Table 4, in which the left hand side variable is the annual depreciation rate, six explanatory variables are significant in all three models; only two other variables even come close to reaching significance in one or two specifications.

The three principal macroeconomic control variables are clearly important. The state of the current account, GDP growth, and the terms of trade (relative to Germany's) all have the expected signs and clearly had a powerful impact on exchange rates.

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[31] Data analysis was carried out on Stata 5.0 using the (Beck and Katz-based) corrections for serial autocorrelation and panel heteroskedasticity included in the Stata package.

The proxies for the importance of real, as opposed to monetary, factors, and of private interests are statistically significant and in the expected direction. First, the larger the country's manufactured exports to the DM zone as a share of GDP, the less likely it was to depreciate. In other words, countries more commercially integrated with Germany were more likely to fix their currencies against that of Germany. This finding is consistent with the idea that export-oriented manufacturers, and multinational firms whose interests tend to track those of manufactured exporters, value currency stability. Second, deterioration in the trade balance (controlling for the current account balance), such as would be caused by an import surge, is strongly associated with depreciation. In other words, the more net import competition a country faces, the less likely the country is to fix its currency against the Deutsche mark. This finding is consistent with the idea the import and export competers faced with increased foreign competition press for a depreciation; and, more generally, with the argument that currency policy was made with real considerations – its impact on trade and investment – strongly in mind.

The proxies used here to attempt to capture anti-inflationary credibility or optimal currency area motivations for currency pegs were not significant in any specification. None of the measures associated with credibility concerns had any impact on the propensity to hold to a currency peg: neither the partisan composition of government, the two measures of general government strength or stability (the government's share of all seats and the number of parties in government), nor central bank independence. The correlation of national industrial structures with Germany's, the proxy for OCA status, is not significant.

The other factors considered yielded mixed results at best. There is some evidence that membership in the snake or ERM was associated with more stability against the DM, as expected, but this variable does not reach statistical

significance.[32] There is little support for the notion that governments were more prone to depreciate in election years, as the results are not statistically significant. One variable is clearly significant but in the opposite direction to that usually expected. Capital controls, far from helping sustain the exchange rate against the DM, are associated with more depreciation. There is a clear problem of simultaneity here, though, as countries facing attacks on their currencies are more likely to impose capital controls.

Table 5 presents results of the same sort of regression analysis using the coefficient of variation of the nominal exchange rate as the dependent variable.[33] Results for the private-interest variables and macroeconomic controls are essentially as before: more manufactured exports to the DM zone, improvements in the trade balance, faster GDP growth, and a stronger current account, are all associated with reduced volatility. Evolution in the terms of trade is significant in only one specification. Most of the other variables are as before: elections and government strength and stability are insignificant; capital controls is significant in a direction opposite to that expected. So far the results are essentially the same as in the previous specification.

There are three differences between these results and those having to do with the depreciation rate; these differences have mixed implications for credibility-related perspectives. The partisan composition of government matters

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[32] However, the snake/ERM variable is mildly correlated (.39) with manufactured exports so that there may be some problems of collinearity.

[33] In the regression, unlike in Table 1, the relevant time period is a year; so this is the standard deviation of a currency's value (measured monthly) over its annual mean value.

in the way generally anticipated by credibility-based arguments: the more left-wing the government, the less volatile the currency. But central bank independence does not: it is associated with less short-term volatility. In addition, snake/EMS membership is also associated with less volatility. The results imply that these three factors are not strong enough to affect longer-term trends in currency values – the depreciation rate – but they do reduce currency volatility. Left-wing governments do use a currency peg more than right-wing governments for short-term purposes; an independent central bank can stabilize the exchange rate in the short run more effectively than a dependent one, and membership in the snake or EMS increased national ability to stabilize currencies. Again, it should be noted that these variables reduce short-term *volatility* but not the propensity to depreciate itself; and that they do not unambiguously support OCA or credibility-based arguments.

The substantive interpretation of most of the coefficients in the regressions is relatively straightforward. Those having to do with the average annual depreciation rate are easier to interpret than the coefficient of variation. Looking at Table 4, column 3, the variables expressed as percentage points (of GDP or as rates of change) are easily understood. One percentage point improvements in the GDP growth rate, in the current account as a share of GDP, and in the terms of trade relative to Germany are associated with .672, .394, and .378 percentage point reductions in the currency's annual depreciation rate against the DM. Similarly, a one percentage point increase in manufactured exports to the DM zone as a share of GDP and a one percentage point improvement in the trade balance is associated with respective .255 and .547 percentage point reductions in the rate of depreciation. These are all quite appreciable numbers.

Increasing capital controls by one point on the 15-point scale leads to an increase in the depreciation rate of 1.084 percent. This means little in and of itself; one way of seeing it is that a three-point difference, roughly equivalent to that between Norway and Greece, increases the depreciation rate by 3.252 percent a year.

The impact of explanatory variables on the coefficient of variation cannot be assessed so directly. A sense of their importance can be gotten by seeing how a one standard deviation change in explanatory variables (holding all others at their means) affects the volatility measure. By this measure, for example, a one standard deviation increase in the lagged GDP growth rate or the lagged current account is associated with a reduction in the coefficient of variation of 11.7 and 16.3 percent, respectively. An increase of one standard deviation in manufactured exports to the DM zone or the trade balance leads to 17.1 and 14.1 percent reductions in volatility, while such an increase in central bank independence is associated with a 15.1 percent declines in the coefficient of variation. On the other hand, one standard deviation's move to the right of the cabinet center of gravity, or increase in capital controls, are associated with 13.6 and 14.8 percent increases in volatility.

These results are not generally supportive of credibility-oriented or OCA explanations of European currency policies. Only one significant result goes in the direction expected by an argument based on the credibility-enhancing effects of a fixed exchange rate: Left governments have less volatile exchange rates in the short run. But this applies only to month-to-month volatility, not to the overall longer-term stance of currency policy. It is extremely weak evidence, especially as the central bank independence variable is just as strongly significant, but in the opposite direction. To be sure, the difficulty of measuring the demand for anti-inflationary credibility implies that this evidence is not definitive.

Nonetheless, while credibility motivations cannot be excluded, it is difficult to see any support for them here. It might also be noted that the data used here are not well suited to the assessment of the impact of elections on policy, as each observation is a calendar year; analyses of the data using a hazard model yields generally ambiguous results, although there is some mild evidence of an electoral exchange rate cycle, in which politicians delay devaluations until after elections. This evidence is at best tentative, however.

The principal results reported here are quite robust. Removing outliers – the Netherlands and Austria on one end, Greece and Portugal on the other – leaves the results essentially intact. This does reduce the significance of a couple of variables, which is not surprising as it involves removing nearly one-third of all observations, but the major explanatory variables remain important. When countries are omitted one by one, results are undisturbed. Adding year fixed effects only strengthens the results; adding country fixed effects has little impact, although (not surprisingly) it reduces the size of some coefficients.

Many versions of the empirical models were assessed, with no impact on the principal results, those pertaining to the proxies for real sectoral considerations. Manufactured exports to the EU as a whole (as opposed to only to the DM bloc) gives essentially identical results. Inclusion of the fiscal deficit (lagged or simultaneous) serves to make most other variables more significant and their coefficients larger.[34] The fiscal deficit is itself significant and associated with more depreciation. Some scholars suggest a relationship between union

[34] Not surprisingly, it does make the current account insignificant; it also makes central bank independence significant (but, again, not in the direction anticipated by credibility-based accounts).

density and better macroeconomic outcomes.[35] Data on union membership as share of the labor force are however unavailable for Ireland, Spain, and Portugal, and unavailable elsewhere after 1989 or 1990. In any event, when it is included (with almost half the observations lost) it is not significant and does not change the other variables in appreciable ways. Alternative proxies for credibility factors are hard to come up with. When past inflation is included – in the form of a three-year moving average of the Consumer Price Index, lagged one year – it is associated with depreciation and volatility, running directly against the expected credibility argument, although this result is not statistically significant (and it does not affect the impact of the principal explanatory variables). Such a finding is not be particularly surprising, as discussed above: currencies from countries with high inflation typically depreciate against other currencies. In other words, the direct impact of high inflation on the exchange rate dominates whatever effect it might have on the demand for credibility. In any case, we have a high degree of confidence in the principal results – especially concerning the two proxies for private-sector interests and concerning the macroeconomic controls.

The results can be summarized as follows:

1. Proxies for private-sector interests were significant and important, and consistent with the argument that regionally-oriented producers prefer a fixed currency, while import- and export-competers prefer flexibility. In other words, real factors were crucial. The more important were manufactured exports to the DM zone (Germany and Benelux), the slower the depreciation rate and the less volatile the currency; and an increase in net import competition, controlling for the current account, increased the depreciation rate and volatility significantly.

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[35] Calmfors and Drifill 1988.

2. Macroeconomic control variables all had the expected effects. Such fundamentals as the current account balance, GDP growth, and the terms of trade relative to the anchor country all reduced the depreciation rate and currency volatility substantially.

3. Variables intended to capture inclinations to fix currencies to gain anti-inflationary credibility were almost never significant. The only exception was that left-wing parties were more likely to hold the currency stable in the short run, but there was no partisan difference in depreciation rates. A measure of suitability for membership in an Optimal Currency Area was never significant.

The results are in line with my expectations about the role of private interests. The level of commercial integration with Germany led to a more fixed exchange rate; increases in net import competition spurred depreciation. These two results provide a rough evaluation of the impact of private distributional interests – in the event, of exporters of complex manufactures and of import-competers – on exchange rate policy.

Conclusions

This study tends to confirm the importance of real factors, and sectoral interests, in the course of European monetary integration. This is my interpretation of the finding that higher levels of manufactured exports to Germany and Benelux, and improvements in the trade balance are both associated with more fixed exchange rates against the DM. The empirical analysis also tends to confirm the importance of macroeconomic conditions. Neither arguments based on the alleged credibility-enhancing properties of currency pegs, nor those based on Optimal Currency Area criteria, find appreciable support.

The results are evidence for the relevance to the making of exchange rate policy of distributionally motivated private interests, driven by the real effects of

currency policy on trade and investment. Specifically, exporters of sophisticated manufactures and cross-border investors seem to have supported stable exchange rates, while import- and export-competers favored depreciation. There is little or no evidence of the use of the exchange rate as a commitment mechanism for governments lacking in anti-inflationary credibility, or of the relevance of Optimal Currency Area considerations to exchange rate policy choice. Those attempting to explain currency arrangements in Europe and elsewhere – dollarization in Latin America and Euroization in Central and Eastern Europe, perhaps most notably – would be wise to consider the potential importance of such distributional consderations for the future of national exchange rate policies.

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TABLE 1
European currencies during the snake and the EMS
A. Average annual percentage depreciation of nominal exchange rates against the Deutsche Mark, select periods

	1973-78	1979-83	1984-89	1990-94
Hard Currencies				
Netherlands	1.14	0.77	0.01	-0.13
Belgium	2.36	4.24	1.01	-0.48
Denmark	4.59	4.37	1.71	0.16
Intermediate Currencies				
France	6.53	5.02	2.31	0.01
Ireland	12.90	3.02	3.49	1.96
Soft Currencies				
United Kingdom	12.90	0.89	6.68	2.57
Italy	17.28	5.26	4.08	6.21
Spain	12.35	6.54	3.51	5.16
Greece	13.24	13.02	18.75	10.23
Portugal	20.83	14.16	10.64	2.88
Non-EU Members				
Austria	0.12	-0.71	-0.12	0.19
Norway	4.92	1.08	6.61	2.29
Finland	8.83	-0.32	3.06	6.83
Sweden	8.41	3.83	5.35	6.18
AVERAGE	9.03	4.37	4.79	3.15

B. Coefficients of variation of nominal exchange rates against the Deutsche Mark

	1973-78	1979-83	1984-89	1990-94
Hard Currencies				
Netherlands	2.15	1.18	0.31	0.43
Belgium	2.80	9.84	1.55	1.17
Denmark	7.20	7.99	2.85	1.57
Intermediate Currencies				
France	11.00	10.74	4.59	1.00
Ireland	20.47	6.75	7.02	4.83
Soft Currencies				
U.K.	20.47	7.43	10.91	8.11
Italy	24.02	10.64	6.63	12.56
Spain	23.14	16.31	7.38	11.65
Greece	18.43	18.98	26.54	14.66
Portugal	35.65	21.75	17.57	7.31
Non-EU Members				
Austria	1.63	1.48	0.23	0.23
Norway	8.28	4.89	11.40	5.00
Finland	14.24	5.63	6.06	16.08
Sweden	12.54	12.20	8.23	13.00
AVERAGE	14.43	9.70	7.95	6.97

TABLE 2

Average of all countries across periods

	1973-1978	1979-1983	1984-1989	1990-1994
Average Depreciation vs. DM	9.034	4.963	4.227	3.147
Coefficient of Variation vs. DM	.033	.027	.019	.019
Industrial Correlation	.723	.745	.750	.685
Lagged GDP Growth	3.671	2.240	2.731	1.651
Lagged Unemployment (as % of labor force)	3.969	6.681	9.170	8.810
Lagged Current Account as a % of GDP	-1.917	-2.446	-.762	-.196
Difference in Terms of Trade	.198	1.833	-.820	.078
Membership of Snake or ERM	.356	.420	.435	.536
Central Bank Independence (0-1, 1 most independent)	.340	.344	.345	.345
Capital Controls (0-15, 15 most controls)	6.030	5.150	4.244	2.207
Cabinet Center of Gravity (1-5, 5 most right wing)	2.788	2.934	3.017	2.873
Election	.286	.357	.298	.271
Number of Government Parties	2.035	1.832	2.100	2.255
Percent of Seats Held by Government Parties	47.628	48.546	49.578	53.252
Manufacturing Exports to DM Zone as a % of GDP	3.479	3.801	4.504	5.063
Manufacturing Exports to EC as a % of GDP	9.155	9.771	11.649	12.042
Trade Balance Change as a Share of GDP (lagged)	.039	.153	.142	.548

TABLE 4

Results

Dependent Variable = Average Depreciation Rate

	(1)	(2)	(3)
Constant	3.660	3.305**	3.633**
	(3.703)	(1.409)	(1.372)
Lagged Growth Rate of GDP	-0.742**	-0.647**	-0.672**
	(0.208)	(0.203)	(0.203)
Lagged Unemployment	0.029	--------	--------
	(0.111)		
Lagged Current Account	-0.258	-0.393**	-0.394**
Balance as Percent of GDP	(0.177)	(0.180)	(0.179)
Difference in the Terms of	-0.424**	-0.391**	-0.378**
Trade Relative to Germany	(0.092)	(0.093)	(0.093)
Industrial Correlation	- 2.823	--------	--------
with Germany	(4.172)		
Member of Snake or ERM	-0.986	-1.549	-1.486
	(1.115)	(0.957)	(0.950)
Cabinet Center of Gravity	0.660	--------	--------
	(0.675)		
Election	1.258	1.233	--------
	(0.897)	(0.911)	
Percent of Seats Held by	0.042	--------	--------
Government Parties	(0.040)		
Number of Government Parties	-0.379	--------	--------
	(0.374)		
Central Bank Independence	-3.184	--------	--------
	(2.602)		
Capital Controls	0.951**	1.066**	1.084**
	(0.260)	(0.240)	(0.239)
Manufacturing Exports to the DM	-0.289**	-0.257**	-0.255**
Zone as a Percent of GDP	(0.147)	(0.126)	(0.125)
Change in the Trade Balance	-0.740**	-0.541**	-0.547**
as a Percent of GDP	(0.248)	(0.247)	(0.247)
N	278	313	313

TABLE 5

Results

Dependent Variable = Coefficient of Variation

	(1)	(2)	(3)
Constant	2.628**	2.334**	2.304**
	(1.052)	(0.755)	(0.767)
Lagged Growth Rate of GDP	-0.121**	-0.107**	-0.112**
	(0.055)	(0.054)	(0.052)
Lagged Unemployment	-0.011	--------	--------
	(0.031)		
Lagged Current Account	-0.077	-0.110**	-0.118**
as a Percent of GDP	(0.052)	(0.051)	(0.051)
Difference in the Terms of	-0.044*	-0.027	--------
Trade Relative to Germany	(0.025)	(0.025)	
Industrial Correlation	0.278	--------	--------
with Germany	(1.189)		
Member of Snake or ERM	-1.060**	-1.103**	-1.077**
	(0.306)	(0.260)	(0.266)
Cabinet Center of Gravity	0.473**	0.498**	0.516**
	(0.186)	(0.182)	(0.183)
Election	0.269	--------	--------
	0.225)		
Percent of Seats Held by	0.002	--------	--------
Government Parties	(0.012)		
Number of Government Parties	-0.081	--------	--------
	(0.102)		
Central Bank Independence	-2.730**	-2.427**	-2.567**
	(0.765)	(0.784)	(0.777)
Capital Controls	0.100	0.144**	0.139**
	(0.073)	(0.068)	(0.069)
Manufacturing Exports to the	-0.145**	-0.136**	-0.130**
DM Zone as a Percent of GDP	(0.040)	(0.032)	(0.033)
Change in the Trade Balance	-0.188**	-0.144**	-0.149**
as a Percent of GDP	(0.067)	(0.065)	(0.064)
N	278	305	312

NOTES TO TABLES 4 AND 5

1. Standard errors appear in parentheses under the coefficients.

2. * draws attention to coefficients significant at or above the 10% level.
   ** draws attention to coefficients significant at or above the 5% level.

APPENDIX
DEFINITION AND SOURCES OF EXPLANATORY VARIABLES

Lagged Growth Rate of GDP
Growth rate of GDP, lagged one year.
Data for 1971-1979 figures from *Economic Survey of Europe, 1984-1985;* for 1980-1993 from *OECD Historical Studies: 1960-1993*.

Lagged Unemployment
Percentage of the labor force unemployed, lagged one year.
Data taken from OECD *Main Economic Indicators, Historical Studies:Prices, Labor and Wages 1962-1991*, OECD *Economic Outlook* 1995 (volume 58), OECD *Main Economic Indicators, Historical Studies: 1960-1979,* and *Economic Survey of Europe, 1984-1985*.

Lagged Current Account as a % of GDP
Current account balance as a percentage of GDP, lagged one year.
Data from OECD *Economic Outlook*, various years.

Difference in the Terms of Trade Relative to Germany
Percentage point change in the terms of trade over the previous year, relative to Germany's. An increase in this figure signifies an improvement in Germany's terms of trade relative to the country in question.
Data from IMF *International Financial Statistics Yearbook*, 1996.

Industrial Correlation with Germany
Correlation coefficient comparing the percent contribution to GDP of each ISIC 1-digit category and 2-digit categories for manufacturing (ISIC code 3). Because industrial structure changes slowly, the correlation coefficient is calculated for 1970, 1980, and 1990 only.
Data from the OECD's *Industrial Structure Statistics*, various years. Where data were missing from the OECD statistics, data were taken from the UN *Yearbook of Industrial Statistics*, various years.

Member of Snake or ERM
Dichotomous variable = 1 if country is a member of either Snake or ERM, 0 if not.
Data obtained from the *BIS Annual Reports*, various years.

Cabinet
Party composition of the cabinet, weighted by ideological scores using

Center of Gravity a scale constructed by Geoffrey Garrett.
Data through 1991 provided by Geoff Garrett; updated using *European Journal of Political Research* (EJPR 28:277-289, 1995; EJPR 26:241-246, 1994; EJPR 24:419-423, 1993; and miscellaneous from EJPR 1991 and 1992).

Election Number of elections per year (usually 1 or 0).
Data obtained from Mackie, Thomas T. and Richard Rose *International Almanac of Electoral History* (Washington D.C.: Congressional Quarterly, 1991), *National Elections* (various years), and the *European Journal of Political Research* (EJPR 28:277-289, 1995; EJPR 26:241-246, 1994; EJPR 24:419-423, 1993; and miscellaneous from EJPR 1974-1988).

% of Seats Held by Government Parties Percentage of legislative seats won by the government parties in the election at time t, where t denotes the current observation.
Constructed in G. Bingham Powell, Jr. and Guy D. Whitten, "A Cross-National Analysis of Economic Voting," *American Journal of Political Science* 37(2): 391-414, 1993; updated using *European Journal of Political Research*, various years.

Number of Government Parties Number of parties in government.
Constructed in G. Bingham Powell, , Jr. and Guy D. Whitten, "A Cross-National Analysis of Economic Voting," *American Journal of Political Science* 37(2): 391-414, 1993; updated using *European Journal of Political Research*, various years.

Central Bank Independence An index of central bank independence, running from 0 (least independent to 1 (most independent).
Data from Cukierman, Webb and Neyapti (1992)

Capital Controls A measure of capital controls constructed by Dennis Quinn, described in Dennis Quinn, "The Correlates of Change in International Financial Regulation" in *American Political Science Review* 91(3): 531-552, 1997. His 15 point-scale measures "openness;" it is inverted here so that a higher number means more capital controls.
Data obtained from the author.

Manufactured Exports to Value of manufactured (SITC codes 6-8) exports to the Germany, Belgium, Luxembourg and the Netherlands as a percentage of

DM Zone as a % of GDP	GDP. Data supplied by the UN from various years of their *Yearbook of International Trade Statistics*.
Change in the Trade Balance as a % of GDP	Change in the trade balance from the previous year, in percentage terms. Constructed from data for trade balance and GDP in IMF, *International Financial Statistics Yearbook*, various years.