

# EMU: Countries or Regions? Lessons from the EMS Experience

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## Abstract

The future adoption of a single currency among some of the members of the European Union has raised many concerns about the ability of EMU to deal with shocks that are specific to regions or countries. The assumption behind these concerns is that national business cycles in Europe are fairly pronounced and that exchange rates are good stabilizing tools. This paper characterizes regional and national fluctuations within the European Union and it studies how the process of integration and the creation of the EMS has affected these patterns. Our results indicate that national borders have seen their economic significance reduced over time as the process of integration has increased cross-border correlations and reduced within-border comovements.

*JEL classification:* E32; F33; F42

*Keywords:* European Monetary Union; Integration; Regions

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## 1. Introduction

The future adoption of a single currency among some of the members of the European Union has raised many concerns regarding the viability of the future currency union to deal with shocks that are asymmetric (i.e. shocks that are idiosyncratic to either regions or countries). As prices and wages are not flexible enough to compensate for the loss of exchange rates and the degree of labor mobility in Europe is very limited, there is a fear that asymmetric shocks could lead to deep regional recessions and large increases in unemployment which could create a social burden that is politically unacceptable to many governments.<sup>1</sup> These concerns are aggravated by the possibility that the introduction of a single currency and the process of economic integration increase the importance of national business cycles as countries become more specialized and, with the disappearance of exchange rates, they lose a stabilizing tool to mitigate the effects of nation-specific shocks.

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<sup>1</sup> See Eichengreen (1990), Feldstein (1992), Krugman (1993) and Sachs and Sala-i-Martin (1992) for a general discussion of these issues.

This paper analyzes country and regional business cycles in the European Union and how they have evolved over time. The experience of European integration in the last decades, characterized by both increasing trade and monetary policy coordination within the EMS, provides us with an experiment to predict the evolution of regional and national business cycles if monetary union occurs. If the data shows large negative correlations across countries that persist or even grow over time, then the cost of abandoning the current arrangement of independent monetary policies will be large. Our results show that the opposite is true. Correlations within countries have been decreasing over time while cross-country correlations have increased. Our results seem to support the hypothesis that European integration has favored specialization at the regional level and not at the country level and that the discipline of the EMS has helped reduced the national component of business cycles.

Section 2 presents a framework to analyze the data. Section 3 introduces evidence on the patterns of comovements among countries and regions in the European Union and Section 4 concludes.

## 2. Specialization, Economic Policy and Regional Cycles

Regions display cycles where their level of economic activity fluctuates relative to other regions. These asymmetric business cycles have their origin in two different sources. First, differences in the mix of products in which the region specializes lead to asymmetries due to the existence of industry-specific shocks (either to the production function or to demand).<sup>2</sup> Second, differences in economic policy affect regional cycles. In Europe, regions that belong to the same country generally share the same economic policy and, as a result, policy differences are mainly responsible for regional fluctuations at the country level.

There are two main factors that determine the size and shape of regional business cycles:

- The **degree of regional specialization** defines differences in productive structure across regions and countries. For the European Union, there is evidence

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<sup>2</sup> The regional dynamics that industry-specific shocks can create are influenced by the degree of factor mobility. For example, a positive shock to a region can be amplified by flows of firms and workers into the booming area. Evidence from the US and Europe corroborates the importance of this point; regional shocks are larger in size and they tend to be more persistent in the US than in Europe which is possibly due to a higher degree of specialization and more factor mobility in the US than in Europe. See Blanchard and Katz (1992) and Decressin and Fatás (1995) for differences in regional business cycles between US states and European regions.

that the degree of specialization is relatively low in the sense that countries are fairly diversified in their portfolio of industries. For example, Krugman (1993) presents some basic statistics comparing the degree of specialization for Europe and the US to conclude that industries are more concentrated in the US than in Europe.<sup>3</sup> The process of European integration and the adoption of a single currency could change the pattern of industry location, possibly moving it towards a higher degree of specialization at the regional level. The effect that this change will have on the national component of business cycles is, however, ambiguous. This process could lead to an increase in the degree of specialization at the country level, resulting in more pronounced national business cycles but, if specialization occurs at the regional level and the increase in trade results in an increase in the interdependence of regions that belong to different countries, then the effect on national business cycles could go in the opposite direction as the economic meaning of national borders will be vanishing over time.

• **Coordination of economic policy.** Monetary and fiscal policies could be a key factor determining fluctuations in economic activity. An increase in coordination of economic policies, such as the one Europe is experiencing, could have ambiguous effects in national cycles depending on the type of shocks that drive economic fluctuations and the ability of governments to stabilize output. Coordination of economic policies could, in principle, reduce the country-specific component of economic fluctuations. However, the increase in discipline associated to coordination could reduce the ability of local governments to stabilize their economies and could result in an increase in country variability.

In the last decades, Europe has gone through a process of trade integration and increased monetary policy coordination. This experience provides us with a benchmark to predict the future evolution of the European Union if a single currency is adopted. In the next section we address this issue by studying the size and evolution of regional and national business cycles.

### 3. European Regional Business Cycles

We analyze fluctuations at the regional, national and European level by looking at annual data on employment. We use employment, instead of more common measures of economic activity such as income or GDP, for its greater

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<sup>3</sup> One of the most-common used examples to illustrate this point is the automobile industry which is fairly concentrated in the US while being widespread over almost all the European countries.

availability at the regional level and because aggregation of employment across regions or countries does not involve the exchange rate difficulties associated to aggregating values.<sup>4</sup>

We first look at the comovements of business cycles across countries and then move to the regional level for those countries for which data are available.

### *Countries*

We use employment growth rates to approximate business cycles and Table 1 shows contemporaneous correlations of employment growth for each country with the aggregate EU12.<sup>5</sup>

**Table 1. Country Correlations with EU12**

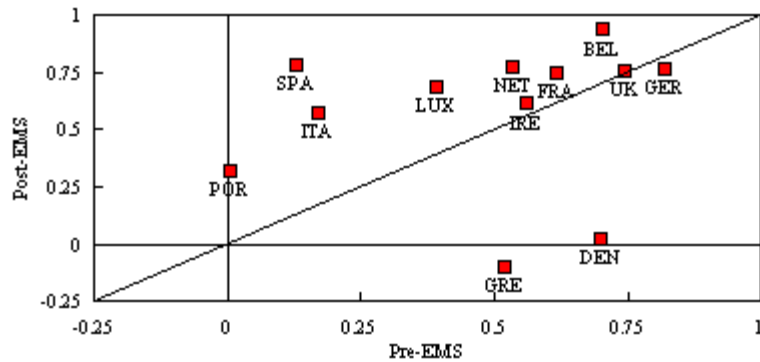
<b>Employment Growth Rates</b>			
Country	1966-92	1966-79	1979-92
Den	0.246	0.557	0.002
Net	0.714	0.279	0.779
Bel	0.839	0.518	0.937
Lux	0.550	0.416	0.686
Ire	0.561	0.557	0.613
Gre	0.058	0.448	-0.101
Por	0.200	0.063	0.320
Ger	0.759	0.731	0.770
Ita	0.328	0.207	0.574
UK	0.728	0.732	0.755
Fra	0.631	0.610	0.752
Spa	0.682	0.089	0.786
<b>Average</b>			
EU12	0.525	0.491	0.574
EU9	0.596	0.581	0.654

<sup>4</sup> A caveat is needed about the properties of the data we use. The data are historical observations which are the result of the institutional features of each of these countries and regions. Therefore, it is only an approximation of the dynamics that would be observed if all or some of these regions were to form a currency union. For example, some of the covariance we observe between regions within the same country is the result of active policy currently done by the monetary authorities of the country. Also we have to take into consideration the possible effects that the current fiscal national systems already have as a cushion to asymmetric shocks at the regional level.

<sup>5</sup> We use the notation EU12 to refer to the 12 members of the European Union as of 1992 and EU9 to refer to the 9 members before Portugal, Spain and Greece joined.

Correlations are, with one exception, all positive. For the full sample, 1966-92, the correlations range from a 0.058 (Greece) to 0.83 in the case of Belgium. The (non-weighted) average correlation is 0.52. Interestingly, the correlations are higher for the oldest members of the European Union (or European Community); the average for EU9 members is 0.59.

**Figure 1. Country Correlations with EU12**



We now address the question of how stable these correlations have been over time. We look at this issue by breaking the sample in 1979 which approximately corresponds with the middle of our sample and marks the beginning of the EMS. Table 1 shows the correlation coefficients for both subsamples and Figure 1 presents the results graphically by comparing the pre-EMS period with the post-EMS period. Our findings show that for most countries, and certainly for the average, there has been an increase in the correlation with the aggregate EU12. The average for all countries increases from 0.49 to 0.57. The increase is larger for the EU9 group (from 0.58 to 0.65) and even larger if one excludes the UK, which is only a late member of the EMS; the resulting increase is more than 30%, from 0.48 to 0.63.<sup>6</sup> This increase in cross-country correlations proves that the national component of business cycles has seen its significance reduced over time. In the next section we perform a similar analysis of regional cycles, at a level below countries.

### *Regions*

We now move our focus to regions and look at the comovements within and across countries. For each region, we calculate the correlation (of the growth rate

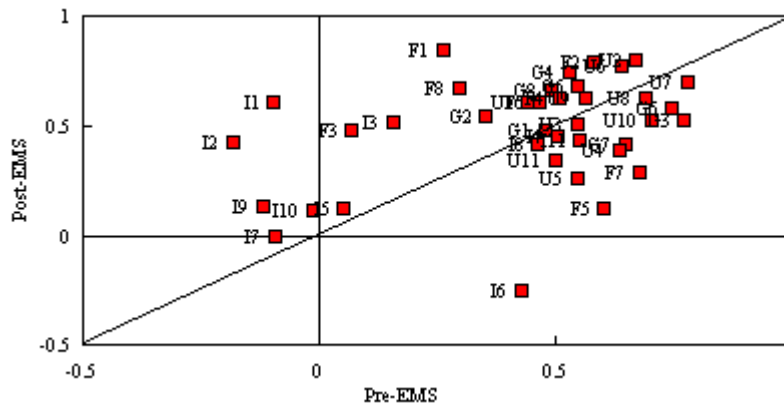
<sup>6</sup> This synchronization of European business cycles is also documented in Artis and Zhang (1995).

of employment) with both the EU12 aggregate and the aggregate of the country to which the region belongs.<sup>7</sup> Data are available for 38 regions of comparable size that belong to four European countries: Germany, Italy, France and the United Kingdom.<sup>8</sup> Table 2 presents this information by averaging the correlation coefficients of regions within the same country. The correlation coefficients for the 38 regions considered are presented graphically in Figures 2 and 3.

**Table 2. Regional Correlations  
Employment Growth Rates**

Average of Regions	1966-92		1966-79		1979-92	
	Country	EU12	Country	EU12	Country	EU12
All (38 regions)	0.638	0.435	0.727	0.431	0.573	0.481
Germany (8 regions)	0.706	0.552	0.736	0.570	0.682	0.583
Italy (11 regions)	0.470	0.208	0.592	0.149	0.283	0.271
France (8 regions)	0.756	0.477	0.788	0.432	0.772	0.557
UK (11 regions)	0.669	0.546	0.809	0.609	0.639	0.563

**Figure 2. Regional Correlations with EU12**



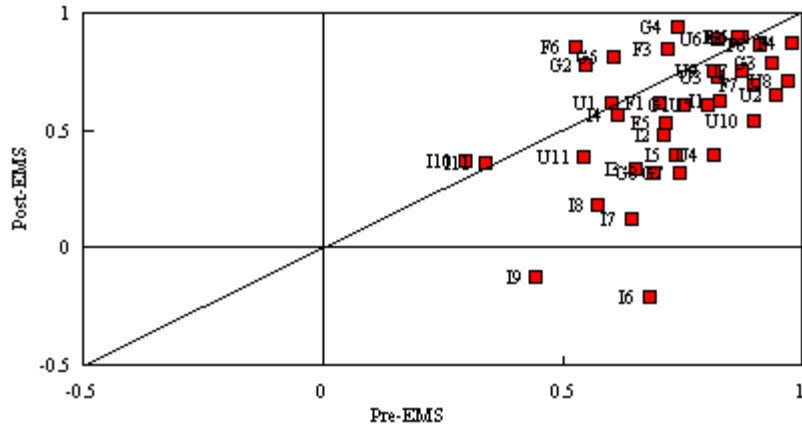
The numbers show again, now at a more disaggregated level, a pattern of increasing correlations with the European aggregate. At the same time, they reveal an opposite pattern with respect to the country aggregate as the correlations of regional to national employment growth rates have decreased for 28 out of the 38 regions considered (and the average has decreased from 0.727 to 0.573). More importantly, in the second half of the sample, the difference between the correlation with EU12 and the correlation with the country aggregate is fairly

<sup>7</sup> In both cases the region considered is excluded from the aggregate to avoid an upper bias in the country correlation.

<sup>8</sup> The location and codes used for all the regions are presented in an appendix.

small for the average of all regions (0.573 versus 0.481) and practically zero for the case of Italy (0.283 versus 0.271).<sup>9</sup>

**Figure 3. Regional Correlations with Country Aggregate**



From the previous analysis we conclude that there has been a general increase in cross-country correlations and a reduction in the correlation among regions that belong to the same country. This pattern is more pronounced for the early members of the European Union and the European Monetary System.

#### 4. Conclusions

In this paper we have studied business cycles asymmetries at the regional and national level for the countries of the European Union. We have measured cross-country and cross-regional correlations in order to characterize the pattern of fluctuations.

Our main finding is that during the period analyzed, 1966-1992, the correlation of regions across national borders has been increasing over time while, at the same time, the cross-regional correlation within countries has decreased. As a result, the economic significance of national borders has been greatly reduced. For example, in the post-EMS period, northern Italian regions display higher correlations with German regions than with southern Italian regions.

<sup>9</sup> Italy is the best example of the change in business cycles from national to European. The average correlation of Italian regions with German regions has increased from -0.09 to 0.23 while the average correlation of Italian regions with other Italian regions has decreased from 0.33 to 0.13. If we were to group Italian and German regions to form two optimum currency areas solely based on these correlations we would surely find that the northern Italian regions are grouped with the German regions and not with their southern counterparts.

These results are probably caused by the combination of two factors. First, European integration and increased trade is creating more cross-border links instead of favoring specialization at the country level. Second, additional coordination in economic policies is increasing cross-country correlations. These results contradict the hypothesis that European integration and the abandoning of exchange rates could result in an increase in the volatility of the national components of business cycles and therefore could increase the cost of monetary unification.

If the process described in this paper continues in the future and national components of business cycles become less and less important, then the current arrangement of individual currencies cannot be considered superior (in terms of dealing with asymmetric shocks) to a single currency area. A similar conclusion can be reached about the need for introducing a fiscal federation in Europe. The only additional benefit of a federal fiscal system is to create cross-country insurance. Our estimates show that these benefits are small and have been decreasing over time.

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## Appendix

**Table A1. Regional Codes**

<b>Country</b>	<b>Code</b>	<b>Region</b>	<b>Country</b>	<b>Code</b>	<b>Region</b>
<b>Germany</b>	G1	Schleswig-Holst./Hamburg	<b>France</b>	F1	Ile de France
	G2	Niedersachsen/Bremen		F2	Bassin Parisien
	G3	Nordrhein-Westfalen		F3	Nord Pas-de-Calais
	G4	Hessen		F4	Est
	G5	Rheinland-Platz/Saarland		F5	Ouest
	G6	Baden-Wurttemberg		F6	Sud-Ouest
	G7	Bayern		F7	Centre-Est
	G8	Berlin		F8	Mediterrane
<b>Italy</b>	I1	Nord-Ovest	<b>UK</b>	U1	North
	I2	Lombardia		U2	York and Humberside
	I3	Nord-Est		U3	East Midlands
	I4	Emilia Romagna		U4	East Anglia
	I5	Centro		U5	South-East
	I6	Lazio		U6	South-West
	I7	Campania		U7	West-Midlands
	I8	Abruzzi-Molise		U8	North-West
	I9	Sud		U9	Wales
	I10	Sicilia		U10	Scotland
	I11	Sardegna		U11	Northern Ireland