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**Working Paper**

## Exchange Rate Regimes of CEE Countries on the Way to the EMU : Nominal Convergence, Real Convergence and Optimum Currency Area Criteria

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# Exchange Rate Regimes of CEE Countries on the way to the EMU: Nominal Convergence, Real Convergence and Optimum Currency Area Criteria

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## The Eastward Enlargement of the Eurozone

Berlin Evora Helsinki Ljubljana Bologna Tartu Warsaw

## Exchange Rate Regimes of CEE Countries on the way to the EMU: Nominal Convergence, Real Convergence and Optimum Currency Area Criteria

### Abstract

The paper addresses some issues which are still open in the process of inclusion of CEE countries in the EMU. First, what are the interests of both parties involved (CEE countries and the EU side) regarding the dynamics of the accession of CEE countries to the EMU, and related to this, what is its likely scenario (early or late inclusion in the EMU), taking into account the balance of powers between the two sides. Second, the paper discusses the criteria for measuring readiness of individual CEE countries for joining the EMU. The analysis is focused on the debate on nominal convergence (represented by the famous maastricht convergence criteria) versus real convergence (catching up in economic development). In short, the discussion concentrates on the question whether monetary integration is possible and desirable among countries at a different level of economic development.

Finally, special attention is paid to optimum currency area criteria, not only as a theoretical background for monetary integration, but also as an additional insight into the measurement of relative suitability and readiness of individual candidate countries for joining the EMU. As an illustration, the paper attempts to measure some of the optimum currency area indicators for the case of Slovenia, and finds out that Slovenia is relatively quite suitable for joining monetary integration and relatively well prepared for joining the euro area. In particular, Slovenia is not expected to be exposed to serious asymmetric shocks, once Slovenia joins the EMU.

*JEL-Classification:* E0, F02

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**EXCHANGE RATE REGIMES OF CEE COUNTRIES ON THE WAY  
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CONVERGENCE AND OPTIMUM CURRENCY AREA CRITERIA**

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# **EXCHANGE RATE REGIMES OF CEE COUNTRIES ON THE WAY TO THE EMU: NOMINAL CONVERGENCE, REAL CONVERGENCE AND OPTIMUM CURRENCY AREA CRITERIA**

## **Abstract**

Central and Eastern European (CEE) countries are expected to join the European monetary union (EMU) in a couple of years after their accession to the EU. According to the official views of the European Commission and the European central bank (ECB), monetary integration of CEE countries in the euro area should be a multilateral, successive and phased process, leading finally to their adoption of the euro.

The paper starts from the description of alternative exchange rate regimes currently in use in Central and Eastern European EU candidate countries. Their present exchange rate arrangements differ substantially, as they cover the whole spectrum of possible solutions, from currency boards to floating exchange rate regimes. By now it is known that these countries will first enter the EU and the ERM 2 (exchange rate mechanism, devised for the so-called pre-in countries, as a preparatory stage before their EMU membership), and only a few years later join the EMU and adopt the euro. The paper therefore tries to evaluate present arrangements of the candidate countries from the point of view of how compatible these arrangements are with the future ERM 2 and EMU requirements.

The paper addresses some issues which are still open in the process of inclusion of CEE countries in the EMU. First, what are the interests of both parties involved (CEE countries and the EU side) regarding the dynamics of the accession of CEE countries to the EMU, and related to this, what is its likely scenario (early or late inclusion in the EMU), taking into account the balance of powers between the two sides. Second, the paper discusses the criteria for measuring readiness of individual CEE countries for joining the EMU. The analysis is focused on the debate on nominal convergence (represented by the famous maastricht convergence criteria) versus real convergence (catching up in economic development). In short, the discussion concentrates on the question whether monetary integration is possible and desirable among countries at a different level of economic development.

Finally, special attention is paid to optimum currency area criteria, not only as a theoretical background for monetary integration, but also as an additional insight into the measurement of relative suitability and readiness of individual candidate countries for joining the EMU. As an illustration, the paper attempts to measure some of the optimum currency area indicators for the case of Slovenia, and finds out that Slovenia is relatively quite suitable for joining monetary integration and relatively well prepared for joining the euro area. In particular, Slovenia is not expected to be exposed to serious asymmetric shocks, once Slovenia joins the EMU.

## 1. Introduction

Central and Eastern European (CEE) countries are expected to join the European monetary union (EMU) in a couple of years after their accession to the EU. According to the official views of the European Commission and the European central bank (ECB), monetary integration of CEE countries in the euro area should be a multilateral, successive and phased process, leading finally to their adoption of the euro.

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Finally, special attention is paid to optimum currency area criteria, not only as a theoretical background for monetary integration, but also as an additional insight into the measurement of relative suitability and readiness of individual candidate countries for joining the EMU. As an illustration, the paper attempts to measure some of the optimum currency area indicators for the case of Slovenia.

## **2. Exchange-rate regimes of Central- and Eastern european EU-candidate countries**

Discussions on optimal dynamics of the inclusion of CEE (Central and Eastern European EU candidate countries) in the eurozone conventionally start from the analysis of exchange rate regimes of these countries. In the process of joining the EU and the euro area their present exchange rate arrangements will at some point in time have to go through some changes before their final adoption of the euro. The sequence and timing of adaptations of their exchange rate regimes shed some light on the issue of optimal as well as on realistic dynamics of inclusion of CEE in the eurozone.

CEE presently use very different exchange rate regimes, covering practically the whole spectrum from rigidly fixed to free floating exchange rate arrangements. These diverging views among the CEE on the optimality of the exchange rate arrangements are not a new development. Even at the outset of their transition process in early nineties they opted for different exchange rate regimes. In line with conventional wisdom at that time, which emphasised the role of the fixed exchange rate as a nominal anchor for macroeconomic stabilisation, majority of CEE decided for some form of a fixed exchange rate regime. Others, like Slovenia, against conventional wisdom, opted for more flexible solutions, even for a managed floating exchange rate regime. As all exchange rate arrangements basically performed well and fulfilled their main task of stabilising the economy and bringing down inflation rate of the CEE to the range of single digit figures, one can conclude that no single optimal exchange rate regime exists for CEE and that their choice of an appropriate exchange rate regime should be tailored according to their specific characteristics and priorities. Their choice of the exchange rate regime therefore reflects the main alternative focuses of their exchange rate policies - bringing down inflation, sustaining balance of payments equilibrium, dealing with large and volatile capital flows, stabilising the real exchange rate etc. Anyway, the view that the optimality of the exchange rate arrangements for the CEE can not be generalised mirrors in the position of the EU on the current exchange rate arrangements of the CEE. Until they join the EU, there are no restrictions on the choice of the exchange rate regime for the CEE.

In the period since the beginning of transition, most of CEE (except Baltic countries and Slovenia) experienced some shifts in their exchange rate regimes. Changes in the exchange rate regimes intensified particularly after currency crises in Asia and Russia. It turned out that some interim solutions, particularly fixed but adjustable exchange rate regimes, are specially vulnerable to speculative attacks related to currency crises. There seemed to be a tendency to move away from interim solutions in the direction of the so-called corner solutions, either in the form of rigidly fixed exchange rate regimes, such as currency boards, or in the form of more flexible exchange rate arrangements, such as managed or even free floating exchange rate regimes. A closer inspection of the exchange rate regime shifts, however, reveals that except for the case of Bulgaria, which moved from a floating exchange rate regime to a currency board as a result of specific circumstances (financial crash and the need to restore confidence), all other regime shifts were in fact in the direction towards more flexible solutions. In particular, The Czech Republic, Slovakia and Poland adopted flexible exchange rate regimes, which are close to free floating. This points to a certain contradiction. The move towards more flexible exchange rate arrangements appears to be in contrast with the supposed move towards more fixed exchange rate arrangements which monetary integration with the EU implies, as ultimately the inclusion of CEE in the euro area calls for an irrevocable fixing of the exchange rate and giving up the exchange rate altogether, when they adopt the euro. The question then is how and when this trend towards increased flexibility will turn around towards increased fixity of the exchange rate regimes and will this shift be the result of changes in underlying economic developments, or merely the result of external institutional constraint (formal requirements regarding exchange rate regimes of CEE in the process of their joining the EU and the eurozone).

### **3. Process of inclusion of the CEE countries in the eurozone**

Until recently, EU strategy towards inclusion of CEE in the eurozone was rather vague or undefined, as the discussions on the issue seemed premature. In the last three years, EU institutions (European commission, ECOFIN, European central bank) defined their position, coordinated their views and presented rather elaborated strategies towards exchange rate regimes of CEE in their run-up to the EU and to the euro area.<sup>1</sup>

EU side (in this text we use this term as a shortcut expression, which combines the position of the above mentioned EU institutions) sees the inclusion of CEE in the eurozone as the

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<sup>1</sup> Strategy of the EU side towards CEE exchange rate regimes on their way to eurozone can be discerned from European commission (2000), ECOFIN council (2001) and European central bank (2000). For the IMF view on exchange rate regimes of the CEE on their way to EMU, see IMF (2000).

final phase of their process of economic and monetary integration in the EU. This process is divided in three distinct phases. The first phase – preaccession phase - which lasts till the accession of CEE in the EU, gives CEE free hands in the choice of their exchange rate regimes. In this phase, they retain their monetary sovereignty, but have to adopt *acquis communautaire* in the field of EMU (completely liberalise capital flows, make their central banks independent, prohibit direct financing of the government by the central bank and prohibit privileged access of the government to financial institutions).

The second phase - accession phase - starts with the inclusion of CEE in the EU and ends with their inclusion in the eurozone. In this phase, CEE lose to a considerable degree (but not yet fully) their monetary sovereignty. In the second, accession phase, exchange rates of the CEE become the matter of the common concern. In particular, excessive exchange rate fluctuations or misalignments of their exchange rates would be considered inconsistent with the proper functioning of the single market, i.e. potentially harmful to other EU members. In this context it should be mentioned that with their accession, economic policies of CEE also become a matter of common concern and become subject to coordination and common surveillance procedures. In order to meet the Maastricht convergence criterion of exchange rate stability, as one of the preconditions for joining the eurozone, CEE will have to participate for at least two years in the ERM 2 (Exchange rate mechanism 2), a specific system of a fixed, but adjustable exchange rates (ERM 2, as a successor of ERM, which ceased to exist with the introduction of EMU in 1999, is designed for the so called pre-ins, EU member countries which are not yet ready for joining the euro area). Finally, as EU members, CEE have to share the aims of economic and monetary union. In other words, contrary to some incumbent members of the EU, new entrants will not be given the possibility to opt-out of joining the euro area. As a part of their EU package CEE will at some point - when they are assessed as ready - finally have to adopt the euro even if they opposed it. However, this is not a very relevant concern, since most CEE expressed their ambition to join the euro area as soon as possible.

The third phase - euro phase - starts when CEE meet the required criteria for the inclusion in the eurozone, adopt the euro and give up their own national currencies. From there on, CEE have equal rights and obligations in the conduct of the single European monetary policy as any other EU members of the eurozone.

### **3.1. Dynamics of Inclusion of Central and Eastern European EU Candidate Countries in the Eurozone**

What are the interests of both involved parties, EU side and CEE, concerning the dynamics of inclusion of CEE in the eurozone? Generally speaking, CEE, particularly the best prepared ones, are in favour of an early accession to the eurozone. Their strategies reflect their ambition to join the euro area as soon as possible.<sup>2</sup> On the other hand, EU side warns against premature entry of CEE in the eurozone and seems to prefer a delayed “wait and see” approach. In fact, according to the EU side, CEE should join the euro area when they are ready (fulfil the Maastricht convergence criteria on a healthy and sustainable basis), but added to this are some pessimistic economic assumptions, demanding preconditions and administrative barriers, which altogether require a long process of adjustment and preparations of CEE. EU institutions also seem to favour as much discretion as possible in this matter, just to be on the safe side.

Since the attitudes of CEE and of the EU side concerning the timing of CEE entry in the eurozone are obviously diverging, the outcome will be the result of the balance of powers between the two sides. As CEE are “joining the club”, the balance of powers is asymmetric, which means that the timing of their eurozone entry will be from the point of view of CEE more or less exogenous, i.e. externally determined.

What are the risks from a premature inclusion of CEE in the eurozone for the EU side and for the CEE? As far as the EU side is concerned, the risks which call for their overcautious approach to the timing of the entry of CEE in the eurozone are the following: Inclusion of supposedly weaker currencies of CEE could endanger stability and credibility of the euro, could require financial assistance to help CEE deal with asymmetric shocks in the monetary union, could lead to a bias in the decision making process in the ECB, leading perhaps to looser or more accommodative single European monetary policy. These arguments can be opposed on the ground that the share of CEE (in terms of GDP or monetary aggregates) in the eurozone and in the Eurosystem will be almost negligible, and that it can not be assumed that CEE are a priori inclined to less stable financial policies, particularly after many years of adjustment which they went through or still have to go through.

Risks from joining the eurozone for CEE countries undoubtedly exist, but they are in principle similar to those of the EU countries. They will lose their monetary policy and exchange rate instruments, but it has to be said that in the process of joining the EU and

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<sup>2</sup> Strategy of CEE regarding the timing of their EMU accession can be discerned from European Parliament (1999) and from their preaccession programmes.

particularly the ERM 2 they will lose much of their monetary sovereignty anyway, so joining the eurozone will imply only residual loss of their monetary autonomy. The risks CEE will be exposed to in the euro area are conditional. If they suffer specific asymmetric shocks, and if alternative adjustment mechanisms (such as wage flexibility in the first place) do not work, they could suffer some decline in growth and employment. These risks need not be too pronounced or specific for them, at least from an ex ante perspective and taking into account that they still have a number of years ahead to undertake needed adjustment and to prepare themselves for participation in the monetary union. Even if these risks in the worse case scenario materialised, their position would still not be much different from that of the regions within federal states, which suffer an asymmetric shock within the “monetary union”, which in a sense a federal state represents from a monetary point of view. However, in the regional adjustment process in federal “monetary unions” some additional instruments of adjustment (common fiscal policy, migration of labour) can be activated more easily than in international monetary unions which lack a strong supranational state. These risks should be in the first place concern and responsibility of CEE themselves. In the period of preparations they should work on eliminating the causes of domestic asymmetric shocks, and on making their adjustment mechanisms (labour and product markets) more flexible.

On the other hand, there are also obvious benefits for CEE from their early inclusion in the eurozone. The benefits of joining the euro area for CEE are similar to those of the EU countries. There are microeconomic advantages (elimination of exchange rate fluctuations, risks and costs, elimination of currency conversion costs, transparency of prices) and macroeconomic advantages (lowering of the inflation rate and of the interest rate), which CEE can start collecting as soon as they join the eurozone. If it turns out that CEE can expect net benefits (higher benefits than costs) from the inclusion in the eurozone, which seems to be the case, they should aim at joining the eurozone as soon as possible in order to collect these net benefits as soon as possible.

Another argument for an early inclusion of CEE in the eurozone can be found in the fact that in the process of their EU approximation these countries had to liberalise their capital flows almost completely. Before their membership in the EU and in the eurozone they are particularly exposed to potentially volatile speculative capital flows, but have no instruments to protect themselves against them and no support from the EU side, which EU and eurozone members have at their disposal. Once they join the eurozone, their exchange rates can no longer be subject to speculative attacks and they can count on balance of payments support in case of serious asymmetric shocks.

Finally, there are also some political or prestigious reasons for an early membership in the eurozone from the point of view of individual CEE, which has to do with their rivalry and ambition to be in the first group of new countries to adopt the euro.

Three alternative scenarios with respect to the timing of CEE entry in the eurozone reflect opposing views of the EU side and CEE and balance of powers between them. From the point of view of possibilities for an early inclusion of CEE in the eurozone the following scenarios can be suggested:

1. Optimistic scenario: EU entry in 2004, entry in the ERM 2 at the same time, entry in the eurozone two years later, in 2006. This is the first theoretical date for the adoption of the euro for the best prepared CEE. Optimistic scenario seems very unlikely from the present perspective, as it would require good results in structural reforms and successful fulfilment of the convergence criteria in CEE, technical efficiency in the assessment the readiness of CEE for joining the ERM 2 and the eurozone, and some change in the so far conservative attitude of the EU side towards monetary integration of CEE.
2. Pessimistic scenario: EU entry in 2005-2006, entry in the ERM 2 a year later, entry in the eurozone four to five years later, which gives a range between 2010 and 2012 for CEE to adopt the euro. Realisation of a pessimistic scenario would require exactly opposite assumptions than in the case of an optimistic scenario. Taking into account the attitudes of the EU side and balance of powers to support it, pessimistic scenario from today's perspective seems more likely than the optimistic one.
3. Realistic scenario: EU entry in 2004-2005, entry in the ERM 2 half a year later and entry in the eurozone two and a half to three years later, which gives a range between 2007 and mid 2008 for CEE to adopt the euro. Realistic scenario still gives the group of say 2-3 best prepared CEE countries around seven years to undertake necessary adjustment and preparations, which is much, considering the adjustment effort they had to undertake in the past ten years of their transition and EU approximation. Other less prepared CEE could follow in some 2-3 years, and most problematic probably in some 5 years.

### **3.2. Nominal Versus Real Convergence Issue**

The EU side emphasises that criteria for the admission of new members to the eurozone will be the same as criteria that were used for the selection of the present members of the euro area. This means that meeting the Maastricht convergence criteria on a healthy and sustainable basis should be for CEE a necessary and sufficient precondition for their accession in the eurozone. However, starting from their transition-specific characteristics, for CEE an additional precondition, labelled as real convergence, was introduced lately. Their real convergence should take place in parallel to their nominal convergence or in fact before

it, since the idea is that CEE can not be properly assessed for nominal convergence until they converge enough in real terms. Real convergence is understood as catching-up in the level of their GDP per capita towards the average in the EU, implementation of necessary structural reforms and termination of their process of transition. The concept of real convergence is rather vague, and no specific indicators which could be assessed in quantitative terms are suggested as real convergence criteria, although it can not be excluded that such formal criteria may emerge in time.

It can be argued that the concept of real convergence was introduced for the CEE because of the fear that after joining the EU, CEE would be able to fulfil the nominal convergence criteria relatively quickly, so that it would be difficult for the EU side to find arguments and instruments to keep them out of the eurozone, if it considered their membership in the euro area as premature. It is to be reminded that the Maastricht convergence criteria failed in keeping out the Southern, supposedly financially more problematic EU members out of the eurozone. This can explain why the concept of real convergence was introduced - to allow some discretion of the EU side for keeping CEE out of the eurozone for a while, if necessary. The concept of real convergence can be dangerous since because of its discretionary nature it can be misused to postpone the entry of CEE in the eurozone into indefinite future. When will CEE converge enough in real terms? Catching-up, even if not interrupted, is a lengthy process, transition in a sense that CEE are still different from EU countries will hardly ever end, structural reforms can also last forever.

The main question in the nominal versus real convergence debate is probably the following one: Is monetary integration among countries at the different level of economic development possible? The answer should be yes. Historical monetary unions, existing monetary unions, and even European monetary union itself, which includes member countries with considerably different GDP per capital levels, demonstrate this. Perhaps it would be easier to run a monetary union with member countries at the same level of economic development, but in reality this never happens. What matters most is the readiness of member countries to conduct responsible monetary and fiscal policies, if the monetary union is to survive. Another argument in support of the case can be found in federal states, which are conditionally speaking "monetary unions", normally consisting of regions at the different levels of economic development (take as an example Italy with its developed northern and underdeveloped southern regions). However, as was mentioned before, monetary unions at the international level are more demanding than those at the national level, since a country can use additional mechanisms of adjustment to deal with regional asymmetric shocks in a "monetary union".

Finally, it is evident that not all CEE are equally suitable and prepared for monetary integration. A convoy approach to the accession of CEE in the eurozone would not be appropriate. Best prepared candidates should not wait for the others, but go ahead, join the eurozone and themselves set an example that CEE can be successful members of the euro area. Given the problems with interpreting and measuring nominal and real convergence, discussed earlier in the paper, it is evidently difficult to assess even relative readiness of individual accession countries for their joining the process of monetary integration. Maastricht convergence criteria alone, at least in this stage, may be misleading, due to conceptional, interpretational and methodological problems of applying them to CEE. Additional help can come from comparisons based on their real convergence. Finally, some optimum currency area indicators can shed some light on relative suitability of individual CEE for joining the euro area.

#### **4. Optimum Currency Area Theory and Slovenia**

Optimum currency area (OCA) theory was developed in the sixties in the context of the debate on fixed vs. floating exchange rates. It concentrated on certain structural characteristics of the economy, which suggested that for some countries fixed exchange rates, while for others floating exchange rates were a better solution. Later on, the debate shifted to the issue of monetary integration. Again, on the basis of the same structural characteristics (size, openness, diversification, etc.) is it better for a country to join monetary integration and enter a monetary union, or to keep its own currency? Related to this, what is an optimum currency area – a domain in which there should be a single currency? In other words – where should be the border of a monetary union? Needless to say, OCA theory gained additional popularity with the process of creating the EMU among the EU member countries.

Potential members of a monetary union should ask themselves about expected costs and benefits of giving up their own currency and joining the monetary union. Individual structural characteristics of the economy of individual countries affect their costs and benefits of joining the monetary union and thus make them more or less suitable for joining monetary integration. OCA criteria are now becoming useful for CEE countries. Even if for them – as future EU members – joining the EMU is at some point mandatory, OCA criteria can help them to estimate expected costs and benefits of joining the eurozone and shed some light on relative suitability and readiness of individual CEE countries to join the EMU. In the following, we present the assessment of OCA criteria for the case of Slovenia.

## 4.1 Labour mobility in Slovenia

Labour mobility is according to the traditional OCA theory (Mundell, 1961) the alternative adjustment instrument to the nominal exchange rate after a country is hit by an asymmetric shock. The starting point of Mundell's analysis is that a country is hit by an asymmetric demand shock. He argues that if this country has a flexible exchange rate regime it could overcome the shock by adjusting nominal exchange rate<sup>3</sup>. If the country is a member of a currency union this instrument cannot be used. In this case if production factors between the countries were flexible, they would adjust between the countries, preserving the employment of the factors and there would be no real economy imbalances<sup>4</sup>. If neither of these adjustment mechanisms work the country under adverse shock will bear the costs in form of high unemployment.

However, when evaluating optimality of a currency area with this criterion, we should consider the assumptions this argument is based on. First of all, as it is generally accepted today monetary policy effects on real variables in an economy are very small, if any at all. As already noted by Mundell (1961) the exchange rate mechanism may be a less important instrument if economy is very open. We will look at that criterion below. Next, the importance of the labour mobility for well functioning of a currency area only becomes important if a country is hit by asymmetric shock. This means that if the countries in monetary union face the same disturbances (these are usually diversified economies with well-correlated business cycles) there will be less role for the labour mobility as the adjustment mechanism.

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<sup>3</sup> The theory is based on the assumption of effectiveness of the nominal exchange rate changes and of downward nominal wage and price rigidity. Without this assumption the relative prices could adjust even if the nominal exchange rate was fixed.

<sup>4</sup> Initially Mundell's analysis was made with two countries (A and B, say), each producing only one good. The asymmetric demand shock is then interpreted as a shift of demand from country A to the country B.

**Table 1: Regional unemployment rates in Slovenia (in %, 2001)**

|                   |      |
|-------------------|------|
| Celje             | 14.3 |
| Koper/Capodistria | 9.4  |
| Kranj             | 9.0  |
| Ljubljana         | 8.4  |
| Maribor           | 18.4 |
| Murska Sobota     | 16.7 |
| Nova Gorica       | 6.1  |
| Novo mesto        | 8.7  |
| Ptuj              | 16.5 |
| Sevnica           | 14.0 |
| Trbovlje          | 13.5 |
| Velenje           | 10.5 |
| Slovenia          | 11.6 |

Data source: Statistical office of Republic of Slovenia

Table 1 shows data on unemployment in regions in Slovenia. We see that unemployment rates between regions in Slovenia differ substantially. This could impose some idea on the labour market's nature. It suggests low interregional labour mobility even though the regions are small, as are the distances between them<sup>5</sup>. Furthermore, there are no legal, language, and cultural or any other barriers between the regions, which are often the quoted reasons for low labour mobility in Europe.

We can say that labour mobility between Slovenia and EMU does not play any role as an adjustment mechanism, due to legal impediments and labour market's nature. How this will change in the future is hard to predict. From what can be seen when looking at the regional unemployment data (and the EMU labour markets) we do not expect the labour mobility to become an important adjustment instrument soon. However, we can expect more labour mobility in the area, especially if there is enough institutional support provided<sup>6</sup>. Whether low labour mobility in Slovenia may lead to potential problems and costs of joining the EMU will depend on the adjustment needs arising from asymmetric shocks. In section 3.3 we look at the economy and its production structure diversification to see if major idiosyncratic disturbances between the countries are likely to occur and what their consequences are likely to be. Additionally, in section 3.4, we look at the business cycle correlation between Slovenia and its potential common monetary union members.

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<sup>5</sup> We would expect the unemployment rates in the regions to equalise if the labour mobility was perfect.

<sup>6</sup> e.g. qualification programmes for workers, schooling, less unemployed benefits, more flexible labour market legislation and housing market.

## 4.2. Openness of Slovenia's economy

The degree of openness of an economy entering the monetary union is the next criterion of the traditional OCA theory. As first defined by McKinnon (1963), the openness of the economy is an important factor influencing the costs and benefits of a country's inclusion into monetary union. On one hand it rises the benefits of integration because of greater savings in transaction costs and risks associated with different currencies. On the other hand the degree of openness has an impact on the effectiveness of the monetary policy due to large pass-through effect of the changes in nominal exchange rate into domestic prices and wages. More open the economy, larger this effect is and less scope is left for the exchange rate mechanism in the process of adjustments to asymmetric shocks. If, for example, a country depreciates its currency after it had been hit by adverse asymmetric shock, this would rapidly increase the import prices and domestic costs of living<sup>7</sup>. Because of the absence of money illusion the increase in nominal wages will follow. Hence the nominal exchange rate in such economies would be less useful as an adjustment instrument, which lowers the cost from losing direct control over it.

Furthermore, the open economies are usually characterised by high marginal propensity to import, which reduces output variability and the need for domestic monetary policy, since openness acts as an automatic stabiliser (Frankel and Rose, 1998).

Table 2 shows the degree of openness in Slovenia, EMU and some of its members, measured as imports and exports in country's GDP. Slovenia is the most open economy of all the compared countries and the EMU area, with exports in imports larger than GDP. As argued above if economy is open to such a high degree we can expect that changes in nominal exchange rate will be in great proportion transmitted into domestic prices<sup>8</sup>. Additionally Slovenia is also the smallest economy, with no market power and no influence on its tradable prices with the changes in its nominal exchange rate. Judging from this OCA criterion Slovenia could expect benefits of monetary integration arising from a stable exchange rate to be larger than costs from losing the exchange rate flexibility as the adjustment instrument.

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<sup>7</sup> Especially because in small open economies a large proportion of consumed goods is imported.

<sup>8</sup> For empirical studies supporting the strong impact of nominal exchange rate changes on inflation in Slovenia look, for example, Čufer (1997), Drenovec (1998).

**Table 2: Degree of openness of Slovenia and some EMU countries 2000<sup>1)</sup>**

|          | Degree of openness (in %) |
|----------|---------------------------|
| Slovenia | 103.8                     |
| EMU      | 74.6                      |
| Austria  | 69.9                      |
| France   | 46.2                      |
| Italy    | 43.2                      |
| Germany  | 55.9                      |

1) Measured as share of imports and exports in the GDP

Data source: IFS

### 4.3. Diversification of the Slovene economy

The likelihood of asymmetric shocks and their effects depend largely on the economic diversification of a country and therefore this structural characteristic should be considered when defining the optimum currency areas (Kenen, 1969). Well diversified production structure and hence the export structure “protect” the economy ex-ante from major asymmetric shocks. However, even if an asymmetric shock occurs, its effects will not be very large since only a part of the economy will be affected. Furthermore, even if, say, the monetary policy acts in order to offset the imbalances in the segment of the economy hit by an adverse shock, this could have large negative effects on the rest of the economy where the same shock did not occur. All this reduces the argument for the role of an independent monetary policy in counteracting adverse shocks in a country with well-diversified production structure<sup>9</sup>.

In Table 3 the structure of manufacturing sector is shown. It can be seen that the production structure is diversified, with the shares of activities in manufacturing ranging from 0.2% to 14.0%.

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<sup>9</sup> In economies producing and exporting only few types of goods (e.g. primary goods), changes in nominal exchange rate may temporarily compensate for adverse effects and thus help to overcome the shock.

**Table 3: Production structure diversification in Slovenia (shares in manufacturing in %, 2000)**

|                                      |       |
|--------------------------------------|-------|
| Food, beverages and tobacco          | 14.0  |
| Textile, clothing and leather        | 10.6  |
| Wood and wood products               | 3.1   |
| Paper, publishing and printing       | 6.6   |
| Coke, petroleum and nuclear fuel     | 0.2   |
| Chemicals and chemical products      | 12.7  |
| Rubber and plastic products          | 4.2   |
| Non-metallic mineral products        | 5.1   |
| Basic metals and fabricated products | 11.9  |
| Machinery and equipment              | 8.6   |
| Electrical and optical equipment     | 11.6  |
| Transport equipment                  | 7.0   |
| Other                                | 4.4   |
| Manufacturing                        | 100.0 |

Data source: Statistical office of Republic of Slovenia

Next we look at the total economy's diversification. In Table 4 the shares of industries in the economy are presented. Slovene economy is characterised by a large services sector, which is in large proportion non-tradable sector (amounting to approximately 61% of GDP). The primary sector (agriculture, forestry and fishing) with 3.3% of GDP is small and the manufacturing sector contributes a little more than one quarter of GDP.

**Table 4: Output diversification in Slovenia (share of industries in GDP in %, 2000)**

|                        |       |
|------------------------|-------|
| Primary                | 3.3   |
| Mining                 | 1.1   |
| Manufacturing          | 27.8  |
| Energy                 | 3.2   |
| Construction           | 6.2   |
| Trade                  | 11.6  |
| Hotels and restaurants | 3.2   |
| Transportation         | 8.1   |
| Finance                | 4.5   |
| Real estate            | 12.1  |
| Other services         | 18.9  |
| All                    | 100.0 |

Data source: Statistical office of Republic of Slovenia

However, when estimating the suitability of a country for monetary integration on the basis of its economic structure, we should be aware of a flaw of this OCA criterion. Namely, the

production structure of economy changes over time. After intensified economic and monetary integration, changes in production structure may become quite substantial<sup>10</sup>. This means that even if Slovenia today is a well diversified economy, with diversified production and export structure, after its EU and EMU membership it could become more specialised in the production of goods where it has comparative advantage. Consequently, this would increase the likelihood of asymmetric shocks and thus rise potential costs of joining the EMU. However, as we will argue below, when we discuss the effects of enhanced integration in conjunction with business cycle correlation, more specialisation of Slovene economy is not very likely to occur<sup>11</sup>.

#### **4.4. Trade intensity and business cycle correlation**

Business cycle correlation across the countries can be used to estimate the nature of the shocks dominating in these countries. If the business cycles are synchronised (well correlated), major asymmetric shocks are not expected to occur and the countries are more likely to form an OCA. This means that less adjustment will need to take place and malfunctioning of adjustment mechanisms (labour mobility, price and wage flexibility) should not be considered as a major obstacle for future monetary integration.

In our analysis we compare the business cycle in Slovenia with the four major Slovenia's trade partners (hereafter referred to as EMU4) and with the EMU. In order to estimate the business cycle correlation across the countries we look at the correlation of the country's real output growth deviations from the trend<sup>12</sup>. We use the seasonally adjusted data and as de-trending method HP filtering.

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<sup>10</sup> Frankel and Rose (1996) refer to this problem as the endogeneity of the OCA criteria.

<sup>11</sup> However, we are aware of difficulties with estimation of these developments in the future.

<sup>12</sup> We chose real GDP that is widely used for business cycles comparison, although some other variables (e.g. industrial production or employment) could also be used.

**Table 5: Trade intensity and real output correlation between Slovenia and its major trade partners (1992-2001 period average)**

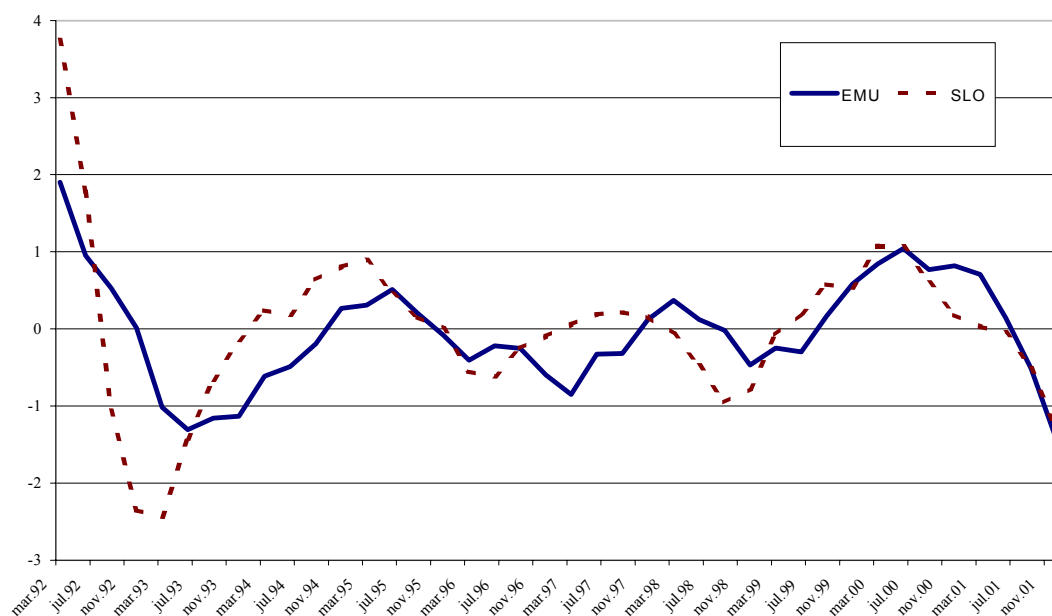
| Country | Trade share* (in %) | Correlation coefficient<br>(deviations of GDP growth from trend) |
|---------|---------------------|------------------------------------------------------------------|
| Germany | 25.2                | 0.62                                                             |
| Italy   | 15.3                | 0.57                                                             |
| France  | 8.7                 | 0.53                                                             |
| Austria | 7.7                 | 0.43                                                             |
| EMU     | 62.4                | 0.68                                                             |

\*measured as a share of imports to and exports from a particular country in Slovenia's total foreign trade

Data source: National statistical offices, ECB

In Table 5 the correlation coefficients of the GDP growth deviations from the trend together with the data on trade intensity are shown. We see that business cycles in Slovenia have been well correlated with its major trade partners and EMU over the last ten years. From what the correlation coefficients tell, we can say that given the well-correlated output movements between Slovenia and the members of the monetary union, which Slovenia will join in the future, major asymmetric shocks are not prevalent in these countries.

**Figure 1: Business cycles in Slovenia and EMU  
(GDP annual growth rate deviations from the trend)**



Data source: National statistical offices, ECB

Another finding is that the correlation of the business cycles is higher with the countries that are more important Slovenia's trade partners. Can we say anything about the correlation of the two? Figure 1 shows that business cycles in Slovenia and EMU countries tracked well

over the whole period. The trade shares of each country (comparing the two sub-periods 1992-1997 and 1998-2001) did not change substantially<sup>13</sup>. To be able to draw any conclusions about the correlation of business cycles and trade intensity in Slovenia a more detailed analysis is needed<sup>14</sup>. We can only say that in the ten years the business cycles in Slovenia were the closest correlated with the country with the largest share in Slovenia's foreign trade.

**Table 6: Trade shares in Slovenia (in %)**

| Country | 1992-2001 | 1992-1997 | 1998-2001 |
|---------|-----------|-----------|-----------|
| Germany | 25.2      | 26.3      | 23.8      |
| Italy   | 15.3      | 15.3      | 15.3      |
| France  | 8.7       | 8.3       | 9.1       |
| Austria | 7.7       | 7.7       | 7.7       |
| EMU4    | 56.9      | 57.6      | 55.9      |
| EU12    | 62.4      | 62.7      | 62.1      |

Data source: National statistical offices, ECB

The drawback of such analysis is that we are evaluating the suitability of a country on the historical data. The suitability may change upon the entry into monetary union<sup>15</sup>. And what are the prospects for the future? Theoretically there is ambiguity about the correlation of the business cycles and trade integration. More integration can result in more or less synchronised business cycles, depending on the changes in the production structure. If a country is going to specialise more, the business cycle can become idiosyncratic<sup>16</sup>. However, it has been argued that the ambiguity is rather theoretical than empirical. The studies on trade integration and business cycle correlation for the EU found positive correlation among the two: more integration resulted in more correlated business cycles<sup>17</sup>. Furthermore, Slovenia's economic integration with the EU is already now strong, but more integration is expected in the future. It can be argued that the cautiousness with the evaluation of the suitability of a country to enter the EMU in this case relates more to the countries that have less trade links with the monetary union and thus more idiosyncratic business cycles. The countries regarded as not suitable candidates for the monetary integration in the past may become members of the OCA in the future.

<sup>13</sup> The share of the EMU countries in the period over last ten years increased from 53% at the beginning of 1992 to 60% at the end of 2001, with the largest increase occurring at the beginning of the period as the result of increased integration of Slovenia with the EU.

<sup>14</sup> Even though it is questionable how reliable the results would be given the short time series for Slovenia.

<sup>15</sup> The endogenous nature of the OCA criteria, see Frankel and Rose (1996).

<sup>16</sup> USA is often quoted as an example, where some states became more specialised. For Europe more specialisation was observed among regions than among countries (e.g. North and South Italy).

<sup>17</sup> For example Frankel and Rose (1996).

#### 4.5. Analysis of real exchange rate movements

The OCA theory is based on the assumption that if a country is hit by an asymmetric shock there are two alternative adjustment mechanisms in the economy: labour mobility or exchange rate flexibility. If none of them adjusts, this will result in large differences in unemployment rates across the countries, making the functioning of the monetary union more costly. These countries do not form an optimum currency area and it would be better for them to have their own monetary policies.

In the section 3.1 we looked at the labour mobility in Slovenia and concluded that the role of labour mobility in adjustment process is negligible. The question we ask now is whether the real exchange rate (RER) mechanism works. To be able to find that out we analyse the real exchange rate movements in Slovenia. We are interested in its variability and the sources of that variability. The variability of real exchange rate in a country with a flexible exchange rate like Slovenia can arise from nominal exchange rate variability and/or variability in relative prices. In a country that is a member of a monetary union it can arise only from the latter (only relative prices can adjust).

However, in such analysis we are faced with some problems that make the analysis very complex and thus the conclusions very vague. One problem is that it is difficult to measure and evaluate the variability. There are different variability measures that can be estimated and still it would not be straightforward to say whether the variability is large or not<sup>18</sup>. Furthermore, without identifying the shocks and their nature it is uncertain to say what the driving forces for the real exchange rate changes are. Not all the real exchange rate changes necessary occur as a result of adjustment to the adverse shocks.

We construct the real exchange rate index for Slovenia against its four major trade partners, members of EMU: Germany, Italy, France and Austria. In 2001 the average share of this four countries in Slovenia's trade amounted to 54%, or 81% of the trade with EMU. As the price

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<sup>18</sup> Therefore this approach is usually used to compare the variability of RER in different countries or regions to estimate which of them are more likely to form an optimum currency area (e.g. De Grauwe and Vanhaverbeke (1991)).

variable we use the unit labour costs because they can best be interpreted as the competitiveness measure.

We define the real exchange rate index as follows:

$$R_t = \sum_j \alpha_j (P_t \cdot E_{jt} / P_{jt}).$$

where  $R_t$  is real effective exchange rate in Slovenia in period  $t$ ;  $E_{jt}$  is nominal exchange rate of Slovene tolar against the currency of country  $j$  ( $j$  = Germany, Italy, France, Austria) in time  $t$ ;  $P_t$  and  $P_{jt}$  are unit labour costs in Slovenia and country  $j$  respectively in time  $t$ ;  $\alpha_j$  is the share of trade of country  $j$  (imports plus exports) in Slovenia's foreign trade<sup>19</sup>. We use quarterly data, for the period from 1992 to 2001.

**Table 7: Real exchange rate in Slovenia against EMU4 – some statistical measures(annual percentage change)**

|           | Minimum | Maximum | Mean | Standard deviation | Mean of absolute changes |
|-----------|---------|---------|------|--------------------|--------------------------|
| 1993-2001 | -6.7    | 36.7    | 2.6  | 7.5                | 4.7                      |
| 1993-1997 | -6.7    | 36.7    | 4.3  | 9.2                | 6.3                      |
| 1998-2001 | -6.7    | 5.3     | 0.4  | 3.5                | 2.7                      |

Data source: National central banks, ECB

**Table 8: Nominal exchange rate in Slovenia against EMU4 – some statistical measures (annual percentage change)**

|           | Minimum | Maximum | Mean | Standard deviation | Mean of absolute changes |
|-----------|---------|---------|------|--------------------|--------------------------|
| 1993-2001 | -2.5    | 32.3    | 7.8  | 7.9                | 7.9                      |
| 1993-1997 | -2.5    | 32.3    | 10.5 | 9.8                | 10.8                     |
| 1998-2001 | 3.1     | 6.0     | 4.3  | 0.8                | 4.3                      |

Source: National central banks, ECB

Looking at some basic statistical measures of the exchange rate movements in Slovenia we observe that both, real and nominal exchange rate, exhibit some degree of variability. However, from this simple analysis we cannot say anything about the interaction between the two.

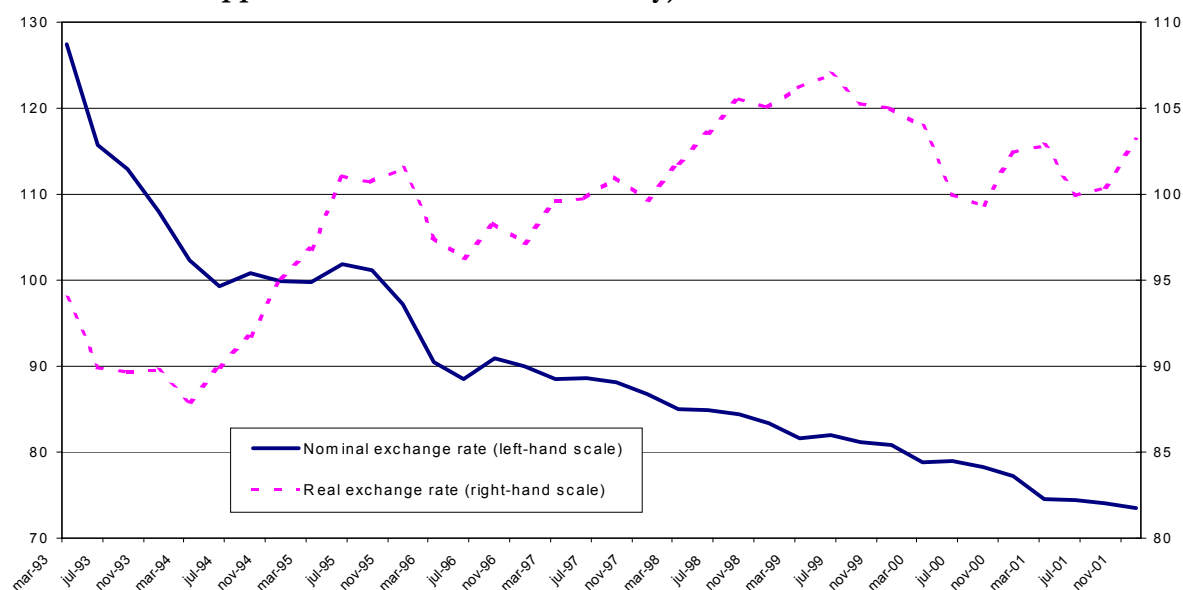
We split the sample into two sub-periods to see how the exchange rate variability changes over time. We observe that this variability of the real as well as of the nominal exchange rate

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<sup>19</sup> Here we assume the share of these four countries in Slovenia's foreign trade is 100%.

became lower in the second sub-period<sup>20</sup>. Lower real exchange rate variability can be explained twofold: It could mean either that less asymmetric shocks occur or that the adjustment mechanism does not work. To be able to estimate the importance of the real exchange rate as adjustment mechanism a more complex analysis is needed (which should include, among other, identifying shocks, relative price adjustments, labour market and unemployment analysis)<sup>21</sup>.

**Figure 2: Real and nominal exchange rate in Slovenia against EMU4 (1995=100)  
(increase means appreciation of domestic currency)**



Data source: National central banks, ECB

## 5. CONCLUSIONS

The paper started from discussing alternative exchange rate regimes of CEE with an ambition to assess their relative compatibility with the EU-determined exchange rate strategy for CEE in their run-up to the eurozone. In order to shed some light on the dynamics of the inclusion of CEE in the eurozone, the paper tried to identify the interests of CEE and of the EU side with respect to the timing of CEE entry in the eurozone, and found these interests to be diverging. Taking into account the balance of powers between both sides and after elaborating some arguments for and against an early compared to a delayed entry of these

<sup>20</sup> To estimate this we also analysed the variability of the exchange rate movements around the trend.

<sup>21</sup> If asymmetric shocks are found and relative prices did not adjust, that should have resulted in higher unemployment. However, because of labour market institutions it is possible this does not happen (e.g. if large state support is given to the affected sector).

countries in the euro area, an attempt was made to present three scenarios (optimistic, pessimistic and realistic) with respect to the timing of CEE entry in the eurozone.

Next, the paper touched upon the debate of nominal versus real convergence and its relevance for the dynamics of inclusion of CEE in the euro area. The conclusion is that the concept of real convergence can be dangerous if misused, since it gives the EU side too much discretion and the possibility to delay the adoption of the euro even for the best prepared CEE into indefinite future, against the ambitions of the CEE. Finally, it is argued that CEE should not be treated as a homogenous group (convoy approach), but that the best prepared candidates should go forward and themselves set an example. It is difficult to assess relative readiness and suitability of individual CEE for monetary integration, but some combination of nominal and real convergence criteria, as well as of optimum currency area criteria should be helpful, particularly if all of these indicators pointed to the same direction.

In concluding, according to optimum currency area criteria Slovenia seems to be a country suitable for joining monetary integration. It is a small, open and diversified economy, with its trade and financial links geographically concentrated towards the EU. Strong positive business cycles correlation indicates that Slovenia is cyclically rather synchronised with the EU, so Slovenia should not expect serious asymmetric shocks, which would cause problems for its economy once in the eurozone. How much other alternative mechanisms of adjustment (such as flexibility of the labour market) will be flexible at the time of Slovenian accession in the eurozone is at this stage hard to predict. According to fulfilment of the nominal convergence criteria, Slovenia can be grouped among best prepared countries, as it meets both fiscal Maastricht convergence criteria, while the three monetary criteria which at the moment are not met, will be at the focus of economic policy in the next few years before Slovenia's EU and eurozone accession. Finally, Slovenia compares well in terms of real convergence, as its GDP per capita is by far the highest within the group of CEE. It is already rather close to the EU average and catching-up with the lowest per capita income countries of the eurozone.

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