
Is economic convergence in New Member States sufficient for an adoption of the Euro?

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Abstract

The New European Member States (NMS) are expected to adopt the euro as soon as they fulfil the Maastricht criteria, which means that their nominal convergence has been achieved; but the question is: should those new European members adopt the euro as soon as possible or should they join the euro zone later on, when the real convergence of their economies is well underway? In the mean time, what currency system should the new European members adopt before joining the euro zone? Besides, where exactly do these NMS stand in terms of nominal convergence? In terms of real convergence, is the Optimal Currency Area (OCA) theory relevant concerning the new European members? The OCA theory states that countries are more suited to belong to a monetary union when they meet certain criteria related to the real convergence of an economy: a high degree of external openness, mobility of factors of production, and diversification of production structures. According to this theory, if there is a clear convergence between business cycles of countries that are willing to join the monetary union and the business cycle within the currency area, then this tends to prove that these countries are ready to enter the currency area.

In this paper, we shall see where NMS stand regarding the Maastricht criteria; then we will try to find out whether these NMS fulfil the criteria identified by the OCA theory, which are linked to the real convergence of an economy. Then, after having gone through a survey of the literature devoted to business cycles synchronisation, we will seek to determine if there is a clear correlation between those countries' business cycles and the European cycle, which would stand in favour of an early adoption of the euro in these countries.

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1. Introduction

Ten countries have joined the European Union (EU) on May 1st, 2004: Poland, the Czech Republic, Slovakia, Hungary, Slovenia, Estonia, Latvia, Lithuania, Cyprus and Malta. Bulgaria and Romania also joined the EU in January 2007. These New Member States (NMS) are expected to enter the "Third Phase" of the European Monetary Union (EMU), thus adopting the euro, as soon as they fulfil the Maastricht criteria, that is to say when their economy has reached a level of convergence which makes it possible for them to abandon the monetary instrument. At the same time, by trying to fulfil the fiscal criteria, they also decide to give up part of the fiscal instrument; indeed, after adoption of the European single currency, the use of fiscal policy will still be constrained by the Growth and Stability Pact; besides, the applicants are invited to join the Exchange Rate Mechanism (ERM2) of the European Monetary System (EMS), during at least two years without any devaluation, when they are ready to do so.

Moreover, real convergence is necessary: the NMS' economies should have converged towards the Euro(pan) business cycle; but we first need to assess the existence of a business cycle which would be specific to the euro area. According to the Optimal Currency Area (OCA) theory, which was first designed by Mundell (1961), Mac

Kinnon (1963) and Kenen (1969), these countries are more suited to belong to a monetary union in so far as they fulfil criteria such as a high degree of external openness, mobility of factors of production, and diversification of production structures.

In this paper, we shall see where the 2004-NMS that have not adopted the euro yet stand in terms of meeting or not the Maastricht criteria; then we will try to find out whether these NMS fulfil the criteria which have been identified by the OCA theory and which are more linked to the real convergence of an economy. The OCA theory is thus used to assess the macroeconomic costs associated with a participation of the new European countries in the European Monetary Union. Then, after having gone through a survey of the literature devoted to business cycles synchronisation, we will seek to determine if there is a clear correlation between those countries' business cycles and the European cycle, which would stand in favour of an early adoption of the euro in these countries.

Further questions appear such as: among the new European members, have the ones that have already joined the ERM2 converged more quickly? Slovenia joined the euro area in January 2007, so did Cyprus and Malta one year later, because they fulfilled all the Maastricht criteria except for the public debt (which has decreased steadily in both countries, and is now below or close to the reference value of 60%); but, for other countries that have joined ERM2, is the non-fulfilment of a single criterion sufficient to postpone the accession to the euro area, as it was the case for Lithuania and Estonia? Given that, for old member states, the achievement of some criteria had been interpreted as a tendency, this would tend to indicate that the European institutions do not wish to let the new comers join the euro area too quickly. All these questions are in fact related to the problem linked to nominal and real economic convergence in the NMS: has the latter sufficiently increased lately for an early adoption of the euro in those countries? We shall see that two groups of countries emerge, according to the OCA theory: one group which is ready to join the club, and the other one which includes countries for which it is not yet the best solution.

2. The NMS and the Maastricht criteria: has nominal convergence been achieved?

Central and Eastern European Countries (CEECs) have chosen a rather rigid currency policy at the beginning of the transition period in order to fight inflation, but they have gradually privileged a more flexible exchange rate system, because of a worsening of their current accounts (due to the appreciation of their real exchange rate)¹. Indeed, because of the initial undervaluation and the necessity of a catch-up in prices which were previously administered, and according to the Balassa-Samuelson² effect (in transition countries, the real exchange rate tends to appreciate because of higher productivity gains in the tradable goods sector), the appreciation of the real exchange rate is predictable. But it tends to be enhanced by the huge amount of foreign direct investment inflows (FDIs) and results in a deterioration of the foreign account. This is the reason why the inflation rate is necessarily higher in transition countries,

¹ See table No. 2, in the appendices.

² Balassa, 1964; Samuelson, 1964.

which makes the inflation criterion very difficult to fulfil. This phenomenon is accompanied in NMS by a rise in the credit growth to the household sector.

At the end of the nineties, Poland was very representative of this vicious circle, strong demand - soaring of the trade deficit - rush of external capital - appreciation of the currency. From the beginning of the transition process, it had instituted a crawling peg regime, which has contributed to disinflation and has offered the advantage of legibility; this in turn has attracted international capital. It is indeed by opting for a crawling peg regime, along with the liberalization of its economy and the prospect of a future participation in EU, that Poland has become very attractive to foreign investors. But this regime has also led to a strong appreciation of the zloty, the Polish currency, which made the management of monetary policy more difficult, and also weakened the competitiveness of domestic enterprises. In order to limit the appreciation of their currency, Polish monetary authorities have then chosen to let the currency float and the economy experienced growth again. But in 2004, the zloty started to appreciate again, due to the tightening of the monetary policy. According to Meunier (2001), «there is a real incompatibility, for the exchange rate, between the objective of catching-up and the competitiveness one». A currency that appreciates in real terms allows, all things being equal, a mechanical increase in the Gross Domestic Product expressed in euros. That certainly helps the catching-up process but it also weakens domestic enterprises, while membership in EU supposes that the country is able to resist to the European competition.

For some of the NMS, entering the ERM2 should not happen too early because it implies that they give up the use of their monetary policy, and because a rigorous stability objective of the exchange rate might have negative effects on the current account, and might lead to a decrease in the competitiveness of the economy that could bring to an end the convergence process. Besides, the participation in ERM2 is foreseeable, when convergence is clearly under way; otherwise it might result in a monetary crisis.

For Poland, Hungary and the Czech Republic, flexible exchange rates appear to have been more appropriate in the past few years. In November 2006, the Polish Finance Minister stated that the criteria would normally be met by 2009 and that a referendum would be held by 2010 for the population to express itself on the issue of euro adoption. But as we shall see the objective now is more remote. As to Hungary, the country's authorities have said that it would probably enter the euro area by 2013. For the moment, the country is facing an excessive deficit procedure, due to the level of its budget deficit, which increased from 6.4% of GDP in 2004 to 9.2% in 2006, due to a tax cut operated by the Hungarian government. The European Commission had even envisaged, at the end of 2005, to cut down cohesion funds received by Hungary if the authorities did not try to improve the state of their public finances. The budget deficit is supposed to be brought back to 4% in 2008 and to 3.6% in 2009. Hungary had in 2001 opted for a crawling peg regime based on the euro, with a monthly devaluation of 0.2%. This decision aimed at lowering the inflation rate and at preparing for ERM2; Hungarian monetary authorities wanted to join the euro area before the end of the decade. However, by the end of 2003, the *forint* had to leave its fluctuation band, because of a speculative crisis which led the Hungarian central bank to sharply increase the interest rates. Consequently, in 2004, the forint started appreciating again, especially after EU accession, and Hungary has now opted for a more flexible exchange rate regime.

The Czech Republic has also adopted a managed floating regime, with inflation targeting. For these countries, the transition towards a relatively fixed exchange rate agreement, such as ERM2, is likely to be more difficult, even if the $\pm 15\%$ width band offers the advantage of flexibility. A study by Bulir and Smidkova (2005) using estimated Sustainable Real Exchange Rates shows that under current policies, if they entered the ERM2, the currencies of Czech Republic, Poland and Hungary would be unlikely to stay within the fluctuation margin in the period before 2010, due to significant overvaluation of these currencies before 2003. They suggest that “an early race to the euro is likely to do more harm than good, unless macroeconomic policies are strengthened”, and that there is a possibility of clash between this appreciation trend of real exchange rates, the criteria of low inflation and of a stable nominal exchange rate in the framework of ERM2, in those latecomer countries, which still need the “shock-absorbing role of monetary and exchange rate policies”.

In Baltic countries, on the contrary, the advantages of tying the domestic currency to the euro (by means of a currency board based on the euro) have been important because of the existence of solid trading links with the EU, and because it has provided an anchor to the countries’ financial markets regarding long-term expectations.³ An independent monetary policy is not necessarily the best solution for these small countries. Estonia and Lithuania have joined the ERM2 on July 1st, 2004, but they could not enter the euro area because they did not fulfil the inflation criterion. Cyprus, Malta and Latvia have entered the ERM2 on May 2nd, 2005, but only the two former countries have adopted the euro in January 2008, the latter having a rate of inflation which was increasing severely; as to Slovakia, it joined the ERM2 on November 25th, 2005 and should adhere to the euro area in January 2009.

In general, NMS have moved from some kind of soft peg, at the beginning of the 90’s, to either flexible exchange rate regimes with inflation targeting (big countries) or to currency boards or hard pegs (small countries), in more recent times.

Concerning nominal convergence, inflation is one of the most difficult criteria to meet in transition countries: in Estonia and Lithuania, a rise in regulated prices and in public sector wages, combined with fast productivity growth, together with pegged exchange rates, have caused a surge in the inflation rate. This has led to a “wage-price spiral” in “overheating Baltic economies”.⁴ In a more recent period, the evolution of the inflation rate in Baltic countries has been rather spectacular (see table 1), rising from 4% in 2005 to 8.3% in March 2008 in Estonia, and from 6.9% to 12.3% in Latvia (Lithuania has a better record than Estonia in terms of inflation, but still lies above the Maastricht reference value of 3.2% in March 2008). Inflation rates have also risen considerably in Hungary and in the Czech Republic, contrary to Poland which has managed to keep the inflation rate under control (see table 4).

Concerning the inflation rate, the European commission uses the notion of “core inflation”, in order to isolate the effect of the sharp increase in prices of energy and unprocessed food; its Spring 2008 economic forecast shows that core inflation in the euro area has increased to 2.7% year on year, at the end of March 2008, whereas the headline inflation, or Harmonised Index of Consumer Prices (HICP), stands at 3.6%. From tables 2 and 4 in the appendices, we can see, through the evolution of these two

³ CESifo, 2004.

⁴ International Center for Economic Growth European Center – Quarterly report on the New Member States, ICEG EC, Autumn 2006.

indicators for each of the NMS, that the difference is sizeable, especially in the recent period of severe increase in the prices of oil and commodities; but even when energy and unprocessed food prices are excluded from the calculation of the HICP, we still have very high rates in several NMS, in March 2008: in the Czech Republic (6.6%), Estonia (9.4%), Latvia (15.7%), Lithuania (9.7%) and Hungary (5.6%); even Slovenia which has adopted the euro faces a rate of 5.8%.

The notion of core inflation is useful to properly measure the evolution of price movements; Aghajanyan (2005) states that “core inflation expresses the general trends of inflation (...) it shows long-term price movements. Thus, its movements are free from the influence of seasonal and random factors and are characterized by low variability”.⁵ Nevertheless, according to a recent debate, the core inflation is no longer represented solely by the Consumer Price Index (CPI) or by the HICP, from which energy and unprocessed food have been excluded, but rather by other indices using diverse techniques, with a statistical approach instead of the behavioural approach linked to the cost of living (Wynne 2008, Vega and Wynne 2001).

However, if we isolate a trend in inflation rates in NMS throughout the last 6 years, we can clearly see a sharp increase in 2004 and then in 2007 in most of the countries that have not yet entered the euro area, but mostly in Estonia, Latvia and Hungary and this holds true whether we include the energy and food prices or not. In May 2008, the HICP rate was of 11.4% in Estonia, 17.7% in Latvia and 12.3% in Lithuania, compared to 4% in the EU and to 3.7% in the euro area.⁶ The recent trend in the oil and commodity prices is not the only explanation to this overall increase in the inflation rate; another factor lies in the rise in some regulated prices as well as in excise taxes, and in a slight increase in inflation expectations, together with a pressure on wages mostly in the non-tradable sector (in the services sector). Of course in Baltic countries (Estonia, Latvia and to a lesser extent Lithuania), the surge in inflation has accompanied a very high economic growth rate, with a tightening of the labour market that has led to increases in wages above the productivity growth; but these economies are slowing down now, which should enable the inflation rate to decrease slightly in the near future.⁷

Nevertheless, price stability remains a crucial issue in Baltic States, whereas in countries of Central Europe the delay concerning euro adoption is mainly caused by fiscal imbalances (even if Hungary also suffers from an increasing inflation rate). The Czech Republic has seen its public debt double from 1998 to 2004, although the peak was still far from the reference value, but the trend is now reversed and the public debt has decreased from 30.5% in 2005 to 28.7% in 2007; the public deficit is also decreasing, to 1.4% of GDP. Until 2004, this upward trend was caused by several factors: slight decrease in indirect tax revenues due to a slower expansion of domestic demand, rise in public-sector wages; moreover, the accession to the EU had boosted budget expenditure (through the co-financing procedure, but also because of upcoming elections in most of the countries). But the Czech Republic has managed to “put its house in order” in terms of public finances.

On the opposite, Hungary has seen its public deficit and its public debt rise sharply in the recent period, as we have already mentioned: except for the year 2000 the

⁵ “Core inflation in a small transition country: choice of optimal measures”, *EJCE*, Vol.2, n°1.

⁶ See table 2, in the appendices.

⁷ ECB Convergence Report, May 2008.

public deficit has always, throughout the last decade, exceeded the 3% benchmark, while being also very volatile, whereas the public debt was decreasing until 2001 before soaring again until it reached 66% of GDP in 2007. If we look at the annual change in the public deficit, we see that the non-cyclical factors represent the bulk of the change, and that they mainly illustrate expansionary policies. Hungary should bring back its budget deficit below the Maastricht reference by 2010, through two channels: first by undertaking a more efficient collection of taxes and secondly through a reduction in administration and social security expenditure; but is it possible with an ageing population? As the ECB points out, measures need to be taken before the worsening of the demographic situation; nonetheless, "Hungary is assessed as being at high risk in terms of the sustainability of public finances".⁸

Poland on the contrary has managed to reverse in 2003 the rising trend concerning its budget deficit; in 2007 it stood at 2%, but is expected to reach 2.5% of GDP in 2008.⁹ Government debt is lower than the 60% of GDP required for EMU participation, although it continues to grow because of the existence of primary deficits. But Poland also faces the risk of an ageing population. As to Slovakia, it now fulfils all the convergence criteria, in particular the ones related to public finances.

Regarding long-term interest rates, it is not very easy to compare performances because the capital markets of NMS are not as developed. However, this criterion does not seem to be the main issue, even if nominal interest rates are generally slightly higher than in Western EU countries. Nevertheless, all NMS stand below the present reference value (6.5%) except for Hungary.

Concerning exchange rates, the currencies need to remain stable in the framework of the EMS for countries willing to adopt the euro in the near future. Baltic countries have already remained more than two years in the ERM2, but Hungary, Poland and the Czech Republic do not seem ready to enter the system. Another issue needs to be tackled concerning the large current account deficits that many of the NMS still have. The risk exists of a slowing down of capital inflows, since the privatisation process is almost finished; this might represent a threat for countries that depend on these FDIs for the financing of their external account deficit.

Slovakia meets all the requirements for the moment; and should join the euro area in January 2009; inflation is still too high in Estonia, Latvia and Lithuania, which will probably have to wait at least until January 2010 to adopt the euro; as to Hungary it faces other problems, mostly linked to public imbalances as we have seen; in reality, it seems as if these countries have not really managed to converge in nominal terms. However, one must keep in mind that they entered the EU four years ago and that they underwent huge reforms and efforts. Poland and the Czech Republic have recently been more successful in terms of nominal convergence, in particular as the public deficit is concerned, although they have preferred to stay outside of ERM2. Both currencies have experienced rather high volatility in the past few years.

As Filacek *et al.* (2006) point out, the criteria of inflation and exchange rate are difficult to fulfil simultaneously, especially when countries experience a long-term appreciation of their real exchange rates. For Van Aarle (2006), the fiscal conservatism required both by the Maastricht criteria and the Growth and Stability Pact is difficult to

⁸ ECB Convergence Report, May 2008.

⁹ See table 1, in the appendices.

observe for a transition country, together with the removal of monetary flexibility. In most countries, the public deficit criteria should be considered as a trend, if the European institutions are to let these transition countries join the euro area in a reasonable time frame. Besides Italy and Belgium did not fulfil the public debt criterion in 1998, nor did Greece two years later. European institutions then chose to interpret some criteria as trends. Nevertheless, it was not the case for Estonia and Lithuania, since they were denied accession because of their high inflation rate.

Poland and the Czech Republic have managed in recent years to bring down their public deficits; for Hungary, fiscal consolidation must continue but it should not be realized in a short while, since it might hinder growth and real convergence, especially at a time when the country experiences a lower growth than its neighbours. Overall, the main issue that these countries face is real convergence, which is the process of catching up in terms of standard of living and productivity, and which does not necessarily go along with nominal convergence in the short-run. According to economic theory, in the long run, price stability and fiscal discipline are supposed to encourage growth.

Trying to meet the convergence criteria too early is likely to slow down the growth pace, which in turn may endanger the process of catching up. The NMS have very different levels of income: concerning the average standard of living, Slovenia is far more advanced than Estonia or Lithuania. Real convergence remains an issue in these countries. Besides, Estonia has an important external deficit, which means that if FDI inflows should decrease in the future, the financing process of this deficit might become more difficult, which might lead to a monetary crisis.

Concerning the type of exchange rate system adopted by NMS during the last years of the transition period, as noted by Tuma (2003), the ERM2 does not have any value added compared to currency board regimes, which is not much different from a de facto adoption of the euro; for countries that have had currency boards (Estonia, Lithuania in 2003), an early adoption of the euro would have been logical, according to the author, with a much shorter membership period in the ERM2. For inflation targeting countries on the other hand, participation in the ERM2 “introduces a potential inconsistency into their modern monetary policy regimes, which may, under unfavourable circumstances, increase the risk of their macroeconomic destabilisation”.

As De Grauwe and Schnabl (2004) explain, there is a conflict between nominal and real convergence during the EMU run-up of CEECs; in particular, inflation is necessarily higher due to the Balassa-Samuelson effect of productivity driven inflation, as mentioned previously. They show that although some countries should follow a policy of fiscal consolidation, in order to control inflation, it will induce a necessary cost in terms of growth; for some countries, this inflation issue might be dealt with by allowing a gradual nominal appreciation of their currency within the ERM2.; in this approach, “nominal appreciation within the ERM2 band may be a viable alternative for restrictive fiscal policies”; this does not apply to the Baltic States which have adopted hard pegs to the euro; “countries committed to hard euro pegs might choose fiscal contraction as the second best solution”. On the opposite, Poland and the Czech Republic have already allowed a significant appreciation of their currencies which puts them in a better position concerning EMU as the inflation criterion is concerned.

Zapal and Schneider (2006) believe that in the NMS that do not respect the fiscal rules, there is a clear tendency of leading lax fiscal policies and postponing structural reforms; according to them, Hungary, Poland, the Czech Republic, but also

Malta and Cyprus, which have adopted the euro since (although Malta had a public debt slightly exceeding the criterion), “demonstrate their failure to put fiscal policy in order even at time of exceptionally supportive environment”, that is with robust economic performance and the perspective of joining the euro area. On the contrary, Baltic countries have showed a strong will of reform and responsible fiscal policies that have enabled them to fulfil the budgetary criteria.

3. The NMS and the Optimum Currency Area theory: has real convergence increased according to OCA criteria?

Maastricht criteria are related to nominal convergence as we have seen; real convergence needs to be assessed considering other criteria, among which those developed by the Optimal Currency Area (OCA) theory; this theory was implemented in the 1960s by Robert Mundell,¹⁰ and enriched both by Ronald Mac Kinnon (1963) and Peter Kenen (1969). In order for a monetary union to be qualified as optimal, countries that belong to this area should fulfil several criteria, such as the degree of openness of the country, its industrial diversification and the mobility of production factors; indeed, factor markets must be sufficiently flexible to absorb shocks in a context where exchange rate movements are no longer possible.

For the time being, the two first criteria do not seem to pose problem: NMS are open economies and they trade more and more with old EU Member States. Moreover, diversification of production structures in NMS is increasing very rapidly. According to Boone and Maurel (1999), in some of the CEECs, a strong correlation with the European cycle (notably with Germany) appears, which stands in favour of an early adoption of the euro, in particular in the Czech Republic, Slovakia and Hungary; the monetary anchorage policy, chosen at least until recent years, might have contributed to strengthen the degree of symmetry of shocks and stabilized inflationary anticipations, thus reducing risk premiums and facilitating investments.

Nevertheless, Boone and Maurel remind us that the fiscal criterion is for the moment hardly compatible with the real convergence objective, which requires an active budgetary policy. The model of Frankel and Rose (1998), that shed light on an endogenous cycle's hypothesis, favoured by trade integration, pleads in favour of an accelerated membership of the most advanced countries to the euro area; indeed a rise in trade relations enabled by an early adoption of the euro by applicant countries strengthens the synchronization of cycles, which tends to “increase the aptitude of countries which, ex ante, do not satisfy the criteria of entry in the monetary union, to satisfy them ex post”. However Frankel and Rose point out that when countries have not finished the first phase of the transition yet (relative price restructuring and economic growth recovery), a strategy of anchorage might be counter-productive.

As explained by Babetskii (2004), this endogeneity argument described by Frankel and Rose (1998), according to which increasing trade relations between

¹⁰R. Mundell, 1961; R. Mundell, 1997.

countries of the monetary union reduce asymmetries between countries, illustrates the position taken by the European Commission in 2000, for which “closer integration leads to less frequent asymmetric shocks and to more synchronised business cycles between countries” which in turn makes it possible and less costly for a common monetary policy to operate; on the contrary, according to what De Grauwe (1997) has called the “Krugman view”, Krugman (1993) believes that closer integration leads to higher specialisation which in turn brings about more idiosyncratic shocks. Babelskii has tested both views and comes up with the following conclusion: by trying to identify demand and supply shocks for CEECs, taking Germany and the EU-15 as benchmarks, he finds that “an increase in trade intensity leads to higher symmetry of demand shocks” and that “a decrease in exchange rate volatility has a positive effect on demand shock convergence”, which tends to support the European Commission’s view, or Frankel and Rose’s view; concerning supply shocks, the results appear to be either ambiguous, either not significant.

Rose (2000) shows later on that currency unions increase trade in participating countries by 300% on average; another study by Micco, Stein and Ordóñez (2003) confirms this increase in trade as being an important benefit from joining a currency union, albeit in a lower proportion (between 4 and 16% for EMU); moreover they find that the microeconomic benefits of EMU are more important than the macroeconomic cost of losing the monetary instrument. Bayoumi et al. (2005) also find that the accession of NMS to the euro area is likely to bring about many benefits stemming from lower transaction costs and higher trade integration, leading to rising output and consumption, enhanced financial integration, lower real interest rates and an increase in investment.

Markiewicz (2006) shows that emerging countries that have a high budget deficit are not likely to adopt a peg, whereas economies that tend to have high inflation will have a more flexible *de facto* exchange rate regime: “high inflation in a pegged regime causes a loss of competitiveness and results in pressure for devaluation”; in order to maintain the parity, the central bank will have to raise the level of interest rates, which in turn will have a negative impact on the budget deficit. According to Markiewicz, “a fixed exchange rate is less likely to be chosen if a country has not achieved macroeconomic stabilization”, conclusion that is consistent with the literature on currency crises. When analysing the OCA criteria, applied to emerging economies, the author finds that on the one hand “a fixed exchange rate regime is associated with smaller economies”, but that on the other hand “a country is less likely to adopt a fixed exchange rate regime if its external trade is highly concentrated with the EU”, since geographical concentration of trade means higher vulnerability to shocks. From this study, we can draw conclusions concerning the NMS, and in particular that fixed exchange rates do not necessarily represent the best solution for some of our euro applicants.

Moore and Pentecost (2006) use a structural VAR model in order to examine the flexibility of labour markets in eight EU countries (four old and four new members) by analyzing the responsiveness of real wages to temporary and permanent shocks. They find that there are longer persistent disequilibria in labour markets in Italy, Poland and Slovakia, which means that these countries exhibit a low flexibility in this market; the Czech Republic and Hungary are more “suitable candidates for membership in the Euro area, at least from the perspective of the degree of wage flexibility”. They conclude that “in practice, Euro-area membership should depend not only on the nominal Maastricht

criteria, but also on the degree of labour market flexibility”; from this point of view, some of the NMS may prove better candidates for joining the euro area than present members.

Boeri and Garibaldi (2005) also argue that NMS do not have more rigid labour markets than old MS, which tends to indicate that they are not less suitable for EMU; they conclude that “even though labour markets in NMS have some structural problems, highlighted by large and stagnant pools of unemployment, they do not seem to work any worse than the labour markets in many current EMU countries”. Early adoption of the euro would rather encourage job creation, by modifying wage setting due to budgetary discipline. In particular, Baltic States seem to have a higher labour market flexibility degree than current EMU members.

Regarding the question as to whether the euro area at present is an OCA, Lane (2006) argues that there is increasing evidence that the monetary union has increased trade and financial integration among participants; however, “the euro area is still some distance from the definition of an optimum currency area”; besides, structural rigidities in the labour and goods markets remain, and political integration is still lacking. For Lane, “it remains an open question whether national economies will prove to be sufficiently flexible to enable smooth adjustment in the event of a major asymmetric shock or a financial crisis”; moreover, the author believes that “EMU acts as an amplification mechanism for asymmetric shocks”, in the sense that a common nominal interest rate automatically leads to a divergence in real interest rates in members of the euro area, because of differences in national inflation rates.

For Van De Coevering (2003), Hungary, the Czech Republic and Slovakia have converged more quickly towards the euro area in terms of growth of intra-industry trade; concerning output, only Hungary and Slovenia display a significant degree of convergence but overall, from an OCA perspective, most countries, even in the euro area, have diverged instead of converging since the mid-nineties. Breuss, Fink and Haiss (2004) seem to be more confident in the sense that, for them, from a purely economic perspective there are more arguments which stand in favour of an early EMU membership, because of the convergence already accomplished by NMS; the authors show that benefits of early membership outweigh the costs. Moreover, concerning the Maastricht criteria, they point out that (with 2003 figures) if all 25 EU countries were part of the euro area, “the overall inflation rate would increase by 0.1%, the average budget deficit would remain unchanged at 2.7%, the average debt level would fall from 70.4 to 63%, the average rate of interest would go up from 4.1% to 4.5%”; they remind us that, after all, the total GDP of the ten NMS only represent 5% of the EU-15’s GDP, and that the only remaining issue that must be dealt with is the high level of bad debts in Poland and Malta; but this should not prevent all ten NMS from joining the euro area quickly, according to the authors.

4. Is there a clear correlation between the NMS’ business cycles and the European business cycle?

First of all, we need to assess the existence of a European business cycle. De Haan, Inklaar and Jong-a-Pin (2005) provide a very useful survey of the empirical research existing on the issue of business cycle synchronization and remind us that “most of the current evidence suggests that periods of greater and lesser synchronization tend to alternate. Still, there is quite some evidence that during the 90s,

business cycle synchronization in the euro area has increased”. However, they also mention the fact that conclusions obtained through various studies often differ because of differences in periods surveyed, data and benchmarks used; even when using the same methodology, estimation results sometimes differ widely. They conclude that the synchronization process has indeed increased, during the 1990s, due to higher trade intensity, and that “the business cycles of many euro countries are still substantially out of sync (...) and that there is not a monotone movement towards the emergence of a “European” business cycle”, which makes the design of monetary policy particularly difficult.

For Bower and Guillemineau (2006), the implementation of the single European market has improved trade relations across the euro area, which in turn has contributed to higher business cycle symmetry. Besides, the introduction of a single currency has led to intensified intra-trade industry, or similarity of trade specialisation patterns, “which has become the main driving force ensuring the coherence of business cycles”; once again, this supports the conclusion of Frankel and Rose (1998), according to whom there is an endogeneity of OCA criteria.

Artis (2003) indicates on the contrary that it is difficult to identify “a homogenous or developing European business cycle” and that “globalisation may be proceeding as fast as Europeanization”; indeed, the author uses GDP data for a panel of 23 countries over a 30 year time-frame, and finds out that the US and Japan sometimes are found to be closely linked to European core countries, more closely than other European countries (Great Britain, Portugal, Ireland or Scandinavian countries). Hence, Artis concludes that “there is not a monotone movement towards the emergence of a highly coherent and exclusive *European* cycle”.

Nevertheless, although the existence of a real European business cycle is not an uncontested fact, we shall review the literature devoted to business cycle synchronisation, in order to determine if there is a clear correlation between the euro applicants’ business cycles and the European cycle, assuming that there is one, or simply with business cycles of core countries of the euro area; if this is proven, then it would stand in favour of an early adoption of the euro by these countries.

According to Weimann (2003), who uses methodologies linked to the OCA theory, with a structural VAR approach, in order to identify economic shocks that have hit the countries wishing to join the euro area, in the past, correlations of these shocks with those of current EMU countries shed light on the question of whether a common monetary policy may be suitable or not in CEECs. He believes that “one cannot judge the CEECs as worse accession candidates than present EMU members”, with regard to asymmetric shocks, which means that “they are not systematically less suitable for EMU than its present members”. Among the NMS, Hungary appears to be the most strongly correlated with the euro area for both shock types, according to Weimann.

On the other hand, as Berger (2004) explains, “economic trends still differ greatly in the old and new member states”, which argues against undue haste in pursuit of euro membership. In NMS, growth rates are much higher, as well as inflation rates, due to FDI inflows and to catching-up effects, than in old MS; that is why, for Berger, a single monetary policy is not likely to fit all EU countries. Business cycles are far from being synchronized between Western and Eastern countries, even with stronger trade integration: “it is the demand side that represents the greatest obstacle to closer business cycle synchronization with the euro area (...) because of sustained differences in consumer behaviour and fiscal policy”. Thus, the fact that countries that adopt the euro

lose the possibility of using the exchange rate policy can be annoying for the ones that have divergent economic cycles. On the contrary, countries with high inflation rates would be better off if they entered the ERM2, since it would enable them to put the accent on price stability.

Similarly, Kontolemis and Ross (2005) point out that real demand shocks seem to explain a relatively small part of the variance of exchange rates in Estonia and Lithuania; in addition, they find that “Hungary, the Czech Republic and Slovenia seem to be influenced significantly by demand shocks, a finding which suggest that an early move to join ERM2 could, *ceteris paribus*, be more problematic in the short to medium term”. For Carmignani (2005), European emerging market economies are poorly synchronized with the euro area except for Hungary and Poland, for which synchronization is significant.

Nevertheless, Kutan and Yigit (2005) find a strong evidence of a real stochastic convergence in CEECs, meaning that they adjust to euro area output shocks, although nominal convergence to EU standards still appears idiosyncratic; the Baltic states exhibit the strongest convergence (in particular concerning monetary policy and price level convergence, due to their hard peg exchange rate regime), indicating that they can join the euro area. But the other CEECs show little convergence with the euro area (when using Germany as a benchmark) and should rather focus on fiscal discipline instead of wanting to join the ERM too soon.

Firdnuc and Korhonen (2001) study the correlation of supply and demand shocks between CEECs and the euro area countries (not only with Germany as often), through the 90’s; they come up with several interesting findings: firstly, they confirm that members of the euro area present a high correlation, even Italy which was considered as “peripheral”; then, they find that supply shocks in some CEECs such as Hungary and Estonia are quite highly correlated with euro area shocks, partly because of the huge amount of FDI inflows, and the existence of extensive trade relations with western EU countries; Slovenia also shows a good although lower correlation index, but in other CEECs, the asymmetry of business cycles continues to be important, which means that an early adoption of the euro may be problematic. Finally Hungary also has a high correlation of demand shocks with the euro area.

As to Frenkel and Nickel (2002), they show a clear correlation of demand shocks between some CEECs (Poland and Hungary) and the euro area; nevertheless, concerning supply shocks, Poland seems to be the only country demonstrating a negative correlation. In a later study, Frenkel and Nickel (2005) find that some of the more advanced CEECs have relatively strong economic links with major euro area members and therefore may be better prepared for the euro, such as the Czech Republic, Estonia and Hungary, even though overall, “CEECs as a group exhibit still considerably different disturbances and adjustment paths” as compared with euro area countries. In addition, Eickmeier and Breitung (2005), when investigating co-movements between CEECs and the euro area, find that there is considerable heterogeneity among CEECs, meaning that, for some of them, accession to EMU is likely to be more costly; but they find that Poland, Slovenia, Hungary, Estonia are “more suitable EMU candidates”.

According to Traistaru (2005), bilateral correlations of business cycles between the euro area and NMS are low, suggesting that “the new EU countries are not part of an optimal currency area in the traditional sense”, although similarity of economic

structures and deeper trade integration should allow for a higher business cycle convergence in the long-run. Likewise, Bower (2005) finds that the degree of real integration achieved by CEECs is still low; therefore they might incur huge short-term costs if they adopt the euro too soon. A study of the convergence of the real economy, proxied by GDP and industrial production of CEECs, with the euro area indeed shows that only Slovenia exhibits a synchronised common cycle; but the Czech Republic, Hungary and Slovakia can also “be considered of an intermediate degree of cyclical movement with the euro area”.

Moreover, Artis, Marcellino and Proietti (2004) analyse the evolution of business cycles in accession countries, and they find that for most of them the adoption of the euro in a near future is not necessarily recommended, in the light of the OCA theory. In particular, the degree of concordance among the accession countries is not as large as within the euro area members, except for Baltic countries; furthermore the synchronization between the two groups is low concerning GDP data; when looking the industrial production, Baltic countries continue to form an integrated economic area, comprising also the Czech Republic; besides, Hungary is highly correlated with the euro zone, and Germany has a very high “cyclical sympathy” with a group made up of Poland, Slovenia, Estonia, Hungary and the Czech Republic concerning concordance measures. Overall, Poland, Hungary and Slovenia are the closest to the euro area, in terms of real convergence.

In Darvas and Szapary (2004), Hungary, Poland and Slovenia again appear as being the CEECs that have achieved a high degree of synchronisation with the EMU for GDP, industrial production and exports, but not for consumption and services; besides some evidence is found of a high synchronization of business cycles among euro area members themselves. Another paper by Darvas, Rose and Szapary (2005) shows, by using data from 21 OECD countries, that reduced fiscal deficits increase business cycle synchronization; in that sense, the Maastricht criteria might have “indirectly moved Europe closer to an OCA, by reducing countries’ abilities to create idiosyncratic fiscal shocks”.

Finally, Firdnuc and Korhonen (2006) offer a very interesting “Meta-analysis of the business cycle correlation between the euro area and the CEECs”, in which they review 35 studies related to this topic; their main finding is that, on the whole, CEECs have comparably high correlation with the euro area business cycle, even if “estimation methodologies can have a significant effect on correlation coefficients”; this meta-analysis also points out that “the highest average estimates of business cycle correlation with the euro area are reported for Hungary, followed by Slovenia and Poland”. Furthermore, Hungary is more highly correlated with the euro area than peripheral countries such as Greece, Ireland or Portugal. Then comes a group of countries that exhibit a lower degree of correlation with the euro area, comprising the Czech Republic, Estonia, and Latvia; Finally, Slovakia has a positive but small correlation index and Lithuania exhibits negative correlation with the euro area.

As indicated by the authors, this study demonstrates that overall, “the available estimates of business cycle correlation provide a fairly consistent ranking of the CEECs”. This review of the literature devoted to OCA theory and business cycle convergence shows that there is no clear-cut answer to the question; the results in terms of NMS being or not correlated with euro area members often differ widely across the various studies, and depend both on the methodologies and data that are used. Nevertheless, some countries seem to have converged more than others towards the

Euro area cycle, if we judge by the frequency of their favourable citation among the results of the different studies that are analysed in this paper: Hungary, Slovenia, the Czech Republic and Poland are often cited as being “more suitable candidates for EMU”; then come the Baltic States, then Slovakia.

This is particularly interesting in the sense that, among the four that are ahead of the list, we have three countries (Hungary, Czech Republic and Poland) for which euro adoption will happen probably much later, because nominal convergence has not totally been achieved yet, and because their currency has not entered the ERM2 for the time being. These bigger countries have chosen more flexible exchange rate arrangements, in order to deal with the appreciation of their currency, as compared to Baltic States for example. They seem to have converged more quickly in real terms, when analysing the criteria of the OCA theory and business cycle convergence in particular, towards the euro area, although, in terms of nominal convergence, they have not proved very successful.

Concerning Slovenia, the convergence has happened both in real and in nominal terms, since the country has managed to meet the Maastricht criteria. As indicated by the European Commission (2006), the catching-up process has been considerable in Slovenia, in terms of GDP per capita, labour productivity and employment rate; besides, trade links with the euro area have increased quickly, as well as FDI inflows from the EU, and Slovenia is one of the NMS which has an industrial structure comparable to that of the euro area. The report states that “Slovenia’s economic cycle is already well synchronized with the euro area and that the correlation of its cycle to the euro-area average is comparable to that of several current EMU member states”. Cyprus and Malta have also adopted the euro and Slovakia is on the brink of joining as well.

Concerning Estonia and Lithuania, that were not authorized to join the euro area in January 2007, despite their successful membership in the ERM2 and despite their fulfilment of all criteria except the inflation one, we may wonder whether this decision follows from a will of European institutions to “strictly apply the rules” or whether it is linked to the studies above mentioned that demonstrate that these countries have not converged enough towards the euro area business cycle.

5. Conclusion

The NMS have accomplished considerable efforts in order to enter the EU. The next step for them will be to join the euro area. Beside the issue of the correct timing of the entry in the ERM2, the parity of their currency should not be overvalued, which would put the economy under pressure; the aim is also to allow the catching up process to continue. In effect, the conversion rate of the currency against the euro will be the last ERM2 bilateral central rate. An overvalued conversion rate might hurt the country’s competitiveness. As shown by Fic, Barrell and Holland (2006), the short run benefits and costs of euro area accession in CEECs will also depend on the set ERM2 entry rate; Baltic States appear to be in a better situation in this respect, as compared to big economies like Poland, Hungary and the Czech Republic.

There are many constraints attached with an early entering in EMU, on the monetary level but also as fiscal policy is concerned, because of the convergence criteria followed by the constraint of the Stability and Growth Pact. By adopting the euro too early, there is a risk of slowing the growth trend and the economic catch-up. For the Baltic countries, the adoption of the euro can be envisaged in the short term, whereas

the Czech Republic, as well as Poland and Hungary, might have to wait a little longer. As we have already mentioned, price stability seems to remain a crucial issue in Baltic States, whereas in countries of Central Europe the delay concerning euro adoption will mainly be caused by fiscal imbalances. On the other hand, Poland, the Czech Republic, Hungary and, although at a lesser extent, Estonia appear to have converged more quickly towards the euro area business cycle, which would tend to indicate that they are ready to join the euro area; this is rather contradictory and brings us back to the initial debate on the appropriateness of the Maastricht criteria, that essentially focus on nominal convergence whereas the real convergence expressed in the increase of the standard of living in those transition countries seems to be more relevant. The inconsistency between some of those criteria, in particular in catching-up countries, has been identified by several authors as we have seen. Finally, in terms of inflation, it is very likely that NMS will continue to have higher inflation rates than current euro area members, but the impact on the euro area inflation rate is very small: as shown by Egert (2002), a difference in inflation rates between initial euro members and latecomers of 3% would lead to a rise in the GDP weighted euro inflation rate of only 0.1%.

Appendices:

Table 1: Situation of the ten 2004-NMS regarding Maastricht criteria

	Year	Inflation rate	Long term int. rates ¹	Participation in ERM2	Public Deficit (% of GDP)	Public Debt (% of GDP)
Estonia	2005	4.1	3.94	Yes	1.6	4.8
	2006	4.4	3.8	Yes	3.4	4.2
	2007	6.7	4.3	Yes	2.8	3.4
	2008 ²	8.3	4.5	Yes	0.4	3.4
Latvia	2005	6.9	3.59	Yes	0.2	11.9
	2006	6.6	4.1	Yes	-0.2	10.7
	2007	10.1	5.3	Yes	0.0	9.7
	2008 ²	12.3	5.4	Yes	-1.1	10.0
Lithuania	2005	2.7	3.78	Yes	-0.5	18.7
	2006	3.8	4.1	Yes	-0.5	18.2
	2007	5.8	4.5	Yes	-1.2	17.3
	2008 ²	7.4	4.6	Yes	-1.7	17.0
Poland	2005	2.2	5.16	No	-4.8	42.5
	2006	1.3	5.2	No	-3.8	47.6
	2007	2.6	5.5	No	-2.0	45.2
	2008 ²	3.2	5.7	No	-2.5	44.5
Hungary	2005	3.5	6.89	No	-6.1	58.4
	2006	4.0	7.1	No	-9.2	65.6
	2007	7.9	6.7	No	-5.5	66.0
	2008 ²	7.5	6.9	No	-4.0	66.5
Czech Rep.	2005	1.6	3.61	No	-2.6	30.5
	2006	2.1	3.8	No	-2.7	29.4
	2007	3.0	4.3	No	-1.6	28.7
	2008 ²	4.4	4.5	No	-1.4	28.1
Slovakia	2005	2.8	3.62	Yes	-2.9	34.5
	2006	4.3	3.5	Yes	-3.6	30.4
	2007	1.9	9.3 ³	Yes	-2.2	29.4
	2008 ²	2.2	2.5	Yes	-2.0	29.2
Slovenia	2005	2.5	3.69	Yes	-1.8	29.1
	2006	2.5	3.85	Yes	-1.2	27.1
	2007	3.8	4.5	Euro	-0.1	24.1
	2008 ²	5.4	-	Euro	-0.6	23.4
Cyprus	2005	2.0	4.09	Yes	-2.4	70.3
	2006	2.2	4.13	Yes	-1.2	65.2
	2007	2.2	4.5	Yes	3.3	59.8
	2008 ²	3.8	-	Euro	1.7	47.3
Malta	2005	2.5	4.39	Yes	-3.3	74.7
	2006	2.6	4.32	Yes	-2.5	64.7
	2007	0.7	4.7	Yes	-1.8	62.6
	2008 ²	3.4	-	Euro	-1.6	60.6
Ref. value⁴		3.2	6.5	Yes	-3.0	60

1: average of the last 12 months, 10-years benchmark bonds on government debt.

2: average annual percentage change; 2008 data refer to the period April 2007 - March 2008.

3: with effect from March 19 2007, the central rate of the Slovakian currency in ERM2 was revalued by 8.5%.

4: refers to the period April 2007-March 2008 for the inflation rate and long-term interest rate.

Source: DB Research, Eurostat, European Commission.

Table 2: Inflation rate in non-euro NMS, with and without food and energy

		2002	2003	2004	2005	2006	2007
Estonia	HICP	3.6	1.4	3.0	4.1	4.4	6.7
	HICP-food/energy ¹	2.6	1.8	2.5	2.6	3.5	6.5
Latvia	HICP	2.0	2.9	6.2	6.9	6.6	10.1
	HICP-food/energy	1.6	2.9	5.8	5.5	5.1	9.7
Lithuania	HICP	0.3	-1.1	1.2	2.7	3.8	5.8
	HICP-food/energy	0.6	0.7	0.7	1.3	2.4	5.2
Poland	HICP	1.9	0.7	3.6	2.2	1.3	2.6
	HICP-food/energy	2.0	0.6	2.8	1.2	0.6	2.1
Hungary	HICP	5.2	4.7	6.8	3.5	4.0	7.9
	HICP-food/energy	5.8	4.9	6.4	2.7	2.5	6.7
Czech Rep	HICP	1.4	-0.1	2.6	1.6	2.1	3.0
	HICP-food/energy	2.0	0.4	2.5	0.9	0.9	3.1
Slovakia	HICP	3.5	8.4	7.5	2.8	4.3	1.9
	HICP-food/energy	4.5	7.4	6.5	1.7	2.1	1.9

1: HICP excluding unprocessed food and energy.

Source: European Central Bank Convergence Report, May 2008

Table 3: The evolution of exchange rate regimes in NMS from 2000 to 01/2008

	2000	2003	12/2005	01/2008
Cyprus		Peg to the euro (+/- 15% band, de facto +/-1-2% band)	ERM2 since May 2nd, 2005	Adoption of Euro in 01/2008
Czech Republic	Managed float	Free float with inflation targeting	Managed float Inflation target	Flexible exchange rate regime
Estonia	Currency board	Currency board with peg to the euro	ERM2 since July 1st, 2004	ERM2
Latvia	Peg	Peg to SDR euro weight is 29% (+/-1% band)	ERM2 since May 2nd, 2005	ERM2
Lithuania	Currency board	Currency board with peg to the euro	ERM2 since July 1st, 2004	ERM2
Hungary	Crawling bands	Peg to the euro (+/-15% band) inflation targeting	Peg to the euro (+/-15% band) inflation targeting	Flexible exchange rate regime
Malta		Peg to currency basket (+/-0.25 band)	ERM2 since May 2nd, 2005	Adoption of Euro in 01/2008
Poland	Crawling bands	Free float with inflation targeting	Free float with inflation target	Flexible exchange rate regime
Slovakia	Managed float	Managed float	ERM2 since November 25, 2005	ERM2
Slovenia	Managed float	Managed float	ERM2 since July 1st, 2004	Adoption of Euro in 01/2007

Source: Von Hagen and Zhou (2002); Begg et al. (2003); EEAG Report, CESifo (2004), ECB (2005).

Table 4: HICP rates per country + HICP excluding energy and unprocessed food in ten NMS - Percentage change t/t-12

		06/07	07/07	08/07	09/07	10/07	11/07	12/07	01/08	02/08	03/08	04/08	05/08
Euro area-15	HICP	1.9	1.8	1.7	2.1	2.6	3.1	3.1	3.2	3.3	3.6	3.3	3.7 (p)
	HICP-energyfood	1.9	1.9	2.0	2.0	2.1	2.3	2.4	2.3	2.4	2.7	2.4	2.5(p)
EU-27	HICP	2.2	2.0	1.9	2.3	2.7	3.1	3.2	3.4	3.5	3.7	3.6	4.0 (p)
	HICP-energyfood	2.1	2.0	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.7	2.7(p)
EU-25	HICP	2.1	1.9	1.9	2.2	2.6	3.0	3.1	3.3	3.4	3.6	3.5	3.8 (p)
	HICP-energyfood	2.0	2.0	2.1	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.6	2.6(p)
Czech Rep.	HICP	2.6	2.5	2.6	2.8	4.0	5.1	5.5	7.9	7.6	7.1	6.7	6.8
	HICP-energyfood	3.0	2.9	3.1	3.3	3.8	4.7	5.1	7.2	7.0	6.6	6.5	6.2
Estonia	HICP	6.0	6.5	6.1	7.5	8.7	9.3	9.7	11.3	11.5	11.2	11.6	11.4
	HICP-energyfood	6.2	6.4	6.7	7.1	8.0	8.1	8.4	9.3	9.7	9.4	9.5	9.0
Cyprus	HICP	1.7	2.3	2.2	2.3	2.7	3.2	3.7	4.1	4.7	4.4	4.3	4.6
	HICP-energyfood	1.6	2.1	2.0	1.8	2.2	2.2	2.3	2.6	2.7	2.2	2.3	2.6
Latvia	HICP	8.9	9.5	10.2	11.5	13.2	13.7	14.0	15.6	16.5	16.6	17.4	17.7
	HICP-energyfood	8.8	9.8	10.6	11.1	12.2	12.7	13.0	15.2	15.9	15.7	15.9	16.0
Lithu.	HICP	5.0	5.1	5.6	7.1	7.6	7.9	8.2	10.0	10.9	11.4	11.9	12.3
	HICP-energyfood	4.5	4.7	5.3	6.4	6.8	7.1	7.1	8.1	9.1	9.7	10.5	10.6
Hung.	HICP	8.5	8.3	7.1	6.4	6.9	7.2	7.4	7.4	6.7	6.7	6.8	6.9
	HICP-energyfood	7.3	7.2	7.0	5.8	6.0	6.2	6.3	6.3	5.8	5.6	5.7	5.6
Malta	HICP	-0.6	-0.2	0.6	0.9	1.6	2.9	3.1	3.8	4.0	4.3	4.1	4.1
	HICP-energyfood	-0.3	-0.2	0.2	0.5	1.3	2.3	2.4	3.2	3.1	3.4	3.3	3.5
Poland	HICP	2.6	2.5	2.1	2.7	3.1	3.7	4.2	4.4	4.6	4.4	4.3	4.3
	HICP-energyfood	2.0	2.1	2.2	2.4	2.7	3.0	3.3	3.6	3.8	3.8	3.9	3.7
Slove.	HICP	3.8	4.0	3.4	3.6	5.1	5.7	5.7	6.4	6.4	6.6	6.2	6.2
	HICP-energyfood	3.1	3.4	3.7	3.9	4.4	4.6	4.6	4.8	5.6	5.8	6.0	5.7
Slova.	HICP	1.5	1.2	1.2	1.7	2.4	2.3	2.5	3.2	3.4	3.6	3.7	4.0
	HICP-energyfood	1.7	1.5	1.4	1.8	2.2	2.6	2.8	3.2	3.5	3.7	3.9	4.0

*(p): provisional**Source: Eurostat*

References:

- Aghajanyan G. (2005), 'Core inflation in a small transition country: choice of optimal measures', *European Journal of Comparative Economics*, **2(1)**
- Artis M. (2003) 'Is there a European business cycle?', *CESifo Working Paper*, **1053**
- Artis M., Marcellino M., Proietti T. (2004), 'Characterising the business cycle for accession countries', IGER, Innocenzo Gasparini Institute for Economic Research, Bocconi University, *Working Papers*, **261**
- Babetskii I. (2004), 'EU enlargement and endogeneity of some OCA criteria: evidence from the CEECs', *Czech National Bank Working Paper Series* **2**
- Balassa B. (1964), 'The Purchasing-Power Parity Doctrine: a Reappraisal', *Journal of Political Economy*, **72**, 584-596
- Bayoumi T. et al. (2005), 'Exchange rate regimes, international linkages, and the macroeconomic performance of the New Member States', in Detken C. et al. (eds), *The New EU Member States, Convergence and Stability*, Frankfurt am Main, European Central Bank
- Berger H. (2004), 'The economic challenges of EMU enlargement', Deutsche Bank Research, *EU Monitor*, **12**
- Boeri T., Garibaldi P. (2005), 'Are labour markets in the new member states sufficiently flexible for EMU?', *Journal of Banking and Finance*, **30**, 1393-1407
- Boone L., Maurel M. (1999), '«L'ancrage de l'Europe centrale et orientale à l'UE», L'intégration des pays d'Europe Centrale dans l'Union européenne', *Revue Economique*, **50(6)**
- Bower U. (2005), 'An empirical analysis of stochastic trends and cycles in Central and Eastern Europe and the euro area', Working Paper presented at a CEUS Workshop on "Challenges and Implications of EMU Enlargement", Vallendar, WHU Koblenz, 23-June 24, 2005
- Bower U., Guillemineau C. (2006), 'Determinants of business cycle synchronisation across euro area countries', *European Central Bank Working Paper Series*, **587**, February
- Breuss F., Fink G., Haiss P. (2004), 'How well prepared are the New Member States for the European Monetary Union?', *Journal of Policy Modelling*, Summer, Paper for the special issue on Enlargement of the European Monetary Union
- Bulir A., Smidkova K. (2005), 'Exchange rates in the New EU Accession Countries: what have we learned from the Forerunners?', International Monetary Fund, *IMF Working Paper*, **WP/05/27**
- Carmignani F. (2005), 'The characteristics of business cycles in selected European emerging market economies', United Nations Economic Commission for Europe, Economic Analysis Division, *Discussion Paper Series*, **8**, December
- Darvas Z., Szapary G. (2004), 'Business cycle synchronization in the enlarged EU: comovements in the new and old members', Magyar Nemzeti Bank, *NMB Working Paper*, **1**
- Darvas Z., Rose A. K., Szapary G. (2005), 'Fiscal divergence and business cycle synchronization: irresponsibility is idiosyncratic', Magyar Nemzeti Bank, *MNB Working Paper*, **3**
- De Grauwe P. (1997), *The economics of monetary integration*, Oxford, Oxford University Press
- De Grauwe P., Schnabl G. (2004), 'Nominal versus real convergence with respect to EMU accession – How to Cope with the Balassa-Samuelson Dilemma', European University Institute (EUI), Robert Schuman Centre of Advanced Studies (RSCAS), *Working Paper*, **20**
-

- De Haan J., Inklaar R., Jong-a-Pin R. (2005), ‘Will business cycles in the euro area converge? A critical survey of empirical research’, University of Groningen, CCSO Centre for Economic Research, *Working Paper*, **08**
- Egert B. (2002), ‘Estimating the impact of the Balassa-Samuelson effect on inflation and the real exchange rate during the transition’, *Economic Systems*, **26(1)**
- European Central Bank (2004), ‘The acceding countries’ strategies towards ERM II and the adoption of the Euro: an analytical review’, *Occasional Paper Series*, **10**
- European Central Bank (2008), *Convergence Report*, May
- Eichengreen B., Wyplosz Ch. (1994), ‘How to save the EMS’, in Johnson, Ch. and Collignon, S. (eds), *The monetary economics of Europe – Causes of the EMS crisis*, London, Pinter Publisher
- Eickmeier S., Breitung J. (2005), ‘How synchronized are central and eastern European economies with the euro area? Evidence from a structural factor model’, *Journal of Comparative Economics*, **34(3)**, 538-563
- European Commission, Directorate General for Economic and Financial Affairs (2006), *Quarterly Report on the Euro Area*, **5(3)**, October
- European Commission, Directorate General for Economic and Financial Affairs (2008), *Economic Forecast, European Economy*, **1**, Spring
- Fic T., Barrell R., Holland D. (2006), ‘Entry rates and the risks of misalignment in the EU8’, National Institute of Economic and Social Research, *Discussion Paper*, **275**, September
- Filacek J., Horvath R., Skorepa M. (2006), ‘Monetary policy before euro adoption: challenges for EU new members’, *MPRA paper*, 879, <http://mpra.ub.uni-muenchen.de/879/>
- Fidrmuc J., Korhonen I. (2001), ‘Similarity of supply and demand shocks between the euro area and the CEECs’, Bank of Finland Institute for Economies in Transition, *BOFIT Discussion Papers*, **14**
- Fidrmuc J., Korhonen I. (2006), ‘Meta-analysis of the business cycle correlation between the euro area and the CEECs’, *Journal of Comparative Economics* **34**, 518-537
- Frankel J., Rose A. (1998), ‘The endogeneity of the O.C.A. criteria’, *Economic Journal*, **108**, 1009-1025
- Frenkel M., Nickel C. (2002), ‘How symmetric are the shocks and the shock adjustment dynamics between the Euro area and Central and Eastern European Countries (CEEC)?’, *IMF Working Paper WP/02/222*, December
- Frenkel M., Nickel C. (2005), ‘New European Union members on their way to adopting the euro: an analysis of macroeconomic disturbances’, *Global Finance Journal*, **15**, 303-320
- International Monetary Fund (2001), *Public Information Notice (PIN)*, **01/47**
- Kenen P. (1969), ‘The theory of optimum currency areas: an eclectic view’, in Mundell R. and Swoboda, A. (eds), *Monetary problems of the international economy*, Chicago, University of Chicago Press
- Kontolemis Z. G., Ross K. (2005), ‘Exchange rate fluctuations In the New Member States of the European Union’, *EconWPA, Macroeconomics*, **0504015**
- Kutan A. M., Yigit T. M. (2005), ‘Real and nominal stochastic convergence: are the new EU members ready to join the Euro zone?’, *Journal of Comparative Economics*, **33**, 387-400
- Krugman P. (2003), ‘Lessons of Massachusetts for EMU’ in F. Torres and Giavazzi, F. (Eds.), *Adjustment and growth in the European Monetary Union*, Cambridge, Cambridge University Press
- Lane P. (2006), ‘The real effects of EMU’, American Economic Association (AEA), *Conference paper*, January
- Mac Kinnon R. (1963), ‘Optimal currency areas’, *American Economic Review*, **53**, 717-724

-
- Markiewicz A. (2006), 'Choice of exchange rate regime in transition economies: An empirical analysis', *Journal of Comparative Economics*, **34**, 484-498
- Meunier N. (2001), 'La monnaie polonaise: instrument à double tranchant de la politique économique', *Le Courrier des Pays de l'Est*, 1017
- Micco A., Stein E., Ordóñez G. (2003), 'The currency union effect on trade: early evidence from EMU', *Economic Policy*, October, 315-356
- Moore T., Pentecost E.J. (2006), 'An investigation into the sources of fluctuation in real and nominal wage rates in eight EU countries; A structural VAR approach', *Journal of Comparative Economics*, **34**, 357-376
- Mundell R. (1961), 'A theory of optimal currency areas', *American Economic Review*, **51**, 657-665
- Mundell R. (1997), 'A theory of optimum currency areas', in Blejer M.I. et al.(eds), *Optimum currency areas - New analytical and policy developments*, Washington D.C., International Monetary Fund (IMF)
- Rose A. (2000), 'One money, one market: estimating the effect of common currencies on trade', *Economic Policy*, **30**, 7-46
- Samuelson P. (1964), 'Theoretical Notes on Trade Problems', *The Review of Economics and Statistics*, **46(2)**, 145-154
- Sinn H-W. et al. (2004), *Report on the European Economy for 2004*, Brussels, European Economic Advisory Group of CESifo
- Solbes P. (2003), 'Exchange Rate Policies and EMU Participation of Accession Countries', *Speaking note prepared for the Conference on Monetary Strategies for Accession Countries*, Budapest, European Commission, February 27-28
- Sutt A. (2003), 'Challenges facing the Estonian economy on its way to the European Union', *Atlantic economic journal*, **31(4)**, 312-315
- Traistaru I. (2005), 'Transmission channels of business cycle synchronization in an enlarged EMU', Working Paper presented at a CEUS Workshop on "Challenges and Implications of EMU Enlargement", Vallendar, WHU Koblenz, 23-June 24, 2005
- Tuma Z. (2003), 'Monetary policy towards E(M)U accession: a Central Banker's view', *Atlantic Economic Journal*, **31(4)**, 297-302
- Van Aarle B. (2006), 'Accession to the euro-area: a stylised analysis using a NK model', *CESifo Conference Paper*, November 24, Munich
- Van De Coevering C. (2003), 'Structural convergence and monetary integration in Europe', *De Nederlandsche Bank MEB Series*, **2003-20**
- Vega J-L., Wynne M. (2001), 'An evaluation of some measures of core inflation for the Euro area', *European Central Bank Working Paper Series*, **53**, April
- Weimann M. (2003), 'OCA theory and EMU Eastern enlargement – An empirical application', Deutsche Bank Research, *Working Paper series*, **8**
- Wynne M. (2008), 'Core inflation: a review of some conceptual issues', *Federal Reserve Bank of St. Louis Review*, May/June, **90 (3, Part 2)**
- Zapal J., Schneider O. (2006), 'What are their words worth? Political plans and economic pains of fiscal consolidations in new EU member states', *Institute of Economic Studies Working Paper, Faculty of Social Sciences Charles University*, **13/2006**, Prague
- International Centre for Economic Growth – ICEG EC (2006), *Quarterly report on the New Member States*, Autumn
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