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ECONOMIC CONVERGENCE
OF THE CEECS WITH THE EU

Laurence Boone and Mathilde Maurel

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ABSTRACT

Economic Convergence of the CEECs with the EU*

This paper tries to assess how costly it would be for the CEECs to peg their exchange rates to the Euro. We use three types of criteria: institutional (the Maastricht criteria); some measure of real convergence; and the Optimal Currency Area criteria. The institutional criteria seem to be an important impediment to an 'immediate' accession. There is also a lot more to do in terms of real convergence. Finally, the correlations of industrial production and unemployment cycles in the CEECs and the EU, or other reference countries, such as Germany, Greece, France and Portugal point towards a deeper integration of the CEECs with Germany than with the EU. This reflects the old ties Germany had and still has with Eastern countries and the likely key role Germany is going to play in the process of EU enlargement to Eastern Europe.

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NON-TECHNICAL SUMMARY

The first step of the enlargement process has been the sudden opening of CEEC markets to the West since 1991, when the official dismantling of the CMEA occurred. Very rapidly, the geography and composition of trade returned to the patterns they had had in the inter-war period. The respective intensities of trade towards the West and the East were reversed: instead of two-thirds of trade occurring with the former Soviet Union, trade is now essentially directed towards the EU, and especially, towards Germany.

The increasing economic integration of both sides of Europe leads to the question of EU enlargement, that is of the incorporation of the CEECs into the EU as full members. With the selection, made in December 1997 in Luxembourg of the Czech Republic, Hungary, Poland and Slovenia to start the accession negotiations, the enlargement process raises many concerns. One emphasises costs, in as much as membership provides transfers from both the Structural and Cohesion funds, and from the CAP through complex mechanisms of quantity and price support. For Baldwin (1992), the distribution of these funds can be related to GDP per head, and to the share of agriculture in GDP. Since the CEECs rank low on the former and high in the latter, they would receive almost the entire sum available from the Structural Funds, and roughly 14% of the CAP budget. Focusing on the Visegrad States, Anderson and Tyers (1993) estimate that CAP spending would increase by ECU 37.6 billion and Structural Funds spending by ECU 26 billion, if these countries were admitted in year 2000. A more reasonable estimation in Baldwin (1994) puts a total cost of admitting the Visegrad countries at ECU 11 billion, given their low per capita GDP in 1991.

Other important concerns raised by the enlargement are: (i) the credibility of the CEECs commitment to carry out the economic, structural (Competition Policy, Trade Policies) and political reforms necessary to become full members of the EU, once they have entered the EU; and (ii) the issue of the participation of the newcomers in the common decision-making mechanisms. Jürgen Von Hagen (1996) stresses the fact that CAP, for instance, involves the balance of many competing interests. Moreover, it reflects within the member states the conflicts between consumers and producers. The newcomers could make this European political compromise very unstable. Other compromises which could be put into question by the newcomers are: (i) the Maastricht criteria; in the transition period, the policy mix required to achieve the fiscal and nominal criteria for monetary union is likely to slow down economic growth in the transition economies, thus prolonging the reform process required for accession (Coricelli, 1996); (ii) the willingness to abide by the EU objective of the EMU. For Jürgen von Hagen (1996), a realistic

compromise would be that 'the CEE countries could then play the card of a timely accession against the requirement of participation in monetary union'.

In this paper, we try to assess how realistic it would be to play the card of 'an immediate accession against the participation in monetary union'. The gain from such a scenario for the CEECs would be, the transfers of funds from rich to poor members, as it is for some southern countries of the EU, in order to close the wealth gap and accelerate the convergence process. The cost would be the loss of monetary policy as a tool for adjusting negative and asymmetric shocks, and the likely severe recession at the beginning of the process. For the EU, the cost would be the increase in spending. The benefits, besides the political, security, and historical aspects of the enlargement, which are probably at the core of the enlargement process, would stem from more stable inflation rates, interest rates and exchange rates in the whole area, raising the prospect of sustainable economic prosperity. The likely key variables in this deal would then be the exchange rate chosen at the beginning of the process and the level of transfers from the EU to the CEECs. In the case of German reunification, the monetary unification, because of exchange rate overvaluation, has implied an excessively strong recession in the Eastern Länders (and in the rest of the EU), and the very large transfers from the West to the East, which was provided with decreasing political support.

In a first section, we will proceed from an 'institutional' point of view and review how well the CEECs perform with respect to the Maastricht criteria. As this is far from being sufficient to assess a process of real convergence, we will present an evaluation of real convergence in the second part, as measured by GDP and unemployment convergence between the CEECs and the EU. This will be completed in a third section by an analysis of (a)symmetries in the business cycles of these countries. The aim is to ensure, in accordance with Optimal Currency Area (OCA) theory, that implementing a common monetary policy (which is implicit in a pegged exchange rate and explicit in a monetary union) will not be too costly. This will be measured by computing the correlation index of industrial production and unemployment between CEECs and Germany and the EU-15 at different time horizons. The results are then compared with reference cases: Greece and Portugal.

Introduction

The first step of the enlargement process has been the sudden opening of CEEC markets to the West as of 1991, when the official dismantling of the CMEA occurred. Very rapidly, the geography and composition of trade returned to the patterns they had had in the inter-war period. The respective intensities of trade towards the West and the East were reversed: instead of two thirds of trade occuring with the former Soviet Union, trade is now essentially directed towards the EU, and especially, towards Germany.

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In a first section, we will proceed from an « institutional » point of view and review how well the CEECs perform with respect to the Maastricht criteria. As this is far from being sufficient to assess a process of real convergence[1], we will present an evaluation of real convergence in the second part, as measured by GDP and unemployment convergence between the CEECs and the EU. This will be completed in a third section by an analysis of (a)symmetries in the business cycles of these countries.

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[1] As it has been underlined in a number of papers on EMU, see Hénin and Le Pen (1995), and Carré (1995).

Table 1: Performance of the EU-15 with respect to the Maastricht criteria (Source: Andrej Kumar (1996), page 80)

	Price stability Inflation rate [1]			General government Deficit (% of GDP) [2]			General government Gross Debt (% of GDP) [2]			Long-term Nominal interest rates (in %)			Exchange rates in EMS within "normal" bands	ERM participation	Fulfilled all criteria exact interpretation	mild interpretation [2]
	95	96	97	95	96	97	95	96	97	95	96	97	95	95	97	97
Belgium	1,5	2,4	2,2	-4,5	-3,1	-3,5	134,4	132,3	130,0	7,6	6,8	6,8	yes	yes	no	yes
Denmark	2,0	2,4	2,7	-2	-1,3	-0,5	73,6	72,7	70,5	8,3	7,5	7,5	yes	yes	no	yes
Germany	1,8	2,1	2,2	-3,5	-3,5	-3,0	61,0	62,0	61,0	6,9	6,3	6,3	yes	yes	no	yes
Greece	9,2	7,9	7,0	-9,3	-8,3	-7,3	144,4	114,0	113,1	18,4	18,0	18,0	no	no	no	no
Spain	4,9	3,9	3,6	-5,9	-4,7	-3,6	64,8	65,8	65,4	10,9	9,8	9,7	no	yes	no	no
France	1,9	2,1	1,8	-5,0	-3,9	-2,9	51,5	53,4	54,2	7,6	6,9	6,8	yes	yes	yes	yes
Ireland	2,5	2,3	2,4	-2,7	-2,0	-1,3	85,9	81,3	76,9	8,3	7,7	7,7	yes	yes	no	yes
Italy	5,6	4,3	3,7	-7,4	-6,0	-5,2	124,9	123,9	122,3	11,8	10,8	10,4	no	no	no	no
Luxembourg	1,9	2,2	2,5	0,4	0,6	0,7	6,3	6,7	6,8	6,2	6,0	6,0	yes	yes	yes	yes
Netherlands	1,6	1,8	2,0	-3,1	-2,7	-2,2	78,4	78,2	77,8	7,0	6,3	6,3	yes	yes	no	yes
Austria	2,4	2,3	2,4	-6,1	-4,5	-3,0	68,0	71,0	70,0	6,7	6,6	6,6	yes	yes	no	yes
Portugal	4,2	3,6	3,3	-5,4	-4,7	-4,1	70,5	71,0	70,9	11,7	11,0	11,0	yes	yes	no	no
Finland	1,2	2,0	2,2	-5,4	-1,5	0,0	63,2	64,4	64,5	8,0	7,3	7,3	no	no	no	yes
Sweden	2,8	2,6	3,0	-7,0	-4,5	-3,2	81,4	80,8	79,8	10,3	8,8	8,8	no	no	no	yes
Great Britain	2,9	3,0	2,6	-5,1	-3,7	-2,8	52,2	53,3	53,2	8,2	7,9	7,9	no	no	no	yes
EU-15 average	3,1	3,0	2,7	-4,8	-3,6	-2,8	71,0	71,6	71,3	9,2	8,5	8,5				
Reference values	2,9	3,5	3,5	-3,0	-3,0	-3,0	60,0	60,0	60,0	9,5	8,6	8,5				

1) Treaty on European Union (TEU, Protocol 6): Price stability is measured by the consumer price index. The forecasts by the European Commission and by the OECD use instead the private consumption deflator. 2) EC Treaty, Article 104c (2) and Protocol 5 TEU: Denmark and Great Britain have " opted out " from EMU (Protocols 11 and 12 TEU)
EMS= European Monetary System; ERM= Exchange Rate Mechanism of the EMS.

Section 1: Maastricht criteria

Maastricht criteria were designed for the EU countries that hope to join EMU. Their declared aim[2] is to assess convergence in both nominal and fiscal terms. It is primarily a way to ensure that both monetary and fiscal policy converge. Regarding monetary policy, inflation should be low, as a necessary condition for a « sound macroeconomic environment »; similarly the exchange rate should be stable, and nominal interest rate should converge towards low levels. More formally, the criteria for nominal convergence are that a country must have an inflation rate within 1,5% (for the past two years) of the average inflation rate of the three countries with the lowest inflation rates; and a long run bond yield within 2% of the average long bond yield of the same three countries. Furthermore, the exchange rate has to be stable within the 15% ERM bounds for at least two years. Regarding fiscal policy, the aim is to achieve a budget surplus; in any case the budget deficit should be no higher than 3% (and on a declining trend). Public debt should also be limited to 60% and diminishing. The aim is to ensure a sustainable path for public debt, and to limit the public deficit so as to ensure that interest rates do not rise to painful levels.

Bearing in mind that the CEECs countries are actually in a transition process, we analyse their position with respect to the Maastricht criteria, as a way of assessing if a fixed exchange rate with the EU would be sustainable for these countries. Table 1 presents the performance of the EU-15 with respect to these criteria. The four following tables assess the performance of the CEECs with respect to these criteria.

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[2] (Currie, 1997, pp. 28)

1.1 Inflation

Table 2 : Inflation rates (% change, annual averages)

	Bulgaria	Czech R.	Hungary	Poland	Romania	Slovak R.	Slovenia
1990	26.3	10.8	28.9	585.8	5.1	10.8	550
1991	333.5	56.6	35	70.3	161	61.2	118
1992	82	11.1	23	43	210	10.1	201
1993	73	20.8	22.5	35.3	256	23.2	32.3
1994	96.3	10	18.8	32.2	137	13.4	19.8
1995	62	9.1	28.2	27.8	32	9.9	12.6
1996	123	8.8	23.6	19.9	39	5.8	9.7
1997	1049	9.5	18	16	145	6.5	9

Source : EBRD *Transition report*, 1997.
All prices are consumer prices, except for Slovenia where retail prices are used

The CEE countries that were consistent in their stabilisation commitments have nevertheless had difficulties reducing inflation to levels typical of Western countries: however double-digit rates have disappeared in the most successful CEECs. Disinflation has been helped by the development of a domestic securities market and in some cases by substantial capital inflows, which have allowed governments to limit the monetary financing of fiscal deficits. However, the success in achieving a Maastricht-like target is uneven among countries. Only the Czech Republic, the Slovak Republic and Slovenia have succeeded in reducing inflation to single figures. Poland seems to be on a convergence path, with inflation declining throughout the years, while Hungary does not show any strong signs of a declining pattern. In contrast, Bulgaria and Romania displayed bad performances for 1997. Bulgaria experienced a situation of both political and economic crisis in 1997. However the IMF stepped in and a currency board was set up. Following this, the exchange rate was pegged to the DM and should be pegged to the Euro in the future. It is expected that Bulgaria should start recovering soon. Yet, the size of its current account deficit (and that of other countries in the region) cannot completely rule out the probability of a new currency crisis, which would be damaging for the Bulgarian economic situation, especially with respect to nominal and fiscal variables. With regard to Romania, its bad performance was triggered by the devaluation that occurred at the beginning of 1997, followed by the liberalisation of energy and some of the basic food products prices, as well as the exchange rate market. The government does not look very strict about its future policy: while the central bank has conducted a strict monetary policy (to calm inflation tensions), fiscal and income policies have been

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pretty lax. It is expected that both the inflation and exchange rates will not stabilise in the near future. Overall, there is still a significant effort to be made if the CEECs want to reach inflation levels comparable to the EU (the only country with which the best performing CEECs are not too different is Greece, which is typically the « black sheep » of the EU.

1.2 Interest rates

Table 3 : Interest rates (% p.a., end-year)

	Bulgaria	Czech R.	Hungary	Poland	Romania	Slovak R.	Slovenia
1990	na	na	32.1	61	na	na	na
1991	na	na	35.5	40	na	na	na
1992	na	13.3	28.8	39	53	na	72.2
1993	84	14.1	25.6	35	129	14.1	42.6
1994	118	12.8	29.7	31	83	14.4	38.5
1995	51	12.7	32.2	24	83	14.9	28
1996	481	12.5	24	23.3	71	13.2	18.3

Source : EBRD *Transition report*, 1997
* Lending rates (longest available maturity)

We look at lending rates as one measure of 'long term' interest rates: these are the rates with the longest available maturity (generally one year). There is no sign of interest rates being on a declining trend for all these countries, except maybe Slovenia which exhibited consistently declining rates for the period 1992-96. The rates are at dramatically high levels for Bulgaria and Romania (which is consistent with their inflation situation). They are more reasonable for other countries, especially in the Slovak and the Czech Republics. Once again, when compared to the EU, the level of interest rates seems to be too high to talk about convergence. Yet, if one compares the CEECs to Greece, or even Portugal and Italy, the Czech and the Slovak Republics appear to be on a satisfactory path. Hence, if the rest of the criteria were converging, we could expect nominal interest rate to fall quite quickly.

1.3 Public deficits and debt ceiling

Table 4 : Public balance* (% GDP)

	Bulgaria	Czech R.	Hungary	Poland	Romania	Slovak R.	Slovenia
1990	na	na	0.4	3.1	1	na	-0.3
1991	na	na	-2.2	-6.7	3.3.	na	2.6
1992	-5.2	na	-5.5	-6.6	-4.6	na	0.2
1993	-10.9	2.7	-6.8	-3.4	-0.4	-7	0.3
1994	-5.8	0.8	-8.2	-2.8	-1.9	-1.3	-0.2
1995	-6.4	0.4	-6.5	-3.6	-2.6	0.1	-0
1996	-13.4	-0.2	-3.5	-3.1	-3.9	-1.2	0.3
1997	-6.3	-1	-5	-4	-4.5	-3.5	-1

Source : EBRD *Transition report*, 1997. Note: *General government balance.

Public deficits and public debt ceilings should prelude adhesion to the Stability pact. Fiscal balances, although lower in Central and Eastern Europe than in other transition economies, differ substantially, from -6.3 per cent of GDP (1997) in Bulgaria to -1 per cent (1997) in the Czech Republic and Slovenia, as is shown in Table 4. These last two countries are the only ones to respect the Maastricht limit for public deficits, even though the path of this variable does not seem very stable (especially for the Czech Republic which is more on an increasing trend than a declining one). Romania and the Slovak Republic also display signs of an increasingly growing budget deficit. The other CEECs look to be on an unstable path, but it is difficult to say which direction they are actually taking.

Adhesion to these criteria is likely to be demanded by the EU countries, as the criteria were essential for them to join EMU. Yet, they might affect the CEECs more strongly, as the latter particularly need this instrument to absorb the adjustment required by the transition process.

Table 5 : Public debt as a share of GDP (%)

Years	Bulgaria	Czech Republic	Hungary	Poland
1990	35%		66,3%	
1991	17%		73,4%	
1992	20%		77,6%	
1993	37%	19%	87,9%	
1994	53%	17%	85,2%	72%
1995	40%	14%	84,3%	58%
1996		12%	72,1%	51%
1997			64,7%	

Source: International Financial Statistics (IMF,1997); for Hungary: NBH

Few numbers are reported regarding public debt in the CEECs. The public debt has been increasing dramatically in Bulgaria due to the slow reform process, while it has fallen in Poland and remained stable, at low levels in the Czech republic. Hungary now seems on a declining pattern. Overall, the public debt criterion should not prevent any of these countries from joining a monetary union. This is all the more true, that it has not prevented countries such a Belgium and Ireland to do so, even though their debt level as a share of GDP reach dramatically high levels.

1.4 Exchange rate variability with the DM

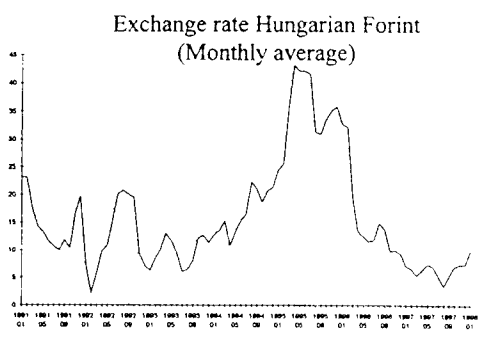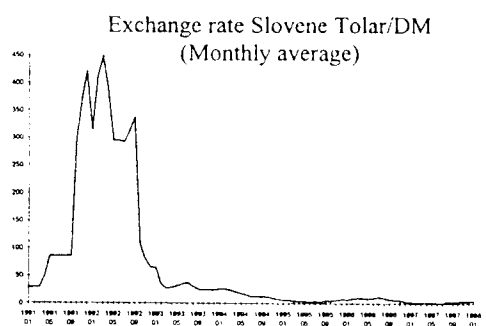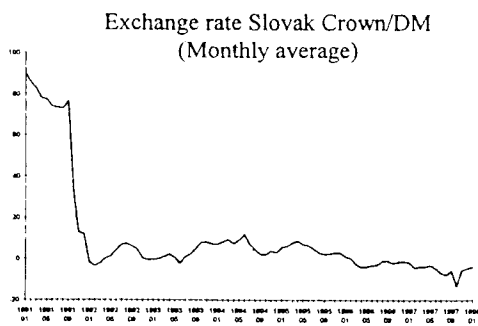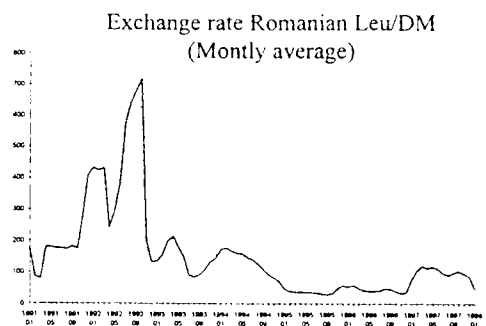Table 6 : Evolution of the CEECs' exchange rates versus the DM[3]

	Bulgaria	Czech R.	Hungary	Poland	Romania	Slovakia	Slovenia
				Average			
1991	559,43	64,80	15,24	8,19	189,60	64,18	137,60
1992	90,82	1,65	12,43	37,23	429,66	1,94	278,84
1993	11,54	-2,60	9,70	30,18	140,36	2,76	32,30
1994	100,11	0,67	16,83	23,78	132,89	6,29	16,46
1995	46,04	4,37	35,18	-100,00	39,14	5,03	4,79
1996	147,01	-2,60	16,01	5,83	44,51	-1,83	8,17
1997	1002,07	1,48	6,33	6,60	101,02	-5,38	2,36
				Standard deviation			
1991	230,58	26,97	4,60	3,91	81,79	26,71	134,30
1992	186,34	3,29	6,25	11,20	184,50	3,62	121,89
1993	5,33	2,63	2,48	4,63	40,60	3,37	10,56
1994	35,76	2,41	3,73	3,77	35,42	3,02	6,23
1995	32,55	1,69	6,10	0,00	7,90	2,18	1,57
1996	140,31	2.12	7,82	2,61	7,04	1,54	2,20
1997	663,47	5,99	1,19	3,72	12.84	2,76	1,34

Source : FERI, Monthly averages

Overall, exchange rate fluctuations have been relatively modest over the last two years (except for Bulgaria, Romania and to a lesser extent the Czech Republic): the average exchange rate has generally a reasonable standard deviation (especially for Hungary, Poland, Romania and Slovenia). This can be better appreciated in the graphs below, which reproduce the evolution of the year-on-year changes in the exchange rate. The pattern for Poland may appear strange, as the Polish Zloty was divided by ten thousand against the dollar in 1995 (which explains the big drop for one year, in the graphs below).

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[3] The choice of the DM instead of the dollar is motivated by (i) the fact that Germany is the main trading partner and foreign direct investor of the CEECs ; (ii) this is reflected by the optimal, theoretical composition of any CEEC's currency basket, as computed by A. Bénassy-Quéré and Lahrèche-Révil A. (1998), (iii) the effective basket to which the CEECs currencies have been pegged consists of between 60% (in Slovakia) and 70% (in Hungary) of the DM, (respectively 40% and 30% of US $). Finally, it is likely that these currencies will be pegged to the Euro in the future, since they seek to join the EU-15.

Figure 1 : Exchange rate fluctuations

Exchange rate Bulgarian Leva/DM,
(Monthly average)

Exchange rate Czech Crown/DM
(Monthly average)

Exchange rate Polish Zloty/DM
(Monthly average)

Exchange rate Romanian Leu/DM
(Montly average)

Exchange rate Slovak Crown/DM
(Monthly average)

Exchange rate Slovene Tolar/DM
(Monthly average)

Exchange rate Hungarian Forint
(Monthly average)
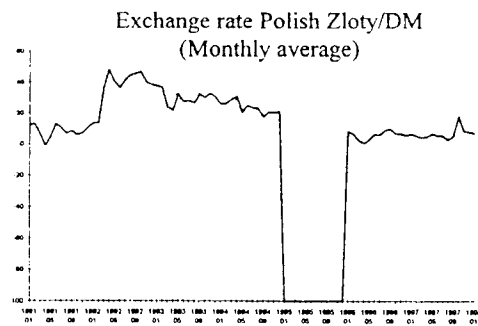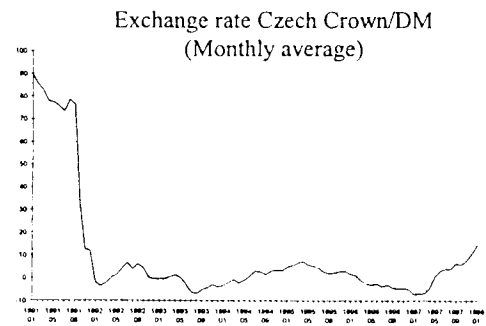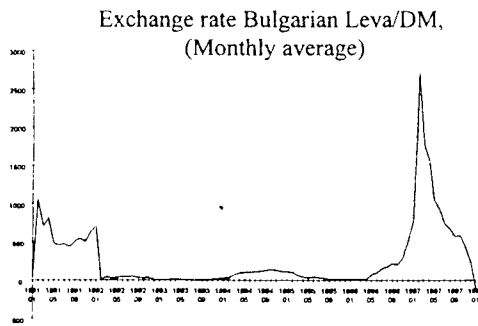
The exchange rate of the CEECs versus the DM has been relatively stable since the beginning of 1995, except for the Bulgarian Leva which underwent a period of strong depreciation in 1997. As emphasised above, from 1995 until 1997, Bulgaria underwent a period of rising inflation, due to a combination of adverse factors: accumulation of debt arrears, financial and banking crises; and the partial, then full liberalisation of prices during the second quarter of 1997. After a period of violent political instability and even hyperinflation in January and February, a programme of stabilisation was implemented during the first half of 1997, the central bank conducted a monetary policy, aiming at the introduction of a Currency Board. As a result, the Leva now seems to be back to its pre-crisis levels. The Romanian Leu constitutes another exception. Its sharp fluctuations in 1997 can be attributed to the freeing of the exchange rate from a previous regime of *de facto* regulation. Convertibility of the Romanian Leu was established in July, in line with the IMF Agreement.

Overall, there is still some progress to be made on the nominal front, for the CEECs to satisfy the Maastricht criteria. From a fiscal point of view, the CEECs are closer to the European targets, but the stability of debts and public deficits is strongly related to the speed of the transition process.

Section 2 : Real Convergence

Between 1992 and 1997, it was often argued that although the EU-15 were converging in nominal terms, real convergence was far from being achieved and one could even point out real divergence between some countries. Feldstein (1992) argues that countries whose initial conditions are unfavourable, and which cannot use a national monetary policy to adjust to specific shocks, will find themselves on low growth and high unemployment paths. Hence it seems crucial to analyse the real evolution of the CEECs with respect to the EU15.

2.1 Sigma-convergence of GDP

Real convergence has traditionally been defined as a falling gap between GDP per head of a group of countries, meaning that standards of living are getting closer. To get preliminary intuition about this, let us look at the difference in ln-GDP per head of the CEECs countries and Germany.

Figure 2 : Evolution of the GDP gap between the CEECs and Germany
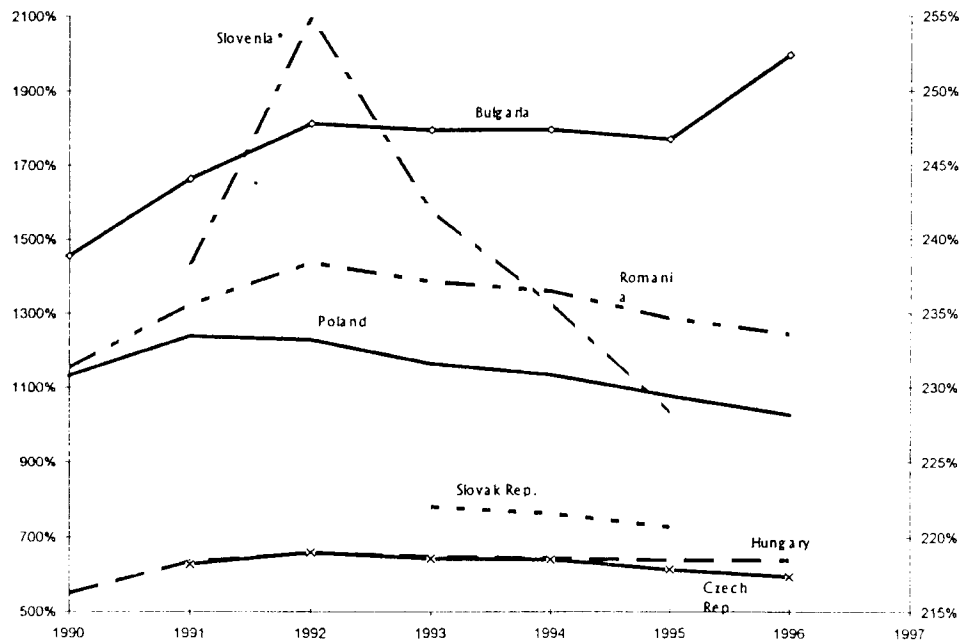
Source : FERJ, authors' calculations . Each curve represents the ratio of GDP per capita in Germany and one of the CEECs.
* For Slovenia, figures have to be read on the right-hand scale.

Figure 2 does provide evidence in favour of convergence between most of the CEECs and Germany. Slovenia is the country whose standard of living is closest to Germany, followed by Hungary and the Czech Republic. Only Bulgaria is on a diverging path, which is not surprising given the recent evolution of the country (see above).

However, the graph focuses on Germany, and it might be the case that there is a process of convergence that is really directed on EMU zone rather than Germany alone. To assess this, we use the concept of sigma-convergence. Sigma -convergence measures the cross-country evolution of the dispersion of GDP per capita across countries. It is a very intuitive measure of convergence, as any increase in the variability is a sign of divergence, *and vice et versa*.

A country is said to sigma-converge towards another if $V_{iT} > V_{i,0}$, where V_{iT} is the variance of GDP in the last period (1996) and $V_{i,0}$ the variance of GDP in the first period (1990).

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Table 6 : Variability of the Area EU-CEECs per year

| | Variability (test of sigma-convergence) | |
| | CEECs only | CEECs and EU |
Year	Variance	Variance
1990	0,13322	0,86113
1991	0,42685	0,82868
1992	0,42763	0,84926
1993	0,37389	0,74679
1994	0,3784	0,74523
1995	0,37633	0,73087
1996	0,19942	0,82442

Source : FERI, authors calculations. Variance of ln(GDP) for each area, computed every year.

Table 6 shows how the variability of each area is evolving over the years, i.e. whether the dispersion between each of national GDP is being reduced over time. According to this criterion, there seems to be convergence within the CEEC area (after a break between 1990 and 1991, which corresponds to the first year of the transition to the market). Between the CEECs and the EU, there has also been a process of convergence over the first five years of the sample (though smaller) but the last year could indicate a departure from this path (however one year of data is not enough to put the trend into question).

Let us now assess whether the magnitude of the fluctuations in GDP is comparable between the CEECs and the EU. Table 7 presents the variance of ln-GDP per capita in each of the countries studied for the period 1990-97. Thus, we assess whether the activity is significantly more volatile in the CEECs than in the EU. We expect this to be the case, but the order of magnitude of the relative difference will give us an indication about how much more important the policy response to a shock should be in these areas.

Table 7 : Variability of each country's GDP over 1990-1997

	France	Germany	Greece	Portugal	EU		
Standard deviation	0,0166	0,0192	0,0204	0,0330	0,0260		
	Czech R.	Hungary	Poland	Romania	Slovakia	Slovenia	Bulgaria
Standard deviation	0,0468	0,0483	0,0763	0,0684	0,0449	0,0433	0,0753

The variability of the CEEC's GDP is at least twice as large as that of Germany, and between 1.7 to 3

times higher than the EU as a whole, which is not too surprising given the transition process. It is however « reasonable » as Portugal's GDP is about 1.3 times more volatile than EU is, for example. Yet some countries seem to be more prone to excess volatility than others; in particular, Bulgaria, Poland and Romania display much greater variability than the other Eastern countries of our sample. For Bulgaria and Romania, this is a likely result of the way the transition process is being conducted. Overall, we could expect the volatility of GDP to decline, as the transition process is completed.

2.2 Convergence of the unemployment rates

Another indicator of real convergence is the unemployment rate. Indeed, rigidities in the labour market, as well as cultural and institutional differences from one country to another, could lead to unequal developments of unemployment rates across the CEECs and with respect to the EU-15. A high diversity of unemployment rates across regions is a likely source of inefficiency for a common monetary policy. We present below the correlation between CEECs and EU unemployment rates.

Table 8: The correlation of unemployment between the CEECs, Germany and the EU before and after German reunification

	Portugal	EU	Slovenia	Czech R.	Hungary	Poland	Romania	Slovak R.
Correlation coefficient with Germany								
Before	0,637	0,919	na	-0,750	-0,899	-0,941	na	-0,786
After	0,789	0,815	0,795	0,545	0,591	0,421	0,066	0,669
Correlation coefficient with EU								
Before	0,902		na	-0,617	-0,787	-0,897	na	-0,659
After	0,907		0,955	0,278	0,804	0,788	0,671	0,822

Source : FERI
Note: There is no standardised measure of the unemployment rate for Greece

The correlation of the unemployment levels, although relatively high, is nevertheless generally lower between Germany (respectively the EU) and the CEECs, than between Germany and the EU (0,815), or Germany and Portugal (0,789), or than between EU and Portugal (0,907). While the correlation between Germany and the rest of the EU has been decreasing sligthly after German re-unification from 0,919 to 0,815, its sign became positive for all CEECs countries. Slovenia constitutes an

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exception: the coefficients of correlation between Slovenia and either Germany (0,795) or aggregate EU (0,955) are higher than the correlation between Germany, EU, and Portugal. As far as this provides evidence of real convergence, it is reassuring from the perspective of integration. However, convergence towards the high levels of unemployment that the EU faces might not be such a good thing for the CEECs.

Section 3: Assessing the degree of (a)symmetry of shocks

By pegging its exchange rate, a country loses the exchange rate tool to adjust to an (external) shock. The economic literature has analysed this issue on the basis of the theory of Optimal Currency Area (OCA thereafter) developed by Mundell, Mc Kinnon and Kenen in the sixties. Roughly speaking, this theory states that a country should join a monetary union if the savings realised (mostly in transaction costs) are greater that the costs of foregoing the exchange rate tool. Savings are related to the degree of openness of the country[4]. Costs depend upon the degree of labour mobility, wage and price rigidities, and regional specialisation. If labour is immobile, wages and prices are rigid, then the adjustments will not take place through these channels. Fiscal adjustment could, to a certain extent, replace the exchange rate tool, but their use will be limited first by the Maastricht criteria, then by the Stability Pact. Overall, it seems that the key variable to assess the potential cost will be the degree of (a)symmetry of shocks between the EU and the CEECs. The greater and the more asymmetric the shocks, the bigger the costs, the more painful it will be for a country to have a common monetary policy in place of a country-specific adjustment.

One way to assess the degrees of asymmetry is to compare the business cycles. Hence this section computes the correlation of the business cycle fluctuations in the monthly unemployment rate and a monthly index of industrial production, between the CEECs and Germany (before and after the re-unification process), between the CEECs and the EU with 15 members (before and after the re-

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[4] Which has been characterised by a dramatic increase during the transition process, reflecting the return towards a « normal » pattern of trade with market economies. This « normal » level of trade is determined by the gravity

unification process), and between two reference countries, Portugal and Greece, with the EU and Germany. We choose these two countries as the first one is an example of successful convergence and integration into the EU, whilst the other reflects an absence of convergence. The period covered by the sample starts in January 1990 and lasts until November 1997. The period before the re-unification process is very short since it starts in January 1990 and ends in November 1990. The source of the data is the database *FERI*, the sub-section on emerging markets.

3.1 Assessing business cycles (a)symmetries with unemployment rates

The transition process in the CEECs is characterised by a drastic re-composition of output and re-allocation of labour. In the short term, this implies a very sharp recession together with a very strong increase in unemployment for two or three years (see the trend decomposition in Figure 3), depending on the reforms schedules in each CEEC. After this initial recession, the national economies return to positive growth. In what follows we will assume that monetary policy acts primarily to smooth the business cycle fluctuations. Hence we will decompose the time series into their cyclical and trend components. The last one is a structural long term component that is supposed to be more dependant on structural policies. This is in line with the literature that has tried to assess the cost of creating EMU for the EU, by assessing the asymmetry of shocks between the member countries. In this framework, it is usually assumed that demand shocks do not have a permanent effect on output nor, therefore, on unemployment.

Since the time span of our data does not allow robust testing of the time properties of the series (to test whether they are I(0), difference-stationary or trend stationary), we proceed in two different ways to distinguish fluctuations due to cycles and trends. First, we compute the correlation of the first differences, e.g. of the increase in the unemployment rates. Secondly, we apply the Hodrick Prescott filter, which has the disadvantage of dropping around ten observations, but allows trends to be estimated.

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equations: see Hamilton and Winters (1992), Shumacher (1996), Maurel and Cheikbossian (1998).

Before looking at the cycle correlations, let us present briefly, in Figures 3 and 4, the trends extracted from the production and unemployment data. Figure 3 below displays a sharp decrease in production trends, beginning of the transition, to a switching point which varies between 1992 (Hungary) and the middle of 1993 (Czech Republic). From 1992-1993 onwards, the trend curves exhibit an turnaround, marking the beginning of the process of recovery[5]. The steepness of the slope depends on the success and consistency of the market implementation: which has been quite low in Bulgaria and Romania, where the index is still below its *pre-transition* level, and higher in Poland or even Hungary. Figure 4 reports the « mirror » statistics for the unemployment trends, which are upward sloping and reflect the initial increase in unemployment levels, followed by a slight decrease once output is stabilised, then returns to growth.

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[5] It could be argued that a return to recovery characterises the end of the transition process.
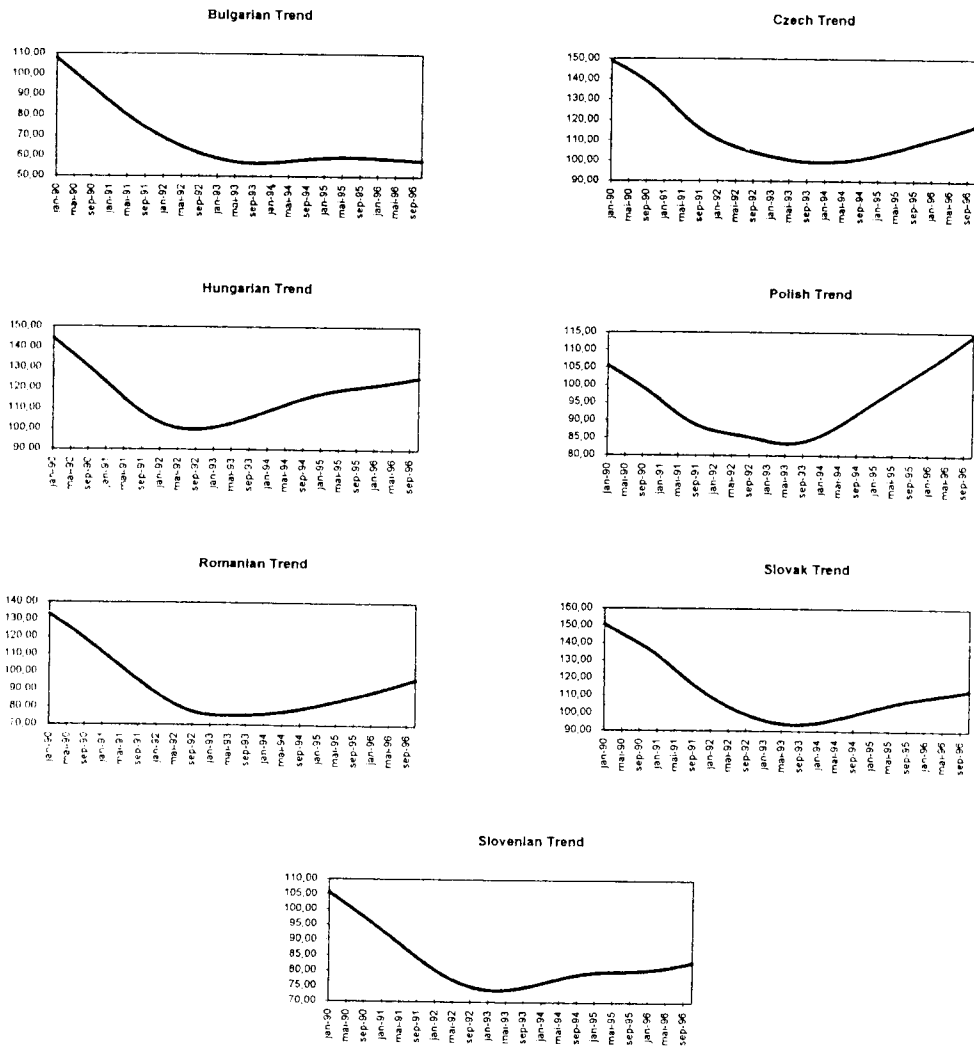
Figure 3 : Industrial production trends

Bulgarian Trend

Czech Trend

Hungarian Trend

Polish Trend

Romanian Trend

Slovak Trend

Slovenian Trend

Figure 4: Unemployment trends

Czech Trend

Hungarian Trend

Polish Trend

Slovak Trend
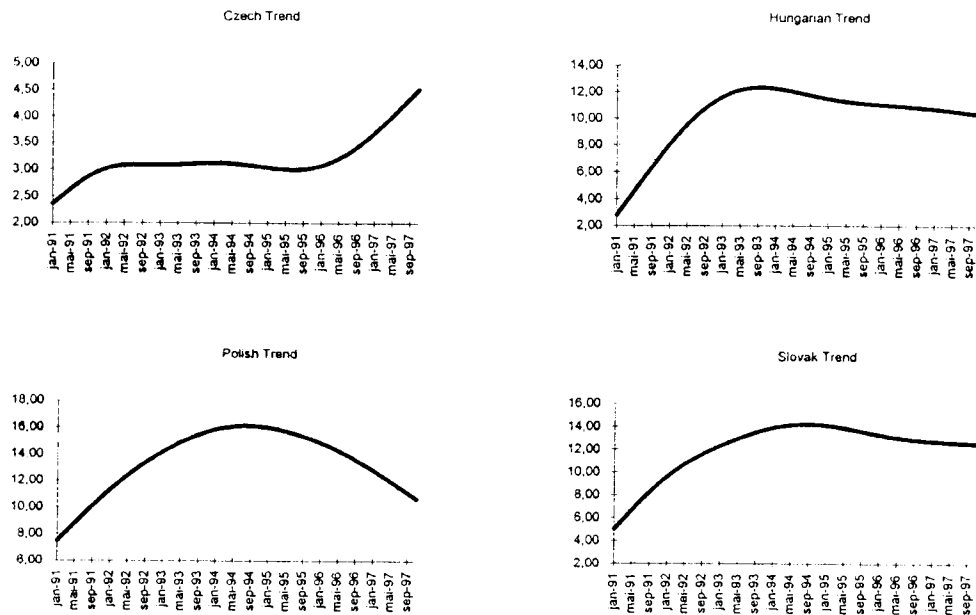
Note : we only extracted the trends for the countries that had more than 7 years of data.

As reflected by Figures 3 and 4 above, the extraction of the trends from the unemployment and industrial production index is a necessary step[6], before turning to the analysis of the correlations of the cycle components. The results are reported below :

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[6] If one agrees that monetary policy does not influence the trend component of both industrial production and unemployment rates, a high correlation of unemployment rates could be due to contemporaneous increases in trends, while the cyclical components would be displaying opposite co-variations.

Table 9 : correlation coefficients on the variations of the unemployment rates

Correlation coefficients with Germany

	Portugal	EU	Slovenia	Czech R.	Hungary	Poland	Romania	Slovak .
Before	-0,002	0,013		0,224	-0,193	0,203		0,296
After	0,129	0,096	0,255	0,589	0,399	0,496	0,280	0,587

Correlation coefficients with the EU

	Portugal	EU	Slovenia	Czech R.	Hungary	Poland	Romania	Slovak .
Before	0,192			0,452	0,00	-0,357		0,514
After	0,435		0,420	0,072	0,218	0,317	0,185	0,156

The former result in Table 8 of a higher coefficient of correlation between Germany and either the aggregate EU or Portugal than between Germany and CEECs disappears, while the increase in it after the reunification process is still observed for all pairs of countries. Hence, except for Slovenia, the degree of (a)symmetry of the cycles is (lower) higher between Germany and the Eastern countries than with EU countries. This result is probably due to the dramatic increase in trade between Germany and the CEECs implied by the opening of Eastern markets (significantly higher than between aggregate EU and CEECs, see Schumacher (1996)). Furthermore, German re-unification might have intensified the links with the CEECs, in the framework of a regional specialisation covering an area including the Eastern Länders and the CEECs[7]. In this case, we would expect the correlation between Germany *as a whole* and the CEECs to increase dramatically after the reunification with the Eastern Länders, which is the case (see Table 9). Finally, another complementary explanation might be the delay between the German and the European cycles. So far, we have only computed contemporaneous correlation coefficients. As the European countries business cycles generally lag the German cycle, we present below the correlation with lags in the cycle starting from one to 12 months. We see that the correlation between Germany and CEECs is still higher than between Germany and either France (0,17), Portugal (0,19), or EU (0,16), even by

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[7] Fatas (1996) shows that such a cross-border phenomenon took place between the south of Germany and the north of Italy. He demonstrates that correlation between the German business cycle and the Northern Italian

taking into account these delays[8].

Table 10 : Correlation of unemployment rate first differences

	Germ.	France	Portugal	EU15	Czech	Hungary	Poland	Romania	Slovakia	Slovenia
Correlation with Germany		0,17	0,19	0,16	0,54	0,42	0,36	0,32	0,55	0,24
(lags)		(-9)	(0)	(-3)	(0)	(0)	(0)	(-1)	(0)	(-9)
Correlation with EU	0,16	0,64	0,47		0,09	0,21	0,17	0,34	0,18	0,44
(lags)	(-3)	(-9)	(-11)		(0)	(0)	(-3)	(-1)	(-3)	(0)

Note : We only retain the maximum correlation coefficients with the corresponding lag.

Table 10 shows that if one takes into account the potential delays in the transmission of shocks, then the Eastern countries are as much correlated with Germany, as are France and Portugal with the EU (respectively 0,64 and 0,47), and they are more correlated with Germany than France, Portugal, and EU (respectively 0,17, 0,19 and 0,16). But this high correlation between CEECs and Germany does not arise with the EU countries: the correlation between CEECs and EU is generally low, from 0,09 (Czech Republic) to 0,44 (Slovenia). The Czech Republic is a striking case: although it displays the highest level of correlation with the German business cycle (0,54), as measured by the fluctuations in the unemployment rates, this similarity does not arise with the EU countries (0,09). From all the indicators above, it seems that the Czech Republic is structurally closer to Germany than the rest of the CEECs, which could display signs of convergence on EMU.

business cycle is quite high.

[8] To obtain further information on this point, further research needs to be done so as to highlight which part of the cycle we are measuring that is country-specific and which part is due to the transmission of European shocks.

Table 11: Correlation of unemployment rates HP-fluctuations

	Germ.	France	Portugal	EU15	Czech	Hungary	Poland	Slovakia
Correlation with Germany (lags)		0,4045 (-2)	0,23 (-3)	0,413 (0)	0,35 (0)	0,3101 (0)	0,4833 (0)	0,3469 (0)
Correlation with EU (lags)	0,413 (0)	0,853 . (-3)	0,719 (-3)		0,524 (-7)	0,041 (0)	0,389 (-6)	0,536 (-8)
Volatility	0,25	0,21	0,49	0,19	0,47	1,06	0,64	0,46

Note : Business cycle fluctuations provided here were obtained with the Hodrick-Prescott filter
We only retain the maximum correlation coefficients with the corresponding lag.

Table 11 confirms and extends the results of Table 10: (i) there are comparable business cycle fluctuations correlation between the CEECs and Germany as between Germany and either the EU (0,41), or France (0,40), or Portugal (0,23); (ii) correlations between CEECs and EU are sometimes higher than between CEECs and Germany, contrary to the previous table (but the delays are higher, see the Czech Republic: -7, and Slovakia: -8); (iii) leaving aside Hungary, there is sometimes higher business cycle fluctuations correlation between the CEECs and the EU (the figures range from 0,389 in Poland to 0,536 in Slovenia) than between Germany and EU, where it is set equal to 0,413, but, again, by taking into account the delays in the transmission of shocks.

Overall, the correlation coefficient appears to be stronger with the cycles obtained with HP-detrending. They also appear even with the EU and with Germany, except for Poland and Hungary, but in taking into account delays which are quite important. This exercise indeed underlines the differences in the timing of the cycle. If the highest correlation is contemporaneous with Germany, there are some (long) lags with respect to the EU cycle.

To summarise, the CEECs cycles are closer to German than to EU cycles. The picture is slightly modified if one takes into account the delay of the transmission of shocks. But in this case, a single monetary policy would be more problematical. In the process of EU enlargement, including as an ultimate development the CEECs participation in EMU, Germany is expected to play a central role.

3.2 Assessing business cycle (a)symmetries with the industrial production index

Tables 12 and 13 show that the CEECs display an equivalent amount of industrial correlation with Germany as Portugal, the EU, and Greece do and a lower correlation with the EU than Portugal, but similar to that of France or Germany. Furthermore, Greek economic fluctuations are less correlated with EU fluctuations after the re-unification process than are those of the Slovenian, the Czech Republic or Poland. As already reflected by the Maastricht criteria, Greece does not perform better than some CEECs. The delays in the cycles vary from one eastern country to another, but overall, they do not appear too long (always less than 6 months).

Table 12 : Correlation of industrial production business cycles in the CEECs with Germany, at different lags

	Greece	Portugal	UE	Slovenia	Bulgaria	Czech Rep.	Hungary	Poland	Romania
Correlation	0,261	0,320	0,402	0,365	0,480	0,699	0,427	0,514	0,458
Lag	(-6)	(-1)	(0)	(-5)	(0)	(0)	(0)	(0)	(-5)

Table 13 : Correlation of industrial production business cycles in the CEECs with the EU, at different lags

	Greece	Portugal	Germany	Slovenia	Bulgaria	Czech Rep.	Hungary	Poland	Romania
Corr.	0,443	0,884	0,402	0,655	0,469	0,393	0,166	0,338	0,297
Lag	(0)	(0)	(0)	(0)	(-5)	(0)	(-8)	(-6)	(0)
Volatility	6,12	8,88	11,84	5,38	6,05	11,62	3,90	5,96	5,52

The volatility of the various cycles appear to be comparable to the European countries' cycles. Bearing in mind that this result might be partly due to the way the HP filter detrends the data, it is nevertheless reassuring as it shows that the volatility displayed by the industrial production cycle in the CEECs is not out of proportion with respect to the EU's cycle volatility.

Conclusion

We have used a battery of indicators to assess how « fit » the CEECs would be to peg their exchange rates against the Euro, if the degree of fitness is measured using the same type of criteria as have been used for the 15 members of the EU. The main message is that although the CEECs do not seem to satisfy the nominal Maastricht criteria, and that it might be an uneasy task for them to match the fiscal criteria, a real convergence process might be at work. Indeed, if the volatility of GDP remains higher in the CEECs than it is for the member countries of EU, there has been a decline in the dispersion of the CEEC's GDP compared to EU's GDP.

There is a significant correlation between the CEECs' business cycles and the German business cycles, as measured by the industrial production and the unemployment cycles obtained with the HP filter. By taking into account higher delays in the transmission of shocks, the correlation between the CEECs' business cycles and the EU business cycles is also relatively high. From this point of view, if the CEECs manage to master inflation in the near future, they would seem to be quite fit to enter an ERM2, and maybe considered for EMU in the near future.

One striking result is the relatively high correlation between the German and CEECs industrial production and unemployment cycles, which turns out to be even higher than the correlation between Germany and aggregate EU. This result would support the view that Germany and CEECs form a more optimal currency area than EU and CEECs. One recalls the old ties Germany had in the past with Eastern countries, and the willingness during the twenties and thirties to constitute a Customs Union in spite of Allied opposition. Although purely hypothetical, the perspective of a German area including Germany and some Eastern countries, or of a enlargement which would be initiated under the German auspices, seems very plausible.

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