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The Endogeneity of the Optimum Currency Area
Criteria, Trade, and Labor Market Rigidities:
Implications for EMU Enlargement

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EUROPEAN UNIVERSITY INSTITUTE

Robert Schuman Centre for Advanced Studies
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Abstract

This paper analyzes two channels of business cycle convergence, which are subsequently applied to the EU acceding countries. First, trade intensity and intra-industry trade is found to induce a convergence of business cycles. This finding confirms the OCA endogeneity hypothesis. Second, labor market rigidities implying differences in transmission mechanisms lower the correlation of business cycles between the countries. Both effects are significant in a cross-section of OECD countries. Furthermore, the net effect implies a comparable degree of business cycle harmonization of Central and Eastern European countries with the EU as for the current members in the medium run.

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1 Introduction

After the enlargement of the European Union (EU), the new member states will have to define their strategies for euro adoption. On the one hand, the countries participating in a currency area will face benefits of the common currency. On the other hand, these countries will face potentially high costs of the loss of monetary independence, if their business cycles will be independent from the majority of partner countries. However, Frankel and Rose (1998) hypothesize that business cycles are also becoming more similar across countries having intensive trade links. They find empirical support for their OCA endogeneity hypothesis for OECD countries between 1959 and 1993. Furthermore, Artis and Zhang (1997) and Fatás (1997) show that a common European business cycle has been emerging as predicted by the OCA endogeneity hypothesis of optimum currency area (OCA) criteria, although Krugman (1993) presents an opposite evidence on the base of case studies in the US.

In contrast to trade induced synchronization of business cycles, country-specific transmission mechanisms may lower or postpone the synchronization of business cycles for example as a result of increased degree of trade integration and economic policy coordination. Strict employment regulations and labor market rigidities, which are typical for the EU as well as for the acceding countries, are generally seen as one possible source of differences in the propagation mechanisms. Indeed, employment protection indices are shown to have significant negative effects on the correlation of business cycles.

Finally, the paper asks whether the Central and Eastern European Countries (CEECs) should introduce the euro as soon as possible after accession to the European Union, or whether they should do so at a later stage. This question is addressed by applying the endogeneity hypothesis of OCA criteria to six acceding countries with available data on employment legislation (Czech Republic, Estonia, Hungary, Poland, Slovakia, and Slovenia). This paper applies the relation between the degree of trade integration, the labor market rigidities, and the convergence in business cycles in order to predict the degree of business cycle harmonization of the CEECs with the euro area in the long or medium terms. This approach reflects the Lucas critique in so far as it considers possible structural changes during the accession of the CEECs to the EU and the adoption of the euro. Alternatively, these predictions can be interpreted as 'Indices of Endogenous Optimum Currency Area' (*EOCA*-indices) similar to those introduced by Bayoumi and Eichengreen (1997).

The paper is structured as follows. The next section discusses the OCA endogeneity hypothesis with respect to trade intensity, intra-industry trade, and labor market flexibility. Section 3 describes our data sample, while Section 4 presents several estimations for OECD

countries. Section 5 computes potential correlations of business cycles (*EOCA*-indices) using the revealed relation between, on the one hand, the correlation of business cycles, and, on the other hand, trade variables and labor market indicators. Finally, the last section concludes.

2 Optimum Currency Area Theory, Trade, and the Flexibility of the Labor Market

The theory of optimum currency areas, which was developed by Mundell (1961), McKinnon (1963), and Kenen (1969), has become particularly popular for analyses of the costs and benefits of monetary integration, in particular with reference to EMU. The basic point of the OCA theory is that countries or regions exposed to symmetric shocks, or possessing mechanisms for the absorption of asymmetric shocks, may find it optimal to adopt a common currency. This stream of literature therefore focuses on assessing the symmetry of output shocks in monetary unions, and/or evaluating the absorption mechanisms, such as labor mobility or fiscal transfers. In general, the stronger any of these linkages (OCA criteria) between countries participating in a currency area are, the more gains may be expected by the participating countries.

Frankel and Rose (1997 and 1998) suggest that the OCA criteria are endogenous. Closer trade relations result in a convergence of business cycles. Furthermore, similar business cycles create good preconditions for policy integration and the creation of a currency area. However, this view is not universally shared in literature. For example, Krugman (1993) points out that, as countries become more integrated, they increasingly specialize. This view is also supported by Eichengreen (1992).

Moreover, Kenen (2000) shows in a framework of the Keynesian model that the correlation between two countries' output changes increases unambiguously with the intensity of trade links between these countries. But this does not necessarily mean that asymmetric shocks are reduced as well. Kose and Yi (2001) also do not find any positive relations between business cycles and trade intensity in a standard international business cycle model. Therefore, it is important to keep in mind that it is not trade relation alone which induces the convergence of business cycles in an OCA. Indeed, Frankel and Rose's hypothesis underlines that bilateral trade is mainly intra-industry trade, although this indicator does not directly enter their analysis. Fontagné (1999) discusses the relation between intra-industry trade and the symmetry of shocks in a monetary union. Fidrmuc (2004) shows that intra-industry trade is a better indicator for business cycle asymmetries than simple trade intensities.

However, there are also possible sources of asymmetric business cycles between the countries (see De Grauwe, 2003). For example, Artis (2003) points out that asynchronous business cycles may arise from the interaction of different propagation mechanisms with common

shocks despite a convergence of the original shocks in the economies. Labor markets are likely to play an important role in the formation of transmission mechanisms. More or less flexible labor markets will make for less or more persistence in the response to shocks. This barrier to the synchronization of business cycles may be especially important for EU countries, which are generally characterized by a high degree of labor market regulations.

3 Data Description

The empirical part proceeds in two steps. In the first step, Section 4 estimates the relationship between the correlation of business cycles between OECD countries and several explanatory variables. The data for the acceding countries are not yet involved in this stage because specific transition factors might bias the causalities. In the second step, Section 5 looks at the expected properties of the business cycles in selected acceding countries given their trade integration and labor market legislation. The same explanatory variables are used for a ranking of countries with weights derived from the estimations. Thus, out-of-sample forecasts are computed for this region. Correspondingly, data sets used for both stages of empirical analysis are described in this section.

3.1 Data Used for Estimations (OECD Countries)

Before we analyze synchronization of business cycles between the countries, we have to define business cycles. However, this question is already a difficult issue, which was addressed in a long (not yet finished) series of papers.¹ Frankel and Rose (1998) and Fidrmuc (2004) use simple detrended (differenced) indicators of economic activity. Following this literature I use contemporaneous correlations of industrial production (in logs and fourth differences) as a simple indicator of business cycles.

However, the revealed pattern of the business cycles may be sensitive to specific filtering methods. Although the previous research showed that the causalities of business cycle synchronization are relatively robust with respect to applied methods of business cycle determination, I extend the analysis to an alternative measure of business cycles taken from Artis (2003). This ensures a high quality of the business cycle indicator used in the subsequent parts of our paper. Artis identifies business cycles for a set of OECD countries (including all EU countries except for Greece, for data reasons) using quarterly GDP between 1970 and 2001. Business cycles are identified by a band-pass filter version of the Hodrick-Prescott filter.

¹ Darvas and Szapáry (2004) discuss various measures of business cycles also from the perspective of the acceding countries.

This paper analyzes two channels of business cycle determination (see De Grauwe, 2003). First, trade induces transmission of demand shocks between countries. Second, inflexible labor markets can prohibit adjustment of business cycles also when supported by other variables. Labor market rigidities are likely to create different propagation mechanism between the countries.

In the subsequent analysis, we use two different trade related indicators. First, I use the bilateral trade intensity between the countries i and j ,

$$TI_{ij}^T = \frac{T_{ij}}{T_i + T_j}, \quad (1)$$

which may be defined either in relation to exports, imports, or trade turnover ($T = X, M, X + M$).

However, the trade structure seems to be more important than the simple transmission of demand shocks. Frankel and Rose (1998) argue that business cycles are likely to converge, especially if intra-industry trade is important in bilateral trade relations. Indeed, Fidrmuc (2004) finds a significant and positive relation between the correlation of business cycles (measured by various indicators of economic activity) and intra-industry trade in a cross-section of OECD countries. Correspondingly, we use intra-industry trade (Grubel-Lloyd indices) from Fidrmuc (2004), which are computed as,

$$IIT_i = 1 - \frac{\sum_i |X_{ii} - M_{ii}|}{\sum_i (X_{ii} + M_{ii})}, \quad (2)$$

where X and M denote EU's exports and imports by three-digit SITC commodity groups i (as published by UN), respectively. This level of disaggregation is more detailed than industry production used by Clark and van Wincoop (2001). An index value of 0% shows a complete specialization on different products for each country (inter-industry trade), while an index value of 100% indicates exclusively intra-industry trade.²

In addition to trade indicators, we analyze effects of labor market rigidities on business cycle affiliations. Riboud et al. (2002) discuss indices of employment protection legislation (*EPL-Indices*) for OECD countries which we identify with labor market rigidities. The *EPL-Index* is defined as a weighted average of 22 indicators. This broad set of indicators includes both some basic and easily available employment regulations (e.g. period of notice before

² One advantage of using the Grubel-Lloyd indices is their stability over time. For example, Grubel and Lloyd (1975) compute intra-industry trade for a number of countries over a relatively longer period of time. There is a remarkable stability of the ranking of countries by years.

dismissal and severance pay), but also indicators derived from qualitative information (e.g. difficulties of dismissal). Higher values of the *EPL*-Index, which is defined between 1 and 6 (note that the extreme values are not available in our sample) correspond to more severe employment regulations, that is, higher labor market rigidities.

While the previous variables (correlation of business cycles, bilateral trade intensities, and bilateral shares of intra-industry trade) are defined genuinely for each individual country pair, labor market rigidities are already by their concept as a part of the country-specific transmission mechanisms defined for individual countries. We assume that the international transmission of business cycles is restricted if any of the considered countries faces high labor market rigidities.³ Correspondingly, we take the maximum value of the *EPL*-Indices (*MEPL*-Index) as a joint attribute for countries *i* and *j*,

$$MEPL_{ij} = \max(EPL_i, EPL_j). \quad (3)$$

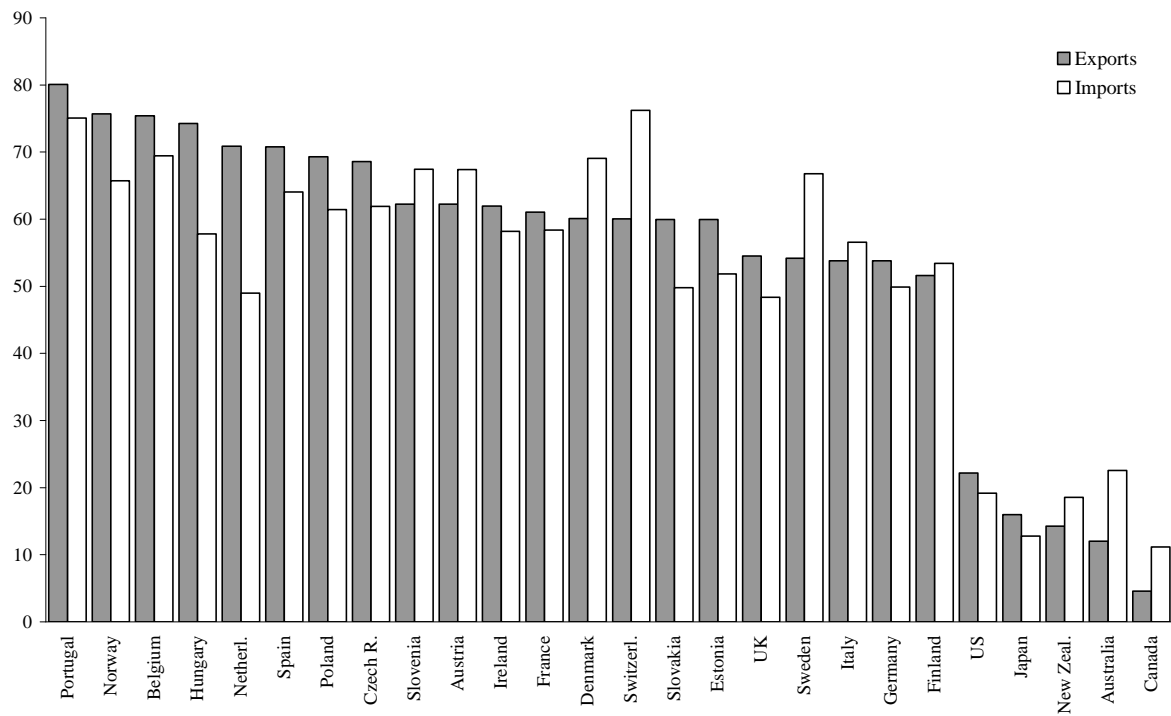
Thus, our data is compiled from various sources. The country sample includes Switzerland, Norway, the US, Canada, Japan, Australia, and New Zealand, in addition to 13 EU countries (no business cycles are reported for Greece, while Belgium and Luxembourg are reported as a single region). When ever available, trade data according to Eurostat were taken. Intra-industry trade at the same level of disaggregation between non-EU countries was computed using the UN World Trade Data. Note that the data according to this classification are not available for earlier periods due to changes in trade statistics. Table 1 shows descriptive statistics for the data sample.

Table 1: Data Description

A. All Countries	Mean	Median	Minimum	Maximum	Std. Dev.	No. of obs.
Bus. cycles (indus. prod.)	0.315	0.320	-0.380	0.885	0.283	190
Bus. cycles (Artis, 2003)	0.412	0.430	-0.320	0.880	0.231	190
Trade intensity (imports)	1.367	0.634	0.018	15.646	1.950	190
Trade intensity (exports)	1.321	0.601	0.033	15.688	1.886	190
Trade intensity (total)	1.337	0.625	0.037	15.664	1.878	190
Intra-industry trade	34.597	34.958	2.591	75.097	18.364	190
<i>MEPL</i> -Index	2.574	2.600	0.900	3.700	0.708	190

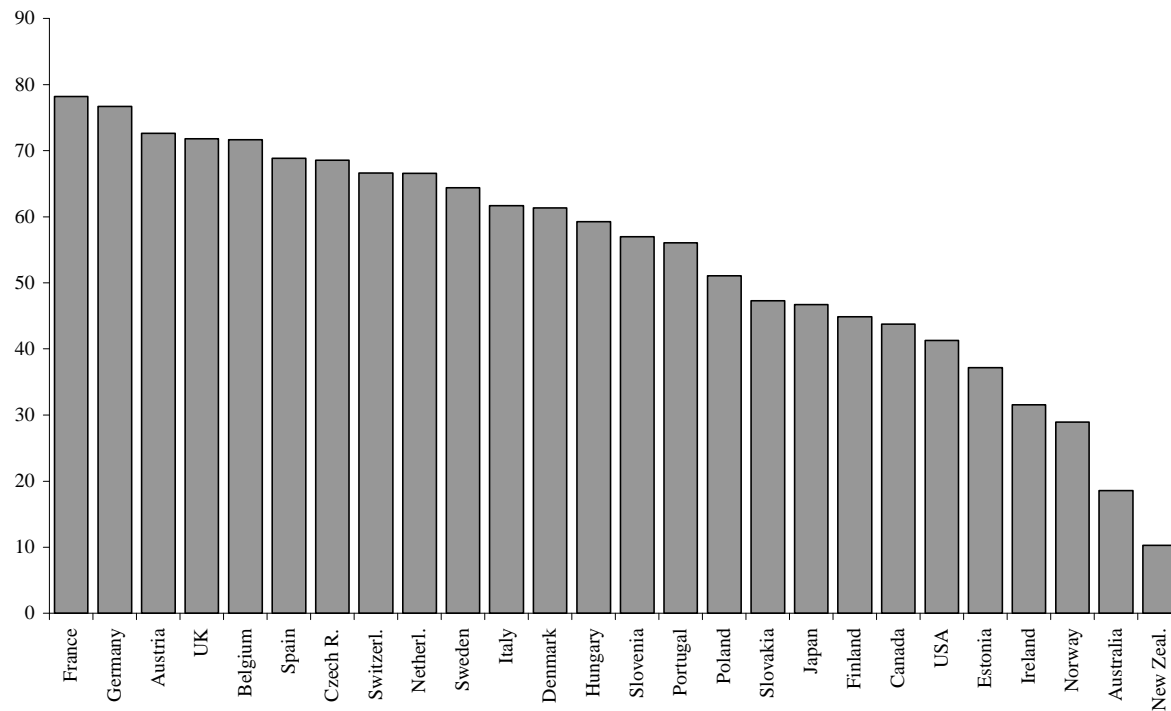
³ In particular, also similar values of *EPL*-Indices may be caused by fully different employment regulations. Therefore, differences in propagation mechanisms may be significant also when both countries display similar *EPL*-Indices.

Figure 1: Shares of Trade with the EU in 2001, %



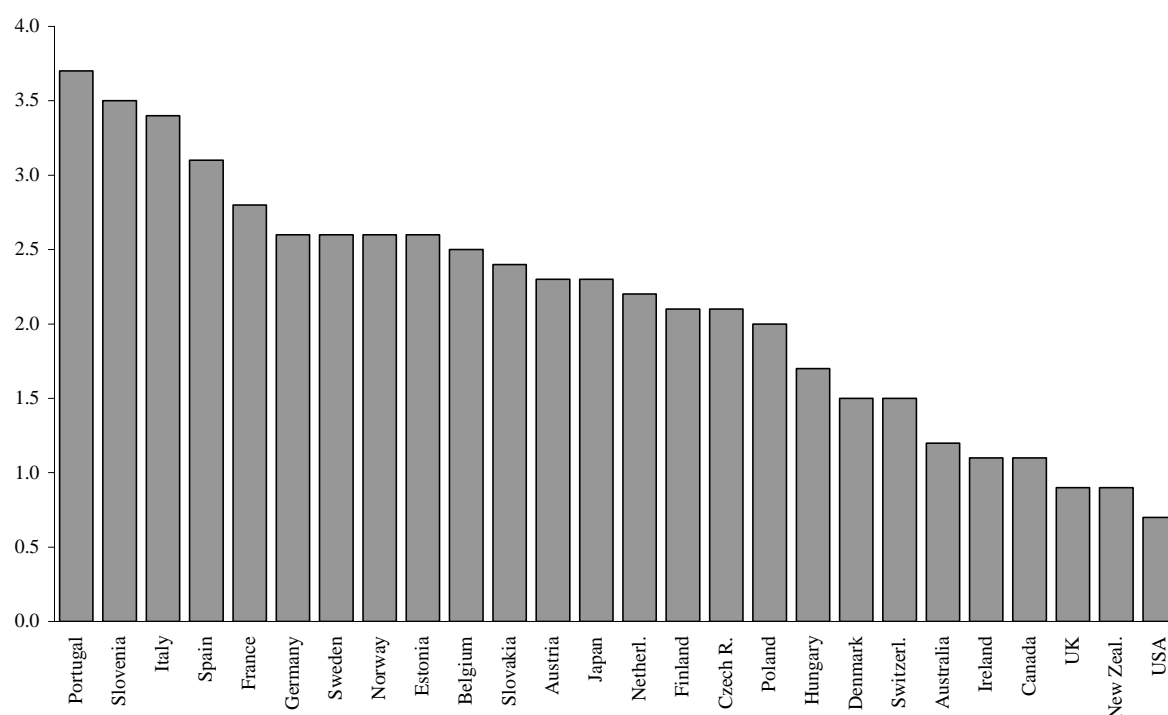
Source: UN World Trade Databank.

Figure 2: Intra-Industry Trade with the EU in 2001, %



Note: Preliminary Data excluding the UK.

Source: Djankov and Fidrmuc (2004).

Figure 3: Employment Protection Legislation Indices

Source: Riboud et al. (2002).

3.2 Data Description for the Out-of-Sample Analysis (Acceding Countries)

Since the opening-up of Eastern Europe, the importance of EU countries for the CEECs' trade has increased dramatically. As of 2001, the European Union was the most important trading partner of all CEECs. The EU accounted for between 40% (Lithuania) and 75% (Hungary) of CEECs' total exports. These export shares are comparable to or even higher than intra-EU shares for nearly all EU member states (see

Figure 1). On the import side, the predominance of the EU is only slightly weaker. Furthermore, the shares of exports and imports going to and coming from an 'enlarged EU,' which is the current EU plus the ten accession countries, are even higher. According to this indicator, the enlarged Europe is the most important export market for Slovakia and the Czech Republic, followed by Portugal, the Netherlands, and Austria.

The CEECs are relatively open economies. Exports account for about one third of GDP in Hungary, and above 40% in the Czech Republic, Slovakia and Slovenia. Thus, these countries are relatively more open than nearly all EU countries. There are only few EU countries, including Belgium, the Netherlands, and Ireland, which are significantly more open than the smaller CEECs (export shares between 50% and 70% of GDP). Only Poland's exports are relatively low at 17% of GDP, but this corresponds to the larger size of the Polish economy.

Buiter and Grafe (2002) note that the CEECs are also relatively open, if we compare their trade to GDP at purchasing power parities.

The growth of intra-industry trade, which is observed in intra-EU trade, also dominates the recent East-West trade developments. This would increase net gains from the integration of CEECs into the euro area. According to Djablik and Fidrmuc (2004), the shares of intra-industry trade in EU's trade with the Czech Republic, Slovenia and Hungary, as computed by Grubel-Lloyd indices for three-digit SITC commodity groups, are already comparable to or even slightly larger than in EU's trade (preliminary data excluding the UK) with e.g. Spain and Sweden (that is, about 60%) in 2001. Poland and Slovakia report somewhat lower levels of intra-industry trade at about 50%. These levels are comparable to those of Ireland and Portugal (see Figure 2). However, the shares of intra-industry trade in trade of the EU with Estonia, Lithuania, Latvia, Romania, and Bulgaria have still remained slightly below the levels of EU intra-industry trade with Greece and Turkey (35%).

Finally, Riboud et al. (2002) provide the *EPL*-Indices also for six acceding countries (Czech Republic, Estonia, Hungary, Poland, Slovakia and Slovenia). They conclude that these countries, compared to the EU countries, fall in the middle of the flexibility scale. Nevertheless, some acceding countries (especially Hungary) report comparable low degrees of employment regulations, which are only slightly higher than those of Ireland and some non-EU OECD countries. By contrast, Slovenia is an opposite exception as it has second highest degree of employment regulations among OECD countries. Nevertheless, the authors mention that a new labor code is being prepared in Slovenia which will lower employment regulations significantly (from 3.5 to approximately 2.3). Nevertheless, later computations will use the current version of the *EPL*-index for Slovenia.

We have to keep in mind that the maximum *EPL*-Indices are based on comparisons with the partner countries. As far as employment regulations are higher in the current euro countries than in the acceding countries (weighted average for the euro area is 2.78), the *MEPL*-indices used for out-of-sample analysis reflect rather the situation in the euro area than in the acceding countries (except for Slovenia), but the difference is rather small.

4 The Results

Based on the arguments of the optimum currency area theory as presented in Section 2, we expect that trade intensity or intra-industry trade have positive effects on business cycle similarities, as measured by the correlation of business cycles described above. By contrast, labor market rigidities lower business cycle coordination. Thus, following relationship is estimated

$$\text{Corr}(Y_i, Y_j) = \beta_1 + \beta_2 \log(\text{TRADE}_{ij}) + \beta_3 \log(\text{MEPL}_{ij}) + \varepsilon_{ij} \quad (4)$$

where $\text{Corr}(Y_i, Y_j)$ denotes the correlation of business cycles, and *TRADE* the bilateral trade intensity or intra-industry trade between the countries *i* and *j*, and *MEPL* stands for labor market rigidities (defined as the maximum of the *EPL*-indices for countries *i* and *j*). Two measures of business cycles are used for comparisons as described above. The first bloc of Table 2 is estimated for contemporaneous correlation of detrended industrial production, while the second bloc uses correlation of business cycles reported by Artis (2003).⁴

We should keep in mind that Fidrmuc (2004) shows that trade intensity and intra-industry trade are correlated. Therefore, both variables should not be included in the same specification. Trade intensity may be defined either in relation to exports, imports, or trade turnover, as explained above.

Table 2 reports several specifications of equation (4) for OECD countries. However, the OLS regression of bilateral economic activity on trade indicators may be inappropriate. Countries are likely to orient their monetary policy and fix the exchange rates towards their most important trading partners. The bilateral trade might already reflect the adoption of a common exchange rate policy and not vice versa.⁵ Therefore, trade intensity has to be instrumented by exogenous determinants of bilateral trade flows. Such instruments are provided by the so called ‘gravity model’ including the log of distance between trading partners, a dummy for geographic adjacency and a dummy for the 12 earlier member states of the EU,⁶ and the aggregate income as well as the income per capita (in logs) of the included countries. Similar endogeneity arguments may be found for intra-industry trade. The same set of selected instrumental variables is also highly correlated with intra-industry trade (see Hummels and Levinsohn, 1995).

Trade intensity for exports, imports and trade turnover (see first three columns of Table 2) are revealed to have a significant and positive effect on the correlation of business cycles. Intra-industry trade (see the last column of Table 2) is also positive and highly significant. Overall, the size of the coefficients is very similar to Frankel and Rose (1998) and Fidrmuc (2004). Finally, the composite indicator of labor market rigidities enters, as expected, with negative sign. The variable is also significant for all specifications.

⁴ Results for alternative measures of economic activity (GDP growth rates) are available upon request.

⁵ Rose (2000) and Frankel and Rose (2000) document positive effects of currency unions and negative effects of exchange rate volatility on bilateral trade.

⁶ Austria, Finland, and Sweden, which joined the EU in 1995, are excluded here. Nevertheless, the results are largely robust to the exact definition of the dummy variable.

A comparison of individual specifications shows only surprisingly few differences. The quality of fit is relatively low for both indicators of business cycles. Lower coefficients for trade variables but lower coefficients for labor market rigidities are estimated for industrial production than for the alternative Artis' indicator of business cycles.

Table 2: Business Cycles, Trade and Labor Market Rigidities

	Industrial Production (fourth differences)				Business cycles according to Artis (2003)			
	Exports	Imports	Total	IIT	Exports	Imports	Total	IIT
Constant	0.899 (8.100)	0.857 (7.968)	0.897 (8.018)	0.656 (8.821)	1.011 (13.257)	0.980 (13.013)	1.019 (13.169)	0.749 (13.964)
Trade indicator	0.079 (4.548)	0.068 (4.297)	0.078 (4.478)	0.138 (4.014)	0.094 (7.551)	0.084 (7.379)	0.094 (7.600)	0.183 (7.128)
Labor market rigidities	-0.197 (-3.322)	-0.212 (-3.518)	-0.208 (-3.477)	-0.184 (-3.074)	-0.129 (-2.987)	-0.148 (-3.416)	-0.143 (-3.304)	-0.116 (-2.609)
No. of observations	190	190	190	190	190	190	190	190
SER	0.265	0.266	0.265	0.267	0.205	0.206	0.205	0.205
Adjusted R ²	0.123	0.114	0.121	0.104	0.211	0.206	0.213	0.210

Note: Trade is instrumented in the two-stage OLS by the log of distance, a dummy for geographic adjacency, a dummy for EU 12, the log of aggregate income and the log of income per capita. Heteroscedasticity-robust t-statistics are in parentheses. Adjusted R² and standard errors of regression (SER) are computed using the second stage residuals.

5 Indices of Endogenous Optimum Currency Area for Acceding Countries

Several authors report increasing similarities in business cycles between the EU (mainly Germany) and the CEECs since the economic reforms have been introduced. Recent surveys can be found in Fidrmuc and Korhonen (2004) and Darvas and Szapáry (2004). Indeed, these authors conclude that the business cycles of several acceding countries have become strikingly similar to the business cycle of the EU since the second half of the 1990s. At the beginning of the 1990s, the business cycles in the CEECs were determined by the so-called transitional recession. Therefore, the correlation of business cycles remains low if measured since the beginning of the 1990s. The recovery in these countries has been strongly influenced by the growing exports to the EU. As a result, the business cycle of the EU has increasingly gained on importance for the developments in CEECs' economies since the mid of the 1990s. In particular, the business cycles of Hungary, Slovenia, and Poland are generally found to run already parallel to the business cycle of the euro area.

However, the period of about ten years, which are covered in the available analyses, might be too short to conclude that the business cycles have already become similar. In particular, this period corresponds to only about one full business cycle. Actually, business cycles in the Czech Republic and Slovakia are still relatively independent from other EU countries. In so far as the Czech Republic and Slovakia are quite similar to other acceding countries, this shows that country-specific shocks may still have significant effects in the acceding countries. The difference between the Czech Republic and Slovakia, on the one hand, and the remaining acceding countries, on the other hand, indicates that asymmetric shocks are still likely in the EU and the CEECs.

The revealed trend to the unification of business cycles in Europe is not surprising. It fully corresponds to the endogeneity of OCA criteria, although labor market rigidities may lower these adjustments. Therefore, the equations estimated above are used to evaluate the potential correlation of business cycles in the euro area and the acceding countries, given the current integration of these countries or the current levels⁷ of intra-industry trade, and employment indices (see Table 3). However, we have to keep in mind that the specifications are not robust enough to be used for standard forecasts. Nevertheless, the out-of-sample predictions can be alternatively interpreted as indices of endogenous optimum currency area (*EOCA*-indices) similar to those constructed by Bayoumi and Eichengreen (1997).

Using various specifications of equation (4), the average *EOCA*-indices for the member states of the euro area are predicted at 0.53 and 0.40 for the industrial production and the alternative Artis' measure of business cycles, respectively. Actually, the corresponding values for the Czech Republic, Hungary and Poland are only slightly lower, why they are well above the comparable figures for non-EU countries. The difference between both regions is especially small if intra-industry trade is applied as a measure of trade integration. As far as the Slovak and the Slovene trade is less oriented towards the euro zone, this causes lower *EOCA*-indices of about 0.40 on average. A lower degree of business cycle correlation is expected only for Estonia. This is also caused by the negative contributions of the labor market rigidities.

⁷ These technical assumptions may be viewed as rather conservative because trade with the EU and the importance of intra-industry trade is likely to increase during the accession to the EU and EMU.

Table 3: Indices of Endogenous Optimum Currency Area of Selected Countries with the Euro Area

	Industrial Production (fourth differences)				Business cycles according to Artis (2003)			
	Exports	Imports	Total	IIT	Exports	Imports	Total	IIT
Czech Republic	0.45	0.46	0.45	0.56	0.34	0.34	0.34	0.42
Hungary	0.46	0.45	0.45	0.53	0.34	0.33	0.33	0.40
Poland	0.46	0.48	0.47	0.51	0.34	0.35	0.35	0.37
Slovakia	0.36	0.36	0.35	0.49	0.26	0.26	0.25	0.36
Slovenia	0.30	0.33	0.31	0.50	0.19	0.22	0.20	0.35
Estonia	0.23	0.26	0.23	0.45	0.15	0.18	0.15	0.33
EMU	0.54	0.53	0.54	0.53	0.40	0.39	0.40	0.39
Non-EU countries	0.44	0.43	0.43	0.42	0.32	0.32	0.32	0.31

Notes: Indices of Endogenous Optimum Currency Area are computed for 2001 according to particular specification of (4) as indicated by columns' headers.

6 Conclusions

We illustrate the importance of two factors determining the degree of business cycles synchronization between OECD countries. On the one hand, we confirm the endogeneity hypothesis of the OCA criteria. Trade intensities and intra-industry trade are shown to induce the convergence of business cycles. On the other hand, we show that other variables are important in this respect as well. In particular, this paper addresses the importance of labor market rigidities for the synchronization of business cycles. These regulations are revealed to lower the correlation of business cycles between countries. This finding is robust to various definitions of trade integration and different indicators of economic activity for comparisons of business cycles. Thus, EU integration may have ambiguous effects on the synchronization of business cycles in general. Integration to the single market and the euro area is likely to increase trade, however, the adoption of the *aqui communautaire* may increase labor market rigidities as well.

Furthermore, this paper addresses the issue of the current enlargement agenda. The future enlargement of the euro area by Central and Eastern European countries has already initiated an intense discussion. This paper focuses on six acceding countries in Central and Eastern Europe. The empirical analyses (see Darvas and Szapáry, 2004, and Fidrmuc and Korhonen, 2004) document that the CEECs have rapidly converged to the EU countries in terms of business cycles and trade integration. In particular, business cycles in several CEECs (Hungary, Slovenia, and Poland) are strongly correlated with the business cycle in the euro

area in the period since 1993. In this respect, it may seem that Hungary, Slovenia and possibly Poland, not however the Czech Republic and Slovakia, have made headway towards constituting an optimum currency area with the EU.

However, the observation period is still too short to conclude that the business cycles have already become similar. In particular, this period has been characterized by only few supply and demand shocks. Furthermore, the business cycle in the Czech Republic is not correlated with that in the euro area. As the Czech Republic is quite similar to other CEECs, this indicates that country-specific shocks may still have significant effects on these economies.

To shed more light on this ambiguous result, the paper computes the potential correlation of the business cycle in Germany and in the CEECs using estimated relations between the degree of trade integration, labor market indices, and the convergence of the business cycles of trading partners. These figures may be alternatively interpreted as 'EOCA-indices' following Bayoumi and Eichengreen (1997). As a result, the high degree of trade between the EU and the CEECs represents a sound base for business cycle convergence, and thus for a fulfillment of OCA criteria to a comparable degree as by the current EU-members in the medium and long run.

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