NOMINAL CONVERGENCE*

Aurel IANCU**

Abstract: *After presenting the institutional construction during the pre-accession and post-accession to the Economic and Monetary Union (EMU), the exchange rate mechanisms (ERM) in several countries and the convergence criteria, we go on with a brief analysis of the way the CEE countries cope with the convergence criteria in accordance with the Maastricht Treaty. Then, the study deals with a topic often discussed in the scientific literature and included on the agenda of decision-makers at various levels, in order to clarify the following major issues: a shorter transition to the euro, the exchange rate equilibrium versus the inflation rate diminution and the Balassa-Samuelson effect, the exchange rates and the exchange rate deviation index, evidences concerning the real exchange rate equilibrium and the appreciation of the exchange rate in the CEE countries.*

Keywords: *Convergence criteria, exchange rate, exchange rate mechanisms, Euro Area, Balassa-Samuelson effect, tradable goods, non-tradable goods, exchange rate deviation index, purchasing power parity.*

European integration requires convergence not only on the institutional and real economy areas, but also on the nominal area, by the creation and consolidation of the monetary union and the transition of the EU member countries to the single currency (euro). Having joined the European Union – as a proof of the general achievement of institutional convergence – the countries become very soon members of the Economic and Monetary Union and are entitled, ex officio, to adopt the single currency while complying with the criteria of the Maastricht Treaty.

1. PRELIMINARY REMARKS

Nominal convergence is a multilateral process, defined by the gradual harmonisation, at a relatively high rate, of the national institutions and policies of the member countries with the EU ones, in the monetary and financial field.

* A study within the CEEX Programme – Project "Economic Convergence and the Role of Knowledge in the Context of EU Integration", No. 200/2006

** Aurel Iancu is a Member of the Romanian Academy, Senior researcher within the National Institute for Economic Research, with a long experience in European and national research programmes, coordinator of PhD programmes in economic science.

The European integration has covered several stages so far: Free Trade Area, Customs Union, Common Market, Internal Single Market (EU), Economic and Monetary Union (EMU) and full economic integration, as the last integration stage. The EMU is an upper stage of multinational integration that implies the following: common monetary policy, proper coordination of the economic policies of the member states, single currency, full liberalisation of the capital flow, an effective institutional system for the monetary policy coordination and control.

The principle of subsidiarity is excluded from the monetary field. As regards the common monetary policy, unlike other issues, the member countries transfer the decision-making from the national level to the Community one and give up their sovereignty over the monetary policy.

The history of the preparations for nominal convergence is relatively similar and closely connected to the history of the economic integration. Such preparations may include first the actions for the creation of the European institutions, such as: the European Union of Payments (1950), the European Monetary System (1979), the Committee for the Study of Economic and Monetary Union (1988), the European Fund for Monetary Cooperation (1973), the European Monetary Institute (1994), the European System of Central Banks (the European Central Bank and the central banks of the member states), the creation and updating of the exchange rate mechanism.

Without diminishing the importance and role of the above institutions, one may consider the Maastricht Treaty as the "birth certificate" of the EMU and the nominal convergence concept. Obviously, the Treaty: (1) caused the introduction of the common monetary policy based on a single currency, administered by a single independent central bank – the European Central Bank (ECB); and (2) set the nominal convergence criteria to be fulfilled by the member states in order to become members of the European Monetary Area.

The fundamental objective of the common monetary policy and exchange rate policy, set by the Treaty, is, on the one hand, price stability and, on the other hand, support (without any damage to price stability) for the general economic policy of the EU for real convergence, by catching up with the developed countries, in compliance with the principles of the market economy, competition and cohesion.

On the common monetary policy. It is a known fact that the EMU is based on three main pillars: monetary, fiscal and economic/structural[1]. The transition to the EMU entails differentiated changes in the policies and the decision systems for the three pillars. The monetary pillar is based on a very centralized coordination, achieved by the replacement of the national policies with Community policies. Moreover, action is taken to adapt the entire institutional system as well as its infrastructure, in support of the above changes.

[1] Lutaş, M., *Uniunea Economică şi Monetară*, Institutul European din România, Bucureşti, august 2005

The changes in the other pillars are less spectacular as regards the political and decision-making competence. The EMU member states model their responsibility for the economic policy in accordance with the subsidiarity principle and what is required by the open marked economies and the fair competitive environment. Here, the stress is laid, on the one hand, on extending the coordination of the fiscal policy to the EU and, on the other hand, on increasing the capability of the member states to gradually achieve convergence in the economic performance field.

On the nominal convergence criteria. These criteria are the minimal requirements to be met by an EU member state to enter the euro zone. Joining the euro area means that the states must give up their national currency and their national monetary policy and, equally, adopt both the single European currency and the common monetary policy, formulated and coordinated by the European Central Bank.

2. THE STAGES OF NOMINAL CONVERGENCE

Nominal convergence by monetary integration is a long process. This process is closely linked with the institutional and real convergence and implies tree main stages: pre-accession to the EU, post-accession to the EU and euroisation.

2.1 The pre-accession stage

This stage is connected with the institutional changes and construction, as well as with the mechanisms of the monetary system. It lasts until the accession to the EU. During the pre-accession stage, the applicant countries, on the one hand, maintain their monetary sovereignty, which enables them to choose the proper exchange rate regime, as a ground of the macroeconomic stability. On the other hand, the countries are compelled to adopt the Community acquis concerning the independence of the central bank, the liberalisation of the capital flows, the ban on the direct financing of the government by the central bank, the ban on the privileged access of the government to financial institutions.

At this stage to achieve macroeconomic stability by diminishing inflation, controlling the balance of payments, and keeping the budget deficit and public debt at a reasonable level, the applicant countries are free to use the most adequate/efficient exchange rate regimes. Actually, the regimes cover the entire range of arrangements: from the rigid/fixed regime imposed by the monetary council to the free floating regime. During the pre-accession to the EU (1999-2004 and 1999-2006)[2], the candidate countries established the exchange rate regimes presented in Table 4.1.

[2] We considered this interval since 1999 (the year when the European single currency – euro – was adopted) and 2004 witnessed the accession to the EU of ten countries: the Czech Republic, Cyprus, Estonia, Latvia, Lithuania, Malta, Poland, Slovakia, Slovenia and Hungary. As for Romania and Bulgaria, the pre-accession period ranged since 1999 up to 2006, for the same reasons.

Table 4.1

The exchange rate regimes in the countries which acceded to the EU in 2004 and 2007

Country	**Exchange rate regime**
Czech Republic	Controlled floating
Estonia	Monetary council (fixed rate)
Latvia	Monetary quasi-council (fixed target and special drawing rights)
Lithuania	Monetary council (fixed rate)
Poland	Sliding lane ± 15%(since 2001, free floating)
Slovakia	Controlled floating
Slovenia	Controlled floating
Hungary	Sliding lane ±15%
Bulgaria	Monetary council (fixed target, euro)
Romania	Controlled floating

Source: De Haan J.S.C., W. Eijffinger and S. Waller (2004), The European Central Bank: Centralization, Transparency and Credibility, Cambridge M.A., MIT Press; Irina Bălteanu, "Există riscul unui atac speculativ în ţările în tranziţie înainte de intrarea în Uniunea Economică şi Monetară?", in Daniel Dăianu, Mugur Isărescu, Noii economişti despre tranziţia în România, Ed. Enciclopedică, Bucureşti, 2003.

Practice proves that there is no single recipe to optimize the exchange rate regime in these countries. The selection of the regime was based on features and priorities specific to each country. Either opting for flexible solutions (free floating and controlled floating) or opting for the fixed exchange rates, governments managed to fulfil the main task concerning the inflation decrease, the balance of payments equilibrium, the protection against speculative attacks and the prevention of the negative effects of volatile capital.

The adoption of different exchange rate regimes was meant either to ensure price stability, whether they were compatible or not, or to achieve exchange rate stability. During the transition period (1991-2004), the countries shifted from quick mechanisms to flexible mechanisms to ensure disinflation and economic growth. Only the countries confronted with monetary crisis and excessive openness due to the small size of the national economy (Bulgaria, Estonia, Latvia, Lithuania) adopted a monetary council or fixed exchange rates in order to ensure monetary stability and prevent speculative attacks. In principle, the selected exchange rate regime is a key determinant of a country's macroeconomic stability, which influences the investment and business environment of the country; therefore, governments must use this regime as an important anchor of the economic policy.

Since there were no constraints during the pre-accession period, it was possible to adopt different types of exchange rate. The ten countries that joined the EU on May 2nd, 2004, and Romania and Bulgaria, on the 1st of January, 2007, must adopt another exchange rate mechanism, called the Exchange Rate Mechanism II (ERM II), as a lead-up to the accession to the euro area[3].

[3] Initially, the exchange rate mechanism was very restrictive, as the daily fluctuations had to range between ±2.5%, as against the two-year average. This mechanism was called ERM I. Following the frequent non-observance of these limits by the member states, the fluctuation range was extended to ±15%. This is the ERM II.

2.2 The post-accession stage

This stage ranges from the countries' official accession to the EU up to the accession to the Euro Area. The main feature of this stage is that the countries lose most of their monetary sovereignty, since the European Central Bank takes over most tasks from the national central banks in matters of monetary policy.

In the single market based on the free movement of the goods, services and factors, the effects of excessive fluctuations in the exchange rate of an EU member states extend freely to the entire Community economy and damage the other member states. That is why exchange rates are common problems that must be solved on the EU level. Under these circumstances, the monetary policy of the new EU member states is subject to a new exchange rate mechanism (ERM II), meant to assure price and exchange rate stability in accordance with the convergence criteria of the Maastricht Treaty, as a prerequisite to the accession to the Euro Area.

Any discussions about the advantages and disadvantages of various currency arrangements, as well as the desire for a shorter or immediate accession to the Euro Area are practically superfluous. The new member states can no longer have their own options that might contradict the official position of the EU, since either the problems are clarified by treaties and agreements, or the countries have no significant power of negotiation with the Community authorities in order to influence the decision-making.

According to the Copenhagen criteria, the new EU member states have to make every endeavour to accede to the EMU as soon as possible, provided that they meet the criteria. So, the new-comers are not allowed to delay the ERM II adoption and accession to the Euro Area, like the United Kingdom and Sweden were allowed to.

Romania, and other countries which signed the Accession Treaty, set different terms for the ERM II adoption and integration into the Euro Area, in accordance with their own pace (Table 4.2).

Table 4.2

The schedule of some CEE countries for joining the ERM and Euro Area

Country	EU accession time	ERM II joining time	Target-time for the accession to Euro Area
Poland	2004	2006	2009-2010
Czech R.	2004	2006-2007	2009-2010
Slovakia	2004	2006 (first half of the year)	2008-2009
Hungary	2004	2007-2008	2010-2011
Romania	2007	2010-2012	2012-2014

***Source*:** Mugur Isărescu, Programul economic de preaderare, ediția 2005, Obiectivele pe termen mediu ale politicii monetare şi cursului de schimb, Bucureşti, 20 iulie 2005; Napoleon Pop, "Adoptarea euro de către România. Recomandări pentru pregătirea unei strategii de success", INCE, Probleme economice, colecția "Biblioteca economică", vol. 173, 2005, p. 29.

According to the EC and ECB regulations, the new member states may accede to the Euro Area provided that they participated at least two years in the ERM II, which is a stage characterized by fixed, yet adjustable, exchange rates, but still

adjustable. Therefore, the new-comers become, within a short period (about two years), EMU members. The table shows that the accession to the EMU II takes two years after the accession to the EU. There are countries which adopted the ERM II at the accession time (Italy, Finland, Greece, Latvia, Cyprus, and Malta), while others adopted it one month later (Estonia, Lithuania, and Slovenia). This was mostly a consequence of the policy for the liberalisation of the international capital flows, as an important and sensitive part of the Community acquis, "although they became more vulnerable to speculative attacks"[4].

The formulation of the monetary policy in the pre-accession period is based on the four nominal convergence criteria stipulated by the Maastricht Treaty, namely: price stability, exchange rate stability, diminishing long-term interest rate and a sustainable fiscal status (non-excessive deficit) (Table 4.3).

Table 4.3

List of the nominal convergence criteria of the Maastricht Treaty[5]

Criteria	Explanation and limits
1. Price stability	The average inflation rate throughout one year before the accession to the Euro Area shall not exceed by over 1.5 percentage points the inflation rate of the three member countries with the best results in matters of price stability.
2. Sustainable fiscal status	• Budget deficit below 3% of the GDP. • Public debt below 60% of the GDP.
3. Exchange rate stability	Observance of the normal fluctuation lanes of ±15%, provided by the ERM at least in the last two years before the country accession to the EMU and no devaluation of the national currency in relation to the euro during the same period.
4. Lower long-term interest rate	The long-term interest rate shall not exceed by maximum two percentage points the average of the interests of the three countries with the lowest interest.

***Source*:** The Maastricht Treaty (Article 121), The Treaty for the Institution of a Constitution for Europe (Article III 198) and The Protocol on the Convergence Criteria (Annex to the Treaty for the Institution of a Constitution for Europe).

The nominal convergence criteria have a strong political motivation. This motivation is connected with the economic and monetary stability and the economic performance of the countries with the best practice, since these countries are considered as benchmarks for the evaluation of the nominal convergence criteria.

Although all the countries which joined the EU virtually became (after a certain period) EMU members also, still their status in relation to the Euro Area was not the same. Out of the 27 member states, twelve are integrated into the common

[4] It is a unilateral voluntary engagement of the countries, which does not mean an additional obligation for the ECB (Sylvester Eijffinger, "Comment", in European Central Bank, *The New EU Member States Convergence and Stability*, Third Central Banking Conference, 21-22 October 2004, pp. 177-8).

[5] According to the Protocol concerning the nominal convergence criteria (Annex to the Treaty), the inflation is computed by one consumer price index on a comparative basis, taking into account the differences in the national definitions.

monetary area (Euro Area)[6], two benefit from the so-called opting-out clause, which allows them to opt or not for the Euro Area[7], while the other countries (which joined the EU after signing the Maastricht Treaty) will become EMU members[8], that is, they will have access to the Euro Area and adopt the single currency only after participating, at least two years, in the ERM II[9] (as a lead-up period) and only if they prove by concrete results that they comply with the nominal convergence criteria. As long as these criteria are not attained, those countries remain member states with a derogation status, excluded *de jure* and *de facto* from the rights and obligations of the European System of the Central Banks, and the rights and obligations of the Euro Area.

As for the access of the EU member countries to the Monetary Union, The Treaty compels the EC and ECB to assess these countries' compliance with the nominal convergence criteria. The assessment is annual and included in the above-mentioned institutions' reports. For example, according to the 2004 reports, none of the countries which acceded to the EU after 1994 met the nominal convergence requirements. Table 4.4. contains the results of the assessment concerning the fulfilment of the four convergence criteria by the above-mentioned countries, to which we add Romania.

The table shows that no country that acceded to the EU in 2004 fulfilled all convergence criteria to be immediately accepted into the EMU. Analysing the assessment of the fulfilment of the criteria by each country, we find out the following: two countries (Poland and Hungary) fulfilled no criteria; two countries (Malta and Slovakia) fulfilled one criterion; five countries (Estonia, Czech Republic, Cyprus, Latvia, Slovenia) fulfilled two criteria; two countries (Sweden and Lithuania) fulfilled three criteria. In 2004, Romania fulfilled only one criterion (financial stability).

---

[6] The following countries adopted the euro: Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain.

[7] They are Denmark and the United Kingdom, members of the Community before signing the Maastricht Treaty. They benefit from the opting-out clause. It is a special status granted to these countries, which did not intend to accede to a certain field of economic cooperation. This exceptional status was meant to avoid the general blocking of the integration advance. For example, the United Kingdom did not wish to join some of the EMU institutions, especially those concerning monetary integration. As for Denmark, the exceptional status is extended to issues regarding EU defence and citizenship.

[8] This category of states includes all countries which acceded after signing the Maastricht Treaty. Sweden acceded to the EU in 1995, the Czech Republic, Estonia, Latvia, Lithuania, Poland, Slovakia and Hungary acceded in 2004, and Romania and Bulgaria in 2007.

[9] Until 1999, the ERM (as an important element of the European Monetary System) was a multilateral system of parities which allowed each currency to fluctuate within a limited lane in relation to every currency included in the system, by setting a central parity rate in ECU. It was called the first exchange rate mechanism (ERM I). With the adoption of the euro in 1999, a new exchange rate mechanism, called ERM II, was adopted. Therefore, the multilateral system was replaced with the bilateral one, according to which each national currency is defined by a central parity rate in euros.

Table 4.4

Degree of fulfilment of the convergence criteria in 2004 by the EU member countries that signed the Treaty after 1994, plus Romania

Country	Price stability	Governmental financial stability (deficit and public debt)	Exchange rate stability	Long-term interest rate
Czech Republic[10]	Yes	No	No	Yes
Estonia	Yes	Yes	No	-
Cyprus	Yes	No	No	Yes
Latvia	No	Yes	No	Yes
Lithuania	Yes	Yes	No	Yes
Malta	No	No	No	Yes
Poland	No	No	No	No
Slovenia	No	Yes	No	Yes
Slovakia	No	No	No	Yes
Sweden	Yes	Yes	No	Yes
Hungary	No	No	No	No
Romania	No	Yes	No	No

Source: European Commission, October 2004. Data from Assessment of the Fulfilment of the Maastricht Convergence Criteria and the Degree of Alignment of the Czech Economy with the Euro Area, Report 2005, by the Government of the Czech Republic; European Commission, Romania 2005 Comprehensive Monitoring Report, 25 Oct. 2005; European Commission, Bulgaria 2005 Comprehensive Monitoring Report, 25 Oct. 2005.

To assess the fulfilment of the convergence criteria by Romania and Bulgaria in comparison with the Czech Republic (a country on a higher development and integration level), we present in Table 4.5., on the one hand, the limit (reference) values computed in accordance with the rules stipulated by the Treaty, and, on the other hand, the effectively achieved indicators.

Also, to assess the exchange rate stability, we present graphically the daily fluctuations in Romania, the Czech Republic, Poland and Bulgaria in four years (2002-2005), and check whether the fluctuations ranged within ± 15 %, as against the reference average rate computed for 2002-2006[11] (called the central rate of parity), considered by the Treaty as one of the convergence criteria that condition the access to the Euro Area[12] (Figure 4.1).

The central parity is the daily rate average in 2003-2004. Although the daily rate fluctuation was significant, it remained within the corridor consisting of two lanes, +15% and -15%, except for the Polish currency in a short period in 2004. The plus sign and the upward movement of the exchange rate in the chart mean the national currency depreciation in relation to the euro, and the minus sign and the downward movement of the exchange rate mean the national currency appreciation.

[10] Later computations revealed that the Czech R. also fulfilled the criterion of the exchange rate stability

[11] For 2006, the data were available for the first months.

[12] The narrow lane of ±2.5% had been operational until 1992-1993, when the European Monetary System collapsed, since it was too restrictive. The narrow lane was replaced with a broader one, of ±15% around the central parity, considered as being comfortable enough (Wilhelm Salater, "Alegerea regimului de politică monetară în ţările aflate în proces de aderare la Uniunea Europeană; întreţinerea directă a inflaţiei şi Consiliul Monetar", in Daniel Dăianu and Mugur Isărescu (coord.), *Noii economişti despre tranziţia în România*, Ed. Enciclopedică, 2003).

Like the Czech Republic and the other countries, Romania is characterized by the appreciation of the national currency (leu) in relation to the euro and other currencies. It is not our intention to provide causal explanations of the above trend, but we only point out that this phenomenon causes tension in the economy, since it hinders exports and stimulates imports.

Table 4.5

Assessment of the fulfilment of some nominal convergence criteria of the Maastricht Treaty by Romania and Bulgaria in comparison with the Czech Republic

- percent -

	2001	2002	2003	2004
A. Indices of the corporate consumer price (inflation)				
1. Average in three countries with the lowest inflation	1.6	1.1	1.2	0.9
2. Reference value (line 1+1.5 p.p.)	3.1	2.6	2.7	2.4
3. Effective inflation value for:				
• Czech R.	4.5	1.4	-0.1	2.7
• Romania	34.5	22.5	15.3	11.9
• Bulgaria	8.9	7.3	3.8	7.6
B. General governmental deficit in relation to the GDP				
1. Reference value	-3.0	-3.0	-3.0	-3.0
2. Effective value for:				
• Czech R.	-5.9	-6.8	-12.6	-5.2
• Romania	-3.5	-2.0	-2.0	-1.4
• Bulgaria	1.4	-0.2	0.6	1.3
C. General governmental debt in relation to the GDP				
1. Reference value	60.0	60.0	60.0	60.0
2. Effective value for:				
• Czech R.	25.3	28.8	37.8	38.6
• Romania	23.2	23.3	21.8	18.5
• Bulgaria	78.6	65.1	60.5	63.0
D. Long-term interest rate				
1. Average in 3 countries with the lowest inflation	...	4.90	4.12	4.28
2. Reference value (line 1+2.0 p.p.)	...	6.90	6.12	6.28
• Czech R.	...	4.94	4.12	4.75
• Romania	...	....	....	6.75[13x)]

Source: *Assessment of the Fulfilment of the Maastricht Convergence Criteria and the Degree of Alignment of the Czech Economy with the Euro Area*, Report 2005 by the Government of the Czech Republic; European Commission, *Romania 2005 Comprehensive Monitoring Report*, 25 Oct. 2005; European Commission, *Bulgaria 2005 Comprehensive Monitoring Report*, 25 Oct. 2005.

[13] Isărescu, M., *Obiective pe termen mediu ale politicii monetare şi cursului de schimb, Programul economic de preaderare*, ediţia 2005

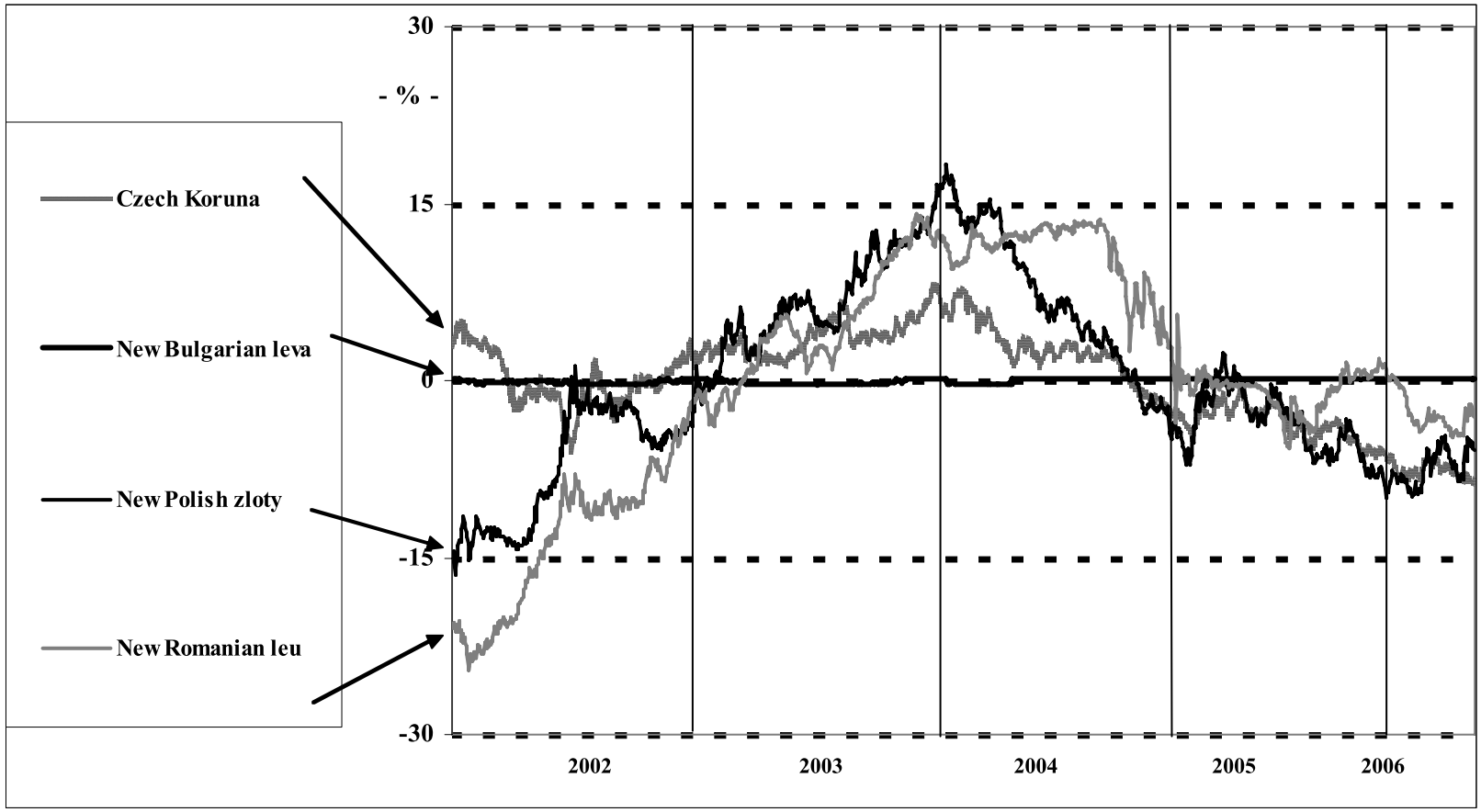

Figure 4.1. *Exchange rate fluctuation as against the 2002-2006 average (limit corridor ± 15 %).*
Source: Based on Eurostat.

3. CONTROVERSIES AND DEBATES CONCERNING THE TRANSITION TO THE EMU. THE QUESTION OF THE BALASSA-SAMUELSON EFFECT

While the applicant countries enjoyed, during the pre-accession to the EU, a high level of freedom in formulating and implementing their monetary policy, this freedom lowered during the post-accession period due to the convergence criteria imposed by the Maastricht Treaty and the obligation to join ERM II before adopting the euro, in the context of full liberalisation of the trade and capital flows. Therefore, the range of tools for the economy control diminished and the degree of vulnerability of the macroeconomic stability increased, which might affect, to a great extent, the real convergence process.

In this context, many questions, debate topics and controversies have occurred. We approach some of them in brief.

3.1 The shortening of the euroisation period

The economic literature reveals that, in the case of the recent CEE members of the EU which were imposed restrictive conditions, this period implies excessive costs in exchange for uncertain and delayed benefits. Moreover, all capital of trust invested in the national currency for 4-5 years to achieve its appreciation and in the supporting institutions is suddenly shattered and becomes nil with the transition to the euro. It looks like the Sisyphean labour or a Fata Morgana chaser. The appreciated national currency, sovereignty over the monetary policy, ERM, etc. will be no longer necessary after the adoption of the euro.

The earlier integration of these countries into the Euro Area would spare major efforts, useless for some authors, and bring significant advantages, consisting of:

- *on the microeconomic level,* the elimination of the risk and cost of the exchange rate fluctuation, the elimination of the currency transaction cost, the increasing transparency of prices;
- *on the macroeconomic level,* the diminution in inflation and interest rates to be possibly achieved in the very moment of the euro adoption.

As ordinary EU members, the countries are no longer able to use the adequate tools for protection against speculative capital flows and benefit from the EU support. Joining the Euro Area earlier could protect these countries against the possible volatility of the speculative capital or the speculative attacks.

The EMU authorities' and the EMU member countries' viewpoint is contrary to the above one. They consider that the new-comers must not join the EMU too early and reject unilateral euroisation. On adopting the euro, the CEE countries must not have a weak currency. Otherwise, it may endanger the euro stability and credibility, on the one hand, and force the countries to request, after joining the

EMU, financial support from the European Community in case of asymmetrical shocks after the euro adoption, on the other hand.

These countries should join the new club in good condition with sound economies, able to face the shocks caused by the enlarged competitive market. Having joined the EMU, the countries are deprived of their monetary policy tools and, consequently, their main means to avoid imbalances are those that ensure the flexibility of the real economies (production structure, workforce, wages, etc.) and the financial tools. To reach the EMU stage, the new EU members must finalize the intermediate stage – often compared to the Purgatory – for testing the financial tools and the competition institutions, as well as for adjusting the economic branches, the production and the production factors.

During the lead-up period, the countries must eliminate the causes of the internal shocks, avoid and diminish the external asymmetrical shocks and create more flexible adjustment mechanisms in the absence of national monetary policies. The EMU authorities wish that the euroisation of the new-comers took place gradually and orderly and ensured, at the same time, nominal and real convergence. They think that the exposure of unprepared economies, *i.e.* not very flexible ones, to the rigorous discipline of the European single currency could be very hazardous, first to the economies themselves, but also, to some extent, to the whole European economic system.

3.2 Exchange rate stability versus inflation rate diminution and the Balassa-Samuelson effect

A largely debated topic concerning nominal convergence is the impossibility that the CEE countries fulfil, after the pre-accession to the EMU, the following two conditions: *the exchange rate stability and the inflation rate diminution*. In fact, it is a return to a hypothesis formulated independently by Balassa and Samuelson in 1964 in connection with the effects of the economic relations between the developing and the developed countries. They started with the division of the economic branches into two large sectors – tradable for export and non-tradable ones – implying a faster productivity growth in the tradeable sectors than in the non-tradable ones, in the less developed countries. They proved that, in this case, not only a higher rate of inflation, caused by the non-tradable goods (services) sector would occur, but also the appreciation of the real exchange rate, caused by the higher productivity of the tradable goods sector, would take place.

The model of the Balassa-Samuelson (B-S) effect is fully valid for the CEE countries, in full process of integration into the EMU, due to some situations (hypotheses) similar to those considered by the two economists many years ago.

The first similar situation refers to the existence of economic development gaps between countries expressed by the GDP per capita and computed in relation to the purchasing power parity (PPP-euro). Even on the European level there are significant differences in economic development between the EU-15 and the countries which joined in 2004 and 2007. It is worth mentioning that these countries are less developed than Greece, Portugal and Spain at the time of their accession to the European Community (Table 4.6).

Table 4.6

The position of the countries acceding to the EU in relation to the development level (per capita GDP computed on the basis of the PPP-euro, percent)

EU 15 average	**100.0**
Czech R. (2004)	64.6
Estonia (2004)	47.1
Latvia(2004)	39.4
Lithuania (2004)	43.9
Poland (2004)	45.1
Slovakia (2004)	48.8
Slovenia (2004)	72.7
Hungary (2004)	55.3
Bulgaria (2007)*)	32.1
Romania (2007)*)	32.8
Greece(1981)	62.4
Portugal 1986)	60.8
Spain (1986)	73.7

Source: Eurostat; data on Greece, Portugal and Spain, in Laszlo Halpern and Charles Wyplosz, "Economic Transformation and Real Exchange Rates in the 2000's; The Balassa-Samuelson Connection", Chapter 6, in *Economic Survey of Europe*, 2001, No. 1, UN/ECE, Geneva, September 2001, p. 4.

Taking into account the special cases of Romania and Bulgaria the B-S effect might have a stronger impact on both the evolution of the inflation and the appreciation of the real exchange rate. But the size and direction of the impact on the two objectives might be different in the two countries due to the different existing exchange rate regimes.

*) The data on Bulgaria and Romania are based on the estimated PPP-euro in the accession year, 8700 and 8900 euros, and the relation to the EU average is based on the estimated PPP in 2007, *i.e.*, 27100 euros

The second situation (hypothesis) considered by the B-S theory, similar to that of the CEE countries, is related to the consequences or the effects of the implementation of the strategy for catch-up with the developed countries by productivity increase and trade integration. On the supply side, a more significant and faster improvement of productivity takes place in the tradable goods sector (industry) than in the non-tradable goods sector (services)[22], which includes the so-called public goods, as well as the public utilities with a monopolistic or semi-monopolistic character.

As a rule, an increase in productivity is accompanied by a rise in wages. Therefore, a faster increase in the productivity of the tradable goods sector than in the non-tradable goods sector causes a faster rise in wages in the former, as it exceeds the wage level of the latter. The possibility that the workforce will move towards better paid jobs exerts a real pressure on the non-tradable goods sector for a rise in wages, but without the corresponding increase in productivity. One should also consider the pressure exerted by the trade unions from the public services for a rise in wages, justified not by the productivity increase, but by the scarcity of the means of subsistence.

As the rise in wages is not matched by the rise productivity, the only way to cover the costs with the incomes, plus a minimum profit, in the non-tradable goods (services) sector is to raise the prices of such goods. Besides, there is something else that counts: since some of the goods produced by this sector are inputs of the tradable goods sector, a rise in the price of the latter may occur at a rate above the productivity rate increase in this sector. If the rise in price is not accompanied by at least equal productivity increases, then an inflation increase occurs.

In this equation, one should also include the demand-side dynamics, influenced by the rise in income, caused by the productivity increase. Demand is different in relation to the goods from the two sectors: either at equal rates for both categories of goods, or at higher rates for the tradable goods, or, finally, at higher rates for the non-tradable goods (services). Each alternative has a different impact on the inflation rise.

According to the analysis of the statistical data on the CEE countries, Halpern and Wyplosz (2001) conclude that non-tradable goods price inflation is higher in the

[22] Some authors doubt whether this hypothesis is true, since one should take into account that the services sector also feels the increasing effect of the scale economy, production diversification, as well as the elasticity increase with the sensible rise in the income of the population. For example, Halpern and Wyplosz (2001) write that the assertion that most of the productivity gain occurs in the tradable goods sector is not thoroughly true, as long as the non-tradable goods and services are inputs of the tradable goods production and, consequently, are confronted with indirect competition. Moreover, most services are superior goods that improve the standard of living and increase demand. Therefore, there is little doubt whether productivity will increase faster in the tradable goods sector than in the non-tradable goods sector (Laszlo Halpern and Charles Wyplosz, "Economic Transformation and Real Exchange Rates in the 2000's: The Balassa-Samuelson Connection", in *Economic Survey of Europe*, 2001, No. 1 UN/ECE Geneva, September 2001, pp. 7).

countries with a faster productivity increase. Therefore, countries with faster economic growth are expected to reach a higher price rise rate for the non-tradable goods. Obviously, this influences the general price index of the consumer goods, as an average of the prices of tradable and non-tradeable goods.

The third situation, similar to that analysed by Balassa and Samuelson, is related to the impact of trade integration on the exchange rate evolution. The analysis of the exchange rate and its evolution under the impact of trade integration is important from two viewpoints: the re-evaluation of the causes of the fluctuations on short and medium terms and the long-term balance (convergence) trend, which confirms the law of one price (LOOP). Both aspects are debated by experts and the outcome is remarkable. But our attention was drawn by the studies on the B-S effect in relation to the impact of the relations between the rise in productivity, wages and prices in the two sectors producing tradable and non-tradable goods on the evolution of the real market exchange rates, in comparison with the exchange rates based on the estimation of the purchasing power parity, taken as benchmark (Egert, Halpern and Mac Donald, 2005; Halpern and Wyplosz, 2001; Breuss, 2003, etc.). The studies of the CEE economies conclude that the real market exchange rates tend towards the balance (convergence) state, initially, by the prevention of the under-appreciation of the national currency against the reference currency and, later, by real appreciation, as a natural process of positive evolution of the real economy consisting in the increase in productivity and competitiveness based on quality.

3.3 Exchange rates and deviation indices

A largely discussed topic, especially by exporters and importers, is that of the currency appreciation or depreciation (in relation to the reference currency), as an important factor influencing competitiveness, knowing that a significant appreciation of the national currency hinders exportation and stimulates importation, while depreciation acts the other way round. The Romanian exporters' appeal to the national public authorities for preventing the appreciation of the leu is actually ineffective, since, in our case, it is a natural market process and the Government's intervention is contrary to the EU regulations.

Further, we try to explain and assess the appreciation of the CEE countries' (including Romania's) currencies in relation to the reference currency (euro), using as computation tools the market exchange rate and the purchasing power parity (PPP).

Denoting by E the nominal exchange rate of the national currency in relation to a foreign (reference) currency, by P the internal price, and by P^* the external price of the goods, the relation:

$$E = P/P^*, \qquad (1)$$

called the market exchange rate, expresses the number of units of the national currency per one unit of foreign currency in external transactions.

Value P can be computed by relation (2):

$$P = EP^*. \tag{2}$$

The exchange rates also can be expressed by a converse ratio:

$$\boldsymbol{e = P^*/P}, \tag{3}$$

which means the number of foreign currency units per one national currency unit. Relation (3) helps us to compute P^*:

$$P^* = eP. \tag{4}$$

There is an extensive literature dealing with the exchange rates produced by the free market mechanisms; it covers several aspects, among which the fluctuation, equilibrium (convergence) and international comparisons of the trend and behaviour of the exchange rates play a key role.

The analysis of the evolution of the market exchange rates reveals two requirements: on the one hand, to set benchmarks or convergence points for those rates, and, on the other hand, to consider comparable measures to be used for the comparisons between countries, especially between those showing considerable differences in the development levels.

In spite of the criticism of the purchasing power parity (PPP), the adoption and use of the exchange rate based on this concept, as a calculation and analysis tool, may help fulfil the above-mentioned requirements. To do that, some methodological clarifications are necessary.

Unlike the market exchange rates (E and e), that represent the natural outcome of the market mechanisms in the monetary-financial domain, the PPP exchange rates (E^{PPP} and e^{PPP}) are estimated on the assumption that the same set of international prices is used in two or more countries compared by the same goods and qualities of the so-called "basket of goods" (P_{BG}), in the following relations:

$$E^{PPP} = P_{BG}/P_{BG}^*, \tag{5}$$

where:

$$P_{BG} = E^{PPP}P_{BG}^*, \tag{6}$$

as well as the converse ratio:

$$e^{PPP} = P_{BG}^*/P_{BG}, \tag{7}$$

where from:

$$P_{CB}^* = e^{PPP}P_{BG}. \tag{8}$$

Theoretically, the PPP exchange rate is based on the law of one price.

As regards the utilisation and interpretation of the real market exchange rates[23] in relation to the PPP exchange rates, the time horizon (Rogoff, 1996) should be taken into account, as follows:

- on long and very long terms, when some real exchange rates tend towards the PPP exchange rate at a very low convergence speed;
- on short term, when there is a deviation of the market exchange rates from the PPP exchange rate, considered as benchmark.

On the basis of these simple relations concerning the two categories of indicators, an evaluation can be made on the position of the market exchange rates in relation to the equilibrium (convergence) state, since:

$$E/E^{PPP} = 1, \tag{9}$$

and

$$e/e^{PPP} = 1, \tag{10}$$

express the convergence state.

But if:

$$E/E^{PPP} > 1, \tag{11}$$

it means that the national currency is underevaluated in relation to the reference one, and the ratio does not express the convergence state. As long as the inequality is considerable and persistent, the market exchange rate is far from the convergence state.

On the macroeconomic level, all aggregated values that form the GDP can be expressed in two ways: 1) by means of the nominal exchange rate based on the consumer price indices (E); 2) by means of the nominal exchange rate based on the comparable PPP (E^{PPP}).

When expressed in the international currency (euro), the market exchange rate (E) may be underevaluated or overevaluated. It includes all current influences in the economy, including those from subjective factors. Expressed in the PPP, the exchange rate (E^{PPP}) reflects directly the effect of the law of one price (LOOP), according to which, in a competitive single market, there is an equalisation tendency for the prices of goods.

The overevaluation or underevaluation of the exchange rate may be determined by *the exchange rate deviation index (ERDI),* computed by means of the ratio between the two types of exchange rate as defined above (the market exchange rate and the PPP exchange rate): E_1/E_1^{PPP}; E_2/E_2^{PPP};....; E_n/E_n^{PPP}.

In time, the index may take on values higher, equal or smaller than 1 (one), which means, respectively, depreciated, convergent and overappreciated market

[23] The real exchange rates stand for the nominal exchange rates adjusted in accordance with the differences in the level of national prices.

exchange rate in relation to the PPP standard exchange rate calculated. As regards the CEE countries, which underwent profound economic transformation and are close to the accession to the EMU, the ERDI describes a downward curve: ($ERDI_0$>$ERDI_1$>$ERDI_2$>….>$ERDI_N$), asymtotic to unit (Figure 4.2).

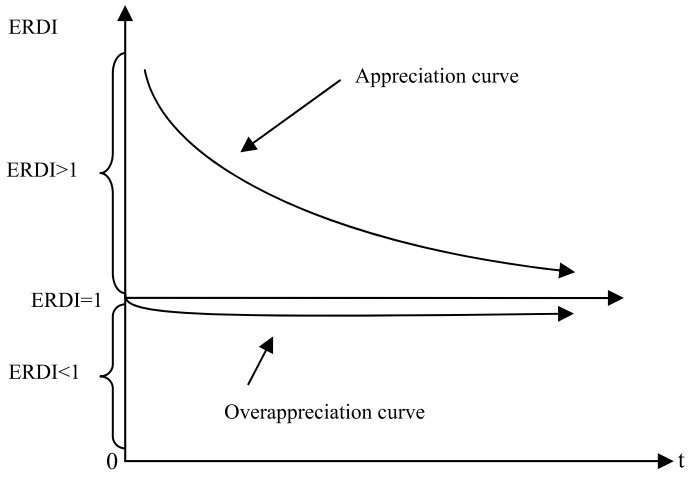

Figure 4.2. *The appreciation (convergence) of the national currency by ERDI*

The downward ERDI curve of the CEE countries shows the quick appreciation of the national currency in relation of the euro.

4. EVIDENCES CONCERNING THE REAL EQUILIBRIUM EXCHANGE RATE

The liberalisation of the national and international markets by removing the tariff and non-tariff trade barriers and strengthening integration, and market relations in all economic sectors, including public services (utilities, health, education, etc.) has contributed to the expansion of the tradable goods sector and the narrowing of the non-tradable goods sector. These actions led to the extension of the law of one price, *i.e.*, the cost of one good is the same both on the domestic market and abroad if the price is expressed in the same currency (Egert, Halpern, Mac Donald, 2005, p. 6).

In the countries or regions where such processes were completed and the economic distortions diminished due to reforms, the exchange rate deviation indices decreased and tended towards unit. Where the index was far above unit, the market exchange rate was underevaluated, and where the index was far below unit, the rate was overevaluated.

Table 4.7 shows the evolution of the market exchange rate deviation index as against the PPP in the CEE countries which joined the EU in 2004 and 2007, as well as in some EMU member countries. The indices represent the ratio of the GDP per capita assessed by PPP-euro to the GDP per capita assessed by the market exchange rates.

Table 4.7

The evolution of the market exchange rate deviation index in the new EU member countries and some EMU member countries, 1993-2006

	1993	1995	1999	2000	2001	2002	2003	2004	2005	2006
CEE member countries since 2004										
Czech R.	3.43	2.58	2.26	2.18	2.03	1.86	1.87	1.87	1.78	1.74
Estonia	5.01	2.60	1.92	1.90	1.80	1.76	1.74	1.74	1.67	1.63
Latvia	5.56	3.01	2.25	1.98	1.95	1.96	2.07	2.01	1.96	1.88
Lithuania	9.07	3.85	2.42	2.16	2.15	2.08	2.06	2.06	1.97	1.92
Poland	...	2.27	2.12	1.94	1.73	1.82	2.045	2.07	1.84	1.79
Slovakia	2.89	2.45	2.47	2.33	2.31	2.27	2.08	1.91	1.87	1.81
Slovenia	1.77	1.34	1.36	1.40	1.39	1.35	1.33	1.37	1.38	1.37
Hungary	2.31	2.28	2.21	2.13	2.03	1.82	1.77	1.69	1.66	1.69
CEE member countries since 2007										
Bulgaria	4.19	3.98	3.31	3.18	3.03	2.88	2.85	2.75	2.69	2.62
Romania	4.23	4.20	3.20	2.78	2.72	2.72	2.69	2.59	210	2.06
EMU member countries										
Greece	1.43	1.29	1.23	1.27	1.25	1.27	1.25	1.22	1.97	1.18
Spain	1.18	1.16	1.19	1.18	1.16	1.16	1.14	1.13	1.10	1.07
Portugal	1.46	1.34	1.35	1.35	1.32	1.31	1.20	1.20	1.19	1.19
Italy	1.14	1.19	1.08	1.09	1.06	1.05	1.01	1.01	1.00	0.99
France	0.93	0.87	0.94	0.96	0.97	0.96	0.94	0.93	0.93	0.93

***Source**:* Own calculation based on Eurostat data, using the GDP per capita, in current price expressed in euros, through the market exchange rate and the PPP exchange rate; the 1993 and 1995 data on Romania and 1993 data on the Czech Republic are taken from B. Egert, L. Halpern and R. Mac Donald, "Equilibrium Exchange Rates in Transition Economies: Taking Stock of Issues", Working Paper, No. 739/2005, William Davidson Institute, Michigan.

Considering the values in the table, we may conclude the following:

1. The real exchange rates are, in general, extremely underevaluated in the CEE countries. The underevaluation took place especially in the early 1990's; it began with the elimination of the constraints on the demand for hard currency and was further amplified by the shocks caused by some actions of the economic reform, such as: price liberalisation, privatisation, poor management on every level, re-orientation of the trade flows, increasing corruption, legislative void, strong economic recession, along with a high inflation, close to hyperinflation, in some cases. One may also add to them political actions for the national currency devaluation in order to improve the foreign balance of the countries.
2. The significant underevaluation of the real exchange rate in the early 1990's, when Romania, Bulgaria and the Baltic countries were at the top, was followed by the appreciation in all countries, along with the economic recovery and productivity improvement at rates higher than those of many EU member countries. In spite of the progress made in this respect, the CEE countries are still affected by a relatively significant underevaluation. Therefore, there still are many resources of appreciation of the real exchange rates. But it may cause commercial troubles: export discouragement and import encouragement.

3. Unlike the CEE counties, the developed EU member countries witnessed the overevaluation of the real exchange rate. According to the data presented in Annex 4.1, the annual deviation index ranged between 0.95 and 0.96 in EU 15, between 0.78 and 0.96 in Germany, and between 0.87 and 0.98 in France, etc. Also, the developed non-EU countries reached overevaluated real exchange rates.

Transposing some of the Annex 1 data into a chart (Figure 4.3), one may see the tendency towards convergence of the market exchange rates and the PPP exchange rates in all CEE countries, including Romania, illustrated by the evolution of ERDI. This tendency confirms, on the one hand, the appreciation of the national currency as an effect of the productivity rise, and, on the other hand, the effect of the law of one price in the context of the competitive market enlargement along with the integration into the EU. The free movement of goods, services, capital and individuals induces the significant diminution of transaction costs due to the elimination of all tariff and non-tariff barriers. The liberalisation of the capital account, the inflows of heavy direct investments in these countries, as well as the extension of partnerships among domestic and foreign companies cause the equalisation of capital costs, the restructuring of production branches by improving the quality and technological levels, as well as the improvement of products and services in a much larger market. But the main element that makes the difference in the EU prices is still the transportation and labour cost, knowing the low elasticity of labour in the European countries.

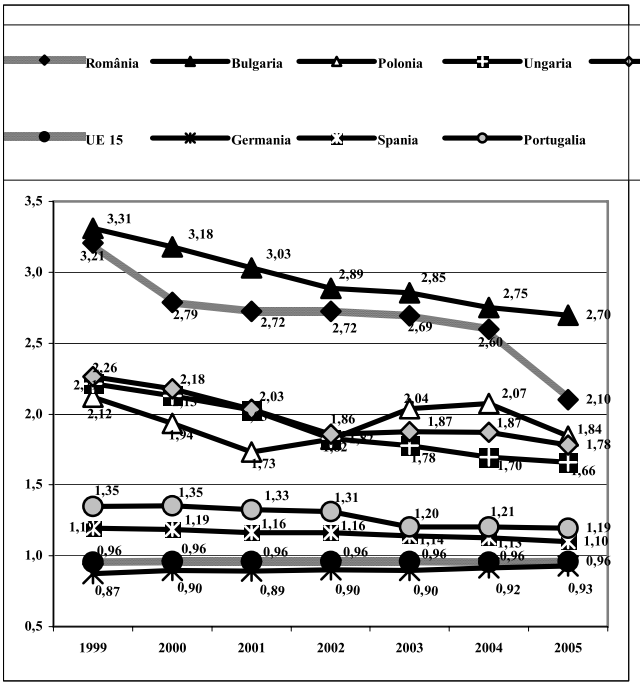

Figure 4.3. *The evolution of the ERDI in relation to the convergence (equilibrium) state of some EU member countries (1999-2005)*

Source: Based on Annex 4.1. data.

Also, the trend towards real exchange rate convergence confirms the theory concerning the B-S effect. Due to the restructuring and economic reform, market forces penetrate the non-tradable products sectors and, consequently, diminish the proportion of the ones that, without the corresponding productivity (therefore, unjustified), get a wage rise which influences inflation. Their openness and the acceptance of the competitive market forces are proved by the gradual elimination of controlled prices; therefore, their share in the consumer price index diminished between 1991-2004, from 47% to 22.5% in Romania, from 27.9% to 10.9% in the Czech Republic, from 11.0% to 1.0% in Poland. The action taken to push the non-tradable goods sector towards the market competition mechanisms brings about not only the dependence of the wage rise on labour productivity, but also the significant appreciation of the real exchange rates. This can be proved by the Table 4.8 data that reveal the significant difference in the ERDI by category of goods classified in accordance with the market relations. In general, the ERDI of the non-tradable goods – either industrial goods or services – is lower than that of the non-tradable goods.

If the data on the ERDI level of various groups of goods and services in the CEE countries that joined the EU in 2004 are linked to the upward trend characterizing the transition of the sectors from a closed (protected) to an enlarged competitive regime, we may conclude that this process also contributes to the general trend of appreciation of the real exchange rates of these economies.

Table 4.8

The ERDI level by group of goods and services of the new in 2004 EU members (CEE 8), 2002

Tradable industrial goods			**Services**		
Durables	Semi-durables	Food	Tradable services	Non-tradable services	Property prices[24]
1.13	1.47	1.46	1.80	2.42	2.41

Source:Balász Égert, Lásló Halpern and Ronald Mac Donald, *Equilibrium Exchange Rates in Transition Economies: Taking Stock of the Issues*, Williamson Davidson Institute, Working Paper, No. 793, October 2005, p. 14.

The results of the above analyses reveal the progress made by the CEE countries towards nominal convergence during the lead-up to the transition to the Euro Area. They deserve to be the object of further thorough research and scientific debates concerning the nominal convergence theory in close connection with the real convergence and institutional convergence theories.

[24] This category of products and services includes those concerning intellectual property and industrial property, at semi-monopolistic prices

Annex 4.1

Exchange Rate Deviation Index: GDP per capita expressed in PPP-euro and GDP per capita expressed in market exchange rate-euro, in the EU member countries

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
UE15	…	…	…	…	…	0.95	0.95	0.95	0.95	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Belgium	1.03	1.05	1.03	0.97	0.95	0.87	0.90	0.93	0.93	0.93	0.96	0.97	0.98	0.97	0.97	0.96	0.96	0.96
Czech R.	…	…	…	…	…	2.59	2.44	2.41	2.22	2.26	2.18	2.03	1.86	1.87	1.87	1.78	1.75	1.75
Denmark	0.78	0.80	0.80	0.78	0.78	0.72	0.73	0.75	0.75	0.77	0.78	0.78	0.76	0.75	0.76	0.75	0.74	0.74
Germany	…	0.96	0.93	0.86	0.86	0.78	0.82	0.85	0.86	0.87	0.90	0.89	0.90	0.90	0.92	0.93	0.94	0.95
Estonia	…	…	…	5.05	3.66	2.60	2.20	2.11	1.97	1.93	1.90	1.80	1.77	1.75	1.74	1.67	1.64	1.62
Greece	1.55	1.52	1.49	1.43	1.40	1.29	1.24	1.22	1.25	1.23	1.27	1.26	1.27	1.25	1.22	1.20	1.18	1.17
Spain	1.13	1.10	1.09	1.18	1.24	1.16	1.14	1.17	1.18	1.19	1.19	1.16	1.16	1.14	1.13	1.10	1.07	1.05
France	0.94	0.98	0.97	0.93	0.93	0.87	0.88	0.93	0.93	0.94	0.96	0.97	0.96	0.94	0.93	0.93	0.94	0.93
Ireland	1.08	1.12	1.11	1.12	1.11	1.06	1.04	0.98	0.98	0.95	0.92	0.89	0.86	0.84	0.85	0.84	0.83	0.82
Italy	1.02	1.00	1.02	1.14	1.17	1.19	1.08	1.06	1.08	1.08	1.09	1.07	1.05	1.01	1.00	1.00	1.00	1.00
Cyprus	…	…	…	…	…	1.16	1.18	1.16	1.15	1.15	1.14	1.14	1.13	1.08	1.11	1.09	1.10	1.10
Latvia	…	…	10.29	5.57	3.49	3.02	2.75	2.49	2.42	2.25	1.99	1.95	1.97	2.07	2.01	1.97	1.88	1.81
Lithuania	…	…	15.43	9.07	5.32	3.86	3.20	2.58	2.47	2.42	2.16	2.15	2.08	2.07	2.06	1.98	1.92	1.91
Luxembourg	0.98	1.01	0.99	0.91	0.88	0.80	0.82	0.85	0.86	0.89	0.89	0.88	0.88	0.89	0.91	0.88	0.87	0.86
Hungary		4.30	4.48	2.31	2.29	2.28	2.29	2.17	2.22	2.21	2.13	2.03	1.82	1.78	1.70	1.66	1.69	1.70
Malta	…	…	…	…	…	…	…	…	1.56	1.52	1.45	1.41	1.44	1.47	1.47	1.46	1.44	1.42
Netherlands	1.03	1.05	1.04	0.98	0.97	0.89	0.92	0.95	0.95	0.95	0.95	0.95	0.94	0.92	0.94	0.94	0.94	0.95
Austria	1.01	1.02	1.00	0.94	0.93	0.85	0.88	0.92	0.92	0.94	0.96	0.95	0.95	0.94	0.96	0.96	0.95	0.95
Poland	…	…	…	…	…	2.27	2.15	2.10	2.03	2.12	1.94	1.73	1.82	2.04	2.07	1.84	1.79	1.81
Portugal	1.70	1.60	1.45	1.46	1.45	1.34	1.32	1.33	1.34	1.35	1.35	1.33	1.31	1.20	1.21	1.19	1.19	1.18
Slovenia	…	2.02	1.92	1.77	1.70	1.34	1.39	1.38	1.35	1.37	1.40	1.39	1.35	1.33	1.37	1.38	1.38	1.37
Slovakia	…	…	…	2.90	2.75	2.45	2.43	2.29	2.29	2.47	2.33	2.32	2.27	2.08	1.91	1.87	1.81	1.81
Finland	0.74	0.79	0.93	1.05	0.98	0.82	0.86	0.88	0.89	0.89	0.90	0.89	0.89	0.88	0.89	0.90	0.91	0.91
Sweden	0.76	0.72	0.74	0.88	0.88	0.83	0.78	0.79	0.81	0.83	0.81	0.86	0.84	0.84	0.85	0.87	0.88	0.89
United Kingdom	1.07	1.04	1.08	1.12	1.12	1.12	1.10	0.95	0.92	0.90	0.85	0.87	0.89	0.94	0.92	0.92	0.92	0.92
Bulgaria	0.98	10.26	10.01	4.20	4.95	3.98	4.77	3.95	3.37	3.31	3.18	3.03	2.89	2.85	2.75	2.70	2.62	2.56
Romania	3.99	4.29	6.20	4.23	…	…	4.20	…	…	**3.21**	**2.79**	**2.72**	**2.72**	**2.69**	**2.60**	**2.10**	**2.06**	**2.08**

***Source**:* Own computation based on Eurostat data

BIBLIOGRAPHY

1. Altar M., Albu L., Dumitru I., Necula C., 2006, "Impactul liberalizării contului de capital asupra cursului de schimb şi a competitivităţii economiei româneşti, Studii de impact III*",* Institutul European din România, Bucureşti.
2. Babetskii J., Égert B., 2005, *Equilibrium Exchange Rate in the Czech Republic: How Good Is the Czech BEER?,* Working Paper Series, e-version, No. 267, CERGE-EI.
3. Balassa B., 1964, "The Purchasing Power Parity Doctrine: A Reappraisal", *Journal of Political Economy*, vol. 72, No. 6, December, pp. 584-596.
4. Bayoumi T. et al., 2004, "Exchange Rate Regimes, International Linkages, and the Macroeconomic Performance of the New Member States*",* in European Central Bank, *The New EU Member States Convergence and Stability*, Third ECB Central Banking Conference, 21-22 October.
5. Bălteanu I., 2003, "Există riscul unui atac speculativ în ţările în tranziţie înainte de intrarea în Uniunea Economică şi Monetară*?"* in Daniel Dăianu and Mugur Isărescu (coord.), *Noii economişti despre tranziţia în România*, Editura Enciclopedică, Bucureşti.
6. Brândeu O., Goleţ I., 2004, "Analiza performanţelor economice ale ţărilor candidate la UE. Convergenţe în performanţele comerţului exterior şi PIB"*,* *Oeconomica*, nr. 4.
7. Breuss F., 2003, "Balassa-Samuelson Effects in the CEEC: Are They Obstacles for Joining the EMU*?"* IMF *Working Paper*, No. 52, Research Institute for European Affairs.
8. Ciupagea C. et al., 2003, "România într-un cadru comparativ. Convergenţa nominală şi convergenţa reală în procesul de preaderare în Uniunea Europeană"*,* in *Modificări structurale şi performanţă economică în România,* I, IRLI, Bucureşti.
9. 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 Working Papers*, RSCAS, No. 20.
10. Detken C., Gaspar V., Noblet G. (eds.), 2004, "The New EU Member States Convergence and Stability", Third ECB Central Banking Conference*,* 21-22 October.
11. Dornbusch R., 1993, *Purchasing Power Parity,* Palgrave, N.Y.
12. Égert B., Halpern L., Mac Donald R., 2005, "Equilibrium Exchange Rates in Transition Economies: Taking Stock of the Issues", *William Davidson Institute Working Paper,* No. 793.
13. Égert B., Imed D. et al., 2003, "The Balassa-Samuelson Effect in Central and Eastern Europe: Myth or Reality?*"* *Journal of Comparative Economics*, vol. 31, September.
14. Frait J., Luboš K.*,* 2001, "Real Exchange Rate Trends in Transition Countries", *Warwick Economic Research Papers*.
15. Fugaru A., 2003, "Care sunt implicaţiile diferitelor regimuri de rată de schimb în perioada de post-stabilizare", in Daniel Dăianu and Mugur Isărescu (coord.), *Noii economişti despre tranziţia în România,* Editura Enciclopedică, Bucureşti.
16. Goldberg M.D., Roman F., 1996, "Imperfect Knowledge and Behaviour in the Foreign Exchange Market*",* *The Economic Journal*", vol. 106, No. 437 (June), 869-893.
17. Halpern L., Wyplosz C., 2001, *Economic "*Transformation and Real Exchange Rates in the 2000's: The Balassa-Samuelson Connection"*,* *U.N./ECE,* Geneva, September.
18. Hein E., Truger A., 2002, "European Monetary Union: Nominal Convergence, Real Divergence and Slow Growth"*,* *WSI Discussion Paper*, No. 107, September.
19. Isărescu M., 2005, "Obiective pe termen mediu ale politicii monetare şi cursului de schimb, Programul economic de preaderare".
20. Lavrač V., Zumer T., 2002, 2003, "Exchange Rate Regimes of CEE Countries on the Way to the EMU: Nominal Convergence, Real Convergence and Optimum Currency Area Criteria*",* EADI Conference, *EU Enlargement in a Changing World*, Ljubljana, September.

21. Luţas M., 2005,*Uniunea Economică şi Monetară,* Seria "Micromonografii – Politici europene"*,* Institutul European din România, Bucureşti, august.
22. Mac Donald R., Wòjcik C., 2003, "Catching Up: The Role of Demand, Supply and Regulated Price Effects on the Real Exchange Rates of Four Accession Countries"*, CESIFO Working Paper*, No. 899.
23. Mohapatra S., Basudeb B., 1997, "Purchasing Power Parity and Equilibrium Real Exchange Rate"*,* Utah State University*,* Economic Research Institute, *Study Paper*.
24. Pop N., 2005, "Adoptarea euro de către România, Recomandări pentru pregătirea unei strategii de success*",* INCE, *Probleme economice,* Colecţia Biblioteca economică, vol. 173.
25. Rogoff K., 1996, "The Purchasing Power Parity Puzzle*", Journal of Economic Literature*, vol. 34, June, pp. 647-668.
26. Quin R., 2003, "Intensifying Course. Balance of Payments and Exchange Rates, Chapter 4b – Exercise 2 Balassa-Samuelson Effect*",* University of Linz, Departament of Economies, Prof. dr. Wilhelm Kohler (internet).
27. Salater W., 2003, "Alegerea regimului de politică monetară în ţările aflate în proces de aderare la Uniunea Europeană: între ţintirea directă a inflaţiei şi consiliul monetary*",* in Daniel Dăianu and Mugur Isărescu (coord.), *Noii economişti despre tranziţia în România,* Editura Enciclopedică, Bucureşti.
28. Samuelson P., (1964), "Theoretical Notes on Trade Problems"*, Review of Economics and Statistics*, 2, pp. 145-54.
29. Taylor A.M., Taylor M.P., 2004, "The Purchasing Power Parity Debate*", Journal of Economic Perspectives*, 18, No. 4, pp. 135-158.
30. Von Hagen J., Traistaru J., 2004, "Macroeconomic Adjustment in the New EU Member States*",* in European Central Bank, *The New EU Members States Convergence and Stability*, Third ECB Central Banking Conference, 21-22 October.
31. Wallace H., Wallace W. şi Pollack M.A. (coord.), 2005, "Elaborarea politicilor în Uniunea Europeană*",* ediţia a cincea, traducere, Institutul European din România, Bucureşti.