Project Management of Romania's Transition to Euro: Insights, Solutions, Cost-Benefit Analysis

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Strictly as per the compliance and regulations of:

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I. Introduction

What would someone's reason be, having the possibility to travel long-term and great distances, with a high-end car or with a cart to choose a cart?

Mutatis mutandis, in the logic of a common sense politics, liked by officials of the "lion cart" management, a high-end car, in the monetary system, Euro, is available to us and we refuse or delay, sine die, to take it! Why? If you read the reports, interventions or the views expressed by many officials in the field, you realize it all points out that it is not possible. And that, every time the due date approaches, another postponement is imposed.

It is a too high luxury, we might say, exotic, and having excessive costs, this odd preference of some technostructures in Romania for an obsolete conservatism to keep the RON currency at any cost.

Who loses and who wins from this hypocritical option? We say hypocritical because almost all officials support the transition to Euro - we actually committed to this through the Accession Treaty, however, it can be said, very little is made to achieve this objective, if not, some make efforts to prolong sine die.

Cyprus has financial problems, our currency depreciates. Investors come, the currency depreciates, suggesting a false currency excess. Investors leave, the currency depreciates. Exaggerating a little, if the wind blows from the north, the currency depreciates, if the wind is blowing from the south, the currency devalues, if it blows from the East the currency deppreciates, there is no other solution than depreciation. Therefore, we have a currency which, with few exceptions, is continuously depreciating and takes all sorts of shocks, more or less justified. It takes, as a cart does, all the shocks of a secondary road, parallel to the motorway where all the latest car versions are speeding away.

Therefore, the biggest loser, following this option of not taking a latest generation vehicle, is the Romanian economy. The economy, rather than developing, on healthy, competitive and strong grounds, is struggling to find solutions and to keep away from permanent shocks that the "the lion cart" sends with full force. And, along with the economy, the loss is for the citizens who do not have hope anymore, they no longer dream, not even of the welfare they had hoped for when they expressed their opinion in favor of the EU accession.

According to the rules of any project, there should be identified the forces which are opposed to it. From the transition delay, the following categories are to gain:

a) a few technocrats that have important positions, have unexpected and of course, not transparent privileges;
b) a few bureaucrats in the public administration;
c) foreign capitals that charge excessively high and unreasonable interests, by invoking a so-called country risk, forgetting that Romania is a member of EU and NATO;
d) non-performent companies, artificially kept with the „infusion" of extremely low salaries and which, in a loyal competition, should be closed down.

We thus enter in a vicious spiral. The part of the economy that is uncompetitive, becomes less competitive, the lack of competitiveness combined with monetary policy that are at least uneconomic and an untransparent mechanism of the exchange rate, will lead

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to the depreciation of RON currency, which will produce new shocks and losses, introducing other companies in the group of uncompetitive firms, that, by using a currency that is in constant devaluation, will reduce or cancel their small profits, becoming more uncompetitive and, obviously, the cycle repeats.

Romania will never be completely ready for the transition to the euro currency. So, what is there to be done? To resign or to take charge and see how we can move quickly to the adoption of the euro? Which is available to us. Let's make an effort to meet the conditions and get on the next generation car!

II. Romania's Transition to Euro – Background

The transition to the unique european currency, Euro, although assumed by EU's Functioning Treaty and by each country's accession treaty, has become, as a result of the manifestations of the crisis (sovereign debt crisis, structural crisis, economies found in difficulty, etc. in countries like Greece, Spain, Italy, etc.), a controversial issue. The fact is, however, obvious. A total of 17[1] countries, that are part of the "eurozone", use this currency. Euro is used[2] more in Monaco, San Marino and Vatican, and is also used[3] in Andorra, Kosovo (unrecognized as a state by Romania and Moldova) and Montenegro. Therefore, about 327 million Europeans use the european currency daily. On March 2013, Latvia signed the membership application for 1 January 2014 and Lithuania decided to switch to the eurozone starting with 2015.

Bulgaria, Hungary, Czech Republic and Poland have announced to stop their plans regarding the transition to the european currency until the monetary union solves its structural problems. Romania again postponed the decision to join the eurozone, considering that for the year 2015 it would not possible. The three countries Great Britain, Denmark and Sweden openly oppose the european currency.

Therefore, the range of views on this matter is diverse. "A faster growth is possible if Latvia is in the eurozone [4]" said the Latvian Minister of Finance characterizing as historic the moment when Latvia signed the application for accession to the eurozone.

"Based on evaluations presented to the presidency, I think that January 1st, 2016 is a realistic date for Poland's accession to the eurozone[5]", said in an interview, Roman Kuzniar, advisor to the Polish President.

Bulgaria has stopped its plans for the transition to the Euro currency. "Our thinking and public opinion has changed ... At this point, I see no benefit in joining the eurozone, only costs", said [6] Simeon Djankov, Bulgaria's Finance Minister.

"Even the most optimistic forecasts say that Hungary will not be able to adopt the euro before 2018", said the Hungarian Prime Minister, Viktor Orban[7].

In principle, Czech Republic meets the nominal conditions for the transition to the european currency but does not seem interested to give up its own monetary policy and its own exchange rate, though, lately, it seems to have changed its mind in favor of joining the Euro.

Although, from the start, Sweden has decided firmly against the Euro, perhaps observing the developments and steps taken by the eurozone in its strengthening, the Swedish Prime Minister said that his country could participate in Greece's rescue plan, although it is not a member of the eurozone and so it does not have such obligations. This statement may reflect a certain fear of Sweden to remain outside Europe. A kind of game at both ends. If the Euro project would fail, obviously, Sweden's anti-euro position would be fully justified. However, the evolution and improvement of the monetary union with the euro, proving its viability and, despite many skeptic opinions who want or wish its disappearance, turns out to be a strong currency and has become kind of a second international reference currency, it is useful and diplomatic not to remain outside this zone. Maybe this is why such a "helping hand" arises unsolicited, which no one was obliged to give.

Regarding the position of Romania, unfortunately, it is polarized. The President seems interested in a quick transition to euro and, in this respect, Romania should pass this option as a priority and will take all the efforts to fulfill the conditions of membership. The National Bank is basically a supporter of permanent postponement. The Government has not yet taken a decision on this issue and it seems that it is not yet sufficiently convinced of the urgency of the transition to

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[1] Austria, Belgian, Cyprus, Estonia, Finland, Franch, Germania, Grecia, Irlanda, Italia, Luxemburg, Malta, Olanda, Portugalia, Slovacia, Slovenia şi Spania
[2] With EU approval
[3] Without EU approval
[4] "Faster economic growth is possible if Latvia is inside the euro zone," said Vilks characterising the move as "historic". http://www.telegraph.co.uk/finance/financialcrisis/9907426/Latvia-formally-applies-to-join-eurozone.html

[5] La Pologne pourrait adopter l'euro à partir du 1er janvier 2016, a estimé samedi le conseiller du président polonais à la politique internationale Roman Kuzniar. "Basant sur les évaluations menées à la présidence, je pense que le 1er janvier 2016 est une date réaliste de l'adhésion de la Pologne à la zone euro", a déclaré M. Kuzniar à la radio commerciale RMF FM. http://www.lefigaro.fr/flash-eco/2012/12/15/97002-20121215FILWWW00555-pologne-adoption-de-l-euro-en-2016.php
[6] http://online.wsj.com/article/SB100008723963904437595045776293 23056333022.html
[7] http://www.szon.hu/hungary-unlikely-to-join-euro-zone-before-2018-says-pm-orban/1921914

euro, according to a disastrous mentality "now is not the time". And the people seem divided.

In conclusion, the context of Romania's possible and desirable decision to switch to the euro in the near future is complex, heterogeneous and dispersed. And the effective transition to the Euro should be addressed from at least two respects: one purely technical and related to the nominal convergence criteria and one of political decision on the economy seen as a whole, the need to bring to an end Romania's strategic choice to join the EU by this transition to the Euro, and finally, through the advantages and disadvantages of adopting the Euro.

There must be noted that the Economic and Monetary Union is a unified, consistent and a firm monetary policy. Its mission and main purpose is the monetary stability, allowing harmonious and balanced development of all European countries and reducing imbalances over time between countries belonging to the European Union.

Finally, the convergence, calculated (measured) by the fulfillment of the convergence criteria, according to the operating Treaty of the EU, requires a joint effort from countries to achieve a certain target on the economic, financial and social performance. This target can be achieved by various methods and strategies, specific to each country, but the result should be a common one, namely a stable, credible, strong and performant economy, close to the best performing EU economies. Such an economy can be addressed from the view of nominal convergence and real convergence.

III. LITERATURE REVIEW

The Maastricht Treaty[8] stipulates the criteria to be met by a country in order to adopt the euro, respectively to participate in the Economic and Monetary Union. These criteria are known as nominal convergence criteria or the Criteria of Maastricht. These criteria are:

- low inflation rate; it must not exceed a maximum of 1.5 percentage points of the average of the three best performing economies in inflation; of the participating Member States in the year before the examination;
- low interest rates for long-term loans; the interests must not exceed the interest rates of the three best performing Member States participating in the year before the examination by more than 2 percentage points.
- the budget deficit should not exceed more than 3% of GDP;
- the cumulative public debt should not exceed 60% of GDP;

- the national currency has been part of the European Monetary System for at least two years before the examination for membership, without severe tensions;

The Maastricht Treaty does not stipulate anything about the issues of real convergence. In an analysis [9] of Romania's transition to Euro, Mugur Isarescu, referring to the real convergence, has a personal view. "In the absence of clear criteria stipulated in the treaties, we believe that the most important actual convergence criteria are: the degree of economy's openness (expressed as a percentage of the sum of imports and exports from a country's GDP), the share of bilateral trade with the member states in the total of foreign trade; the structure of the economy (expressed as the share big sectors have in creating GDP: agriculture, industry, services) and the most synthetic criterion, the GDP / inhabitant (expressed either in the nominal exchange rate, or in the parity of standard purchasing power) ".

In "Dilemmas of Romania's accession to EMU"[10] it is mentioned: "A sudden strategy of accession to a monetary union implies that, starting from a certain day, Romania and the EU use the same currency, the euro, issued by the ECB, and the Romanian citizens are informed to exchange RON currency into Euro at a given exchange rate (we're assuming an exchange rate of Euro-RON of 1 Euro / 3 RON; starting from that date, the Romanians will simply buy 1 euro for 3 ron). For Romania, such a strategy would provide an important advantage. Firstly because the inflation rate will fall to the level of the EU, without costs in terms of unemployment. The Euro – currency issued by the ECB - is now the legal tender in Romania and, therefore, the inflation in Romania is equal to the inflation in the EU. Economic agents realize this and, therefore, correspondingly outline their inflationist expectations for Romania. Thus, Romania can immediately benefit from the reputation of the ECB. Taking over the currency and EU's institutions, Romania can immediately benefit from welfare gains arising from the monetary union". From this point of view, we can see the optimistic level of the ron/euro currency considering the terminus point of the monetary convergence process with the eurozone and also the prevalence of benefits over costs when the transition to the single currency is complete.

The European Central Bank also supports the existence of premises for the future project of transition to euro to be successful. "The maturity of euro[11] takes

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[8] The Maastricht Treaty

[9] Mugur Isarescu, Romania: The Road to Euro. Presentation at the conference organized by the Academic Board of the University "Babes-Bolyai", 2004, updated release (March 2007)

[10] Cristina Socol, Aura Niculescu, Dilemmas of Romania's accession to the EMU, Economic Publishing House, Bucharest, 2006

[11] European Central Bank, how the euro became our currency, short history of the euro banknotes and coins, Frankfurt am Main, Germany, 2007.

place [so far] in good conditions, and the Eurosystem has gained considerable experience from introducing banknotes and coins and the managing their circulation. The experience will prove useful for the physical introduction of cash euro by the new EU Member States. Starting with the year 2007, the euro may gradually replace the national currencies of the 12 countries that joined the EU on 1 May 2004 and later: Bulgaria, Cyprus, Czech Republic, Estonia, Latvia, Lithuania, Malta, Poland, Romania, Slovakia, Slovenia and Hungary. The first of these countries was Slovenia, which joined the eurozone on 1st of January 2007. "

In an analysis of EBRD in 2012 about the prospect of Romania meeting the convergence criteria, there is emphasized: "Short-term macroeconomic perspective of Romania is uncertain, especially in light of turmoil resurfaced on global markets and within the eurozone in the second half of 2011. However, in the medium term, Romania has a strong potential for convergence with the EU, given that GDP per capita, in terms of purchasing power parity, is one of the lowest in the EU, standing at 45% of the EU average, provided that progress will be made in the domain of structural and institutional reforms"[12].

Fulfilment of nominal convergence criteria in the Romanian economy induces both positive and negative effects, and, in terms of project management, it contains benefits, and the potential costs are highlighted by economic theory. However, the decision to switch to the single European currency is based, as a basis, on the economic component, respectively on the more objective quantification of the advantages and disadvantages, but it is or has to be a political decision.

An important economic benefit is that reducing inflation and interest rates stimulates increased investment with a direct effect on GDP growth. It thus improves economic performance effect on salaries convergence.

Respecting the restrictions of deficit and public debt, according to the nominal convergence criteria may slow down economic development as a result of lowering investment, which is one of the most unpleasant economic costs of the project. You can not make public investment more than the maximum budgetary provisions plus a share of the budget deficit that is up to 3% (at the limit, theoretically, this deficit can be entirely destinated for investment).

Also, the real convergence favors or not nominal variables, generating itself specific costs and benefits. With the GDP growth there will be an non-inflationary increase of salaries and obviously of contributions, which is an important benefit. An increase in contributions leads to an increase in budgetary resources, decrease of public debt and of the budget

deficit. The difference in productivity between the assets in the commercial circuit and the assets which are not part of the commercial circuit, along with the uneven increasing trends and outrunning increase of salaries in relation to productivity, will lead to an increased inflation according to the Balassa-Samuelson[13] effect. Viewed through the Balassa-Samuelson effect, nominal convergence and the making of accelerated real convergence, as a result of inflationary pressures caused by the B-S effect, will generate restrictive monetary policies that will have, as a negative consequence, the B-S effect.

Expressed synthetically, Balassa-Samuelson effect states that: "any increase in productivity in a country (GDP/capita) generates an increase in the price level (in other words, nominal convergence is impossible at the same time with the real convergence)"[14].

IV. Aspects for Meeting the Nominal Convergence Criteria in the Strategy for Romania's Transition to Euro

In Table 1 we summarize The situation of meeting the nominal convergence criteria by Romania for adopting the Euro currency, hypothetically taking as the year of examination, 2013.

Regarding criterion 1, price stability, it is observed the decreasing trend of average annual inflation rate, reaching 3.4% in 2012. However, the reference for this indicator is a dynamic one. The graphic in Figure 1 shows the annual average inflation rate for 2010-2012 for the EU countries and then selecting the three best-performing countries, in terms of inflation.

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[12] EBRD Strategy for Romania, approved by the EBRD Board of Directors in its meeting of 28 February 2012.

[13] http://en.wikipedia.org/wiki/Balassa%E2%80%93Samuelson_effect
[14] Cristian Paun, International Finance Course, Bucarest, 2011.

Table 1: The situation of Romania's fulfillment of nominal convergence criteria for adopting the Euro

Criteria	Nominal convergence criteria	Values according to the Maastricht criteria	Romania 2009	Romania 2010	Romania 2011	Romania 2012	If it meets the critera or not
1. Price stability	Inflation rate annual average %	< 1,5 pp. above the average of the three most performant EU members (1,6% reference level)	5,6*	6,1*	5,8*	3,4*	No
2. The situation of public finances	Budget deficit from the GDP %	under 3%	-9*	-6,8*	-5,5*	-2,8**	Yes
	Public debt from the GDP %	under 60%	21,0 23,6*	30,5*	33,4*	34,34**	Yes
3. The participatin to the European Monetary System exchange rate mechanim	Exchange rate (RON/EURO), appreciation/depreciation percentage compared to the average for 2 years	+/-15%	+1,6/-18,2	+10,32 / +2,65	+3,27/ -3,55	+10,04 / +2,32	Yes
4. Convergece of interest rates	Long-term interes rates (% per year)	<2 pp. above the average of the three most performant EU members according to price stability (5,3%)	9,7*	7,34*	7,29*	6,68*	No

*Eurostat data
** Calculated by the authors based on the data from The National Statistics Institute of Romania
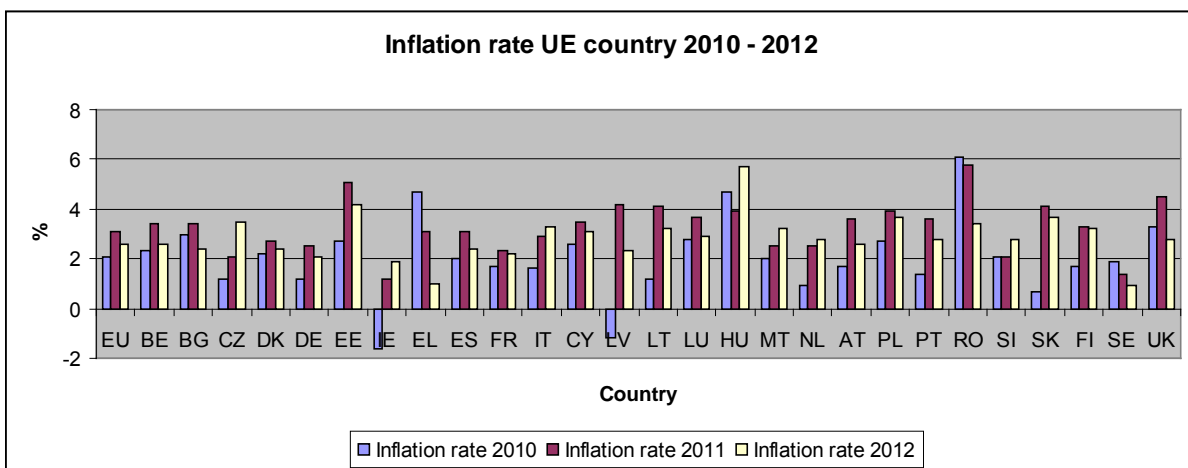
Source: Graph prepared by the authors based on data taken from Eurostat

Figure 1

Table 2 : The fulfillment of the criteria „Inflation rate annual average" of Romania for the years 2010 ÷ 2012 %

YEAR	Three most performant EU countries	Interest rate annual value %	Annual average of interest rates of the three most performant EU countries %	Accepted exceeding percentage %	The maximum value of interest rate accepted for Romania %	Real annual value of Romania's interest rate %	Conclusions
2010	SK	0,7*	0,9333	1,5**	2,4333	6,1*	Does not meet the criteria of convergence
	NL	0,9*					
	DE	1,2*					
2011	IE	1,2*	1,5666	1,5**	3,0666	5,8*	Does not meet the criteria of convergence
	SE	1,4*					
	CZ	2,1*					
2012	EL	1*	1,2666	1,5**	2,7666	3,4*	Does not meet the criteria of convergence
	SE	0,9*					
	IE	1,9*					

*Source : Tabel calculated by the authors based on data taken from different sources.*
*Eurostat data
**According to convergence criteria

As shown, in each of the three years analyzed, the most powerful countries were different and also inflation values were different from year to year. From Table 2, it results that the inflation rate that Romania would have been entitled to for the year 2012 is 2.7666%. But it had an inflation indicator value of 3.4%. Therefore, Romania does not fulfill this criterion.
The criteria 2 and 3, shown in Table 1, are met.

Regarding criterion 3 the following comments should be made. From the graphs of Figures 2 and 3,

made based on daily exchange rates series of EUR - RON, results that after the accession of Romania to the EU in 2007, and to date, the national currency depreciated continuously. Thus, if in 2007 the thes situation was 1 euro = 3 - 3.5 ron, in 2008 it was situated in the 3.5 - 4 ron zone. In the last three years a convergece was made in the area of 4 - 4.5 roni with some intervals of exception. At the moment we are witnessing a stabilization of the euro / ron around 4.5 RON / EUR.
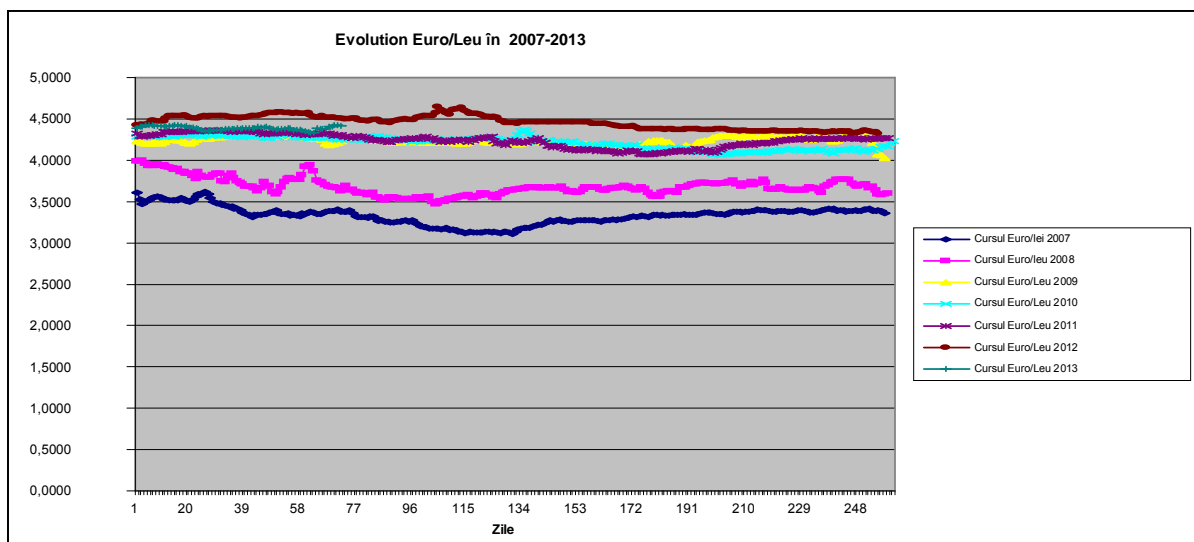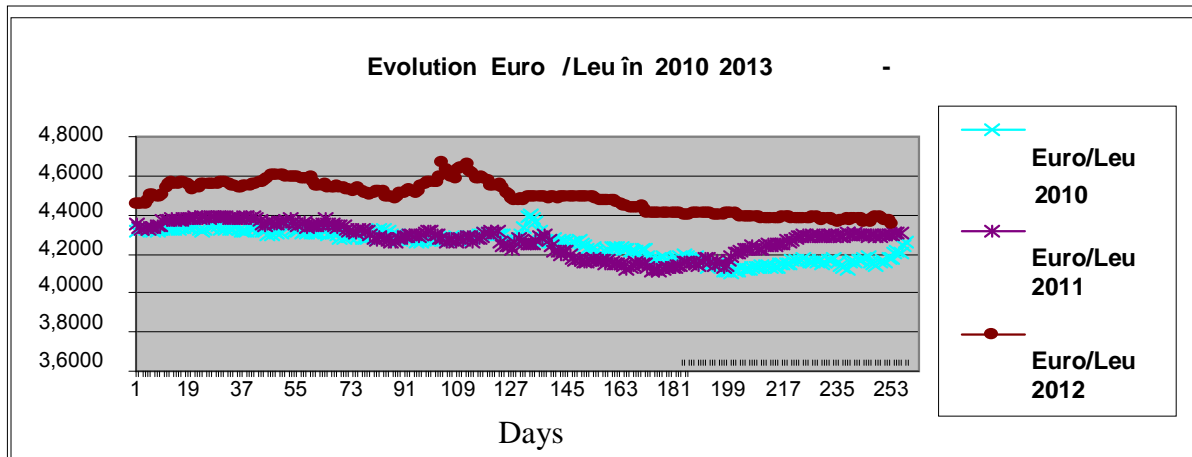

Source : Graphic prepared by the authors based on data from NBR www.bnr.ro

Figure 2

Figure 3 presents the daily trend curves of the euro-ron exchange rate for 2010 and 2011, two years prior to 2012, the year that is examined in this paper. It is observed a proximity of the annual change rate curves and the relative stabilization in the second half of 2012, curve brown, around 4.4 ron for eur.

Evolution Euro /Leu în 2010 2013   -

Source : Graphic prepared by the authors based on data from NBR www.bnr.ro

Figure 3

Based on the statistical series of the annual average exchange rate, presented in Table 3, and the daily exchange rates, in the graph of figure 3, which provided the minimum and maximum deviations from the average value of the annual average exchange rate of the last two years prior to the examined year,respectively 2012, Table 4 analyzes the behavior of the national currency as if it participated in the exchange rate mechanism of the European Monetary System (ERM II).

Table 3 : Exchange rate currency market – in Romania annual series *

Data	EUR average
	(RON/EUR)
	CURSA_EURM
2012	4,4560
2011	4,2379
2010	4,2099
2009	4,2373
2008	3,6827
2007	3,3373
2006	3,5245
2005	3,6234

Source : BNR

*Annual average exchange rate is calculated as a simple aritmetic average of the monthly average exchange rates

Table 4 : Romania's participation to the European Monetary System exchange rate mechanism*

Year	Average of the last 2 years Ron/Eur	Average annual exchange rate Ron/Eur	Maximum Ron/Eur exchange rate Ron/Eur	Minimum Ron/Eur exchange rate Ron/Eur	Maximum deviation from the annual average of last 2 years	Minimum deviation from the annual average of last 2 years	Maximum deviation from the annual average of last 2 years %	Minimum deviation from the annual average of last 2 years %	Conclusios
2012	4,2239	4,4560	4,6481	4,3219	0,4242	0,098	10,0429	2,3201	Meets the criteria
2011	4,2235958	4,2379	4,362	4,0735	0,1384	-0,1501	3,2769	-3,5537	Meets the criteria
2010	3,9599958	4,2099	4,3688	4,0653	0,4088	0,1053	10,3233	2,6592	Meets the criteria

Simulation based on real data from the NBR

Source : Table calculated by the authors based on data from NBR

The conclusion deduced from the analysis presented in Table 4 is that Romania meets the nominal convergence criteria 3 for 2012. In fact, this criterion is met including for the years 2011 and 2010, the maximum and minimum deviations being within the margins of ±15%.

For analysis of nominal convergence criterion 4, we used the statistical series in Table 5.

Table 5 : Long-term interest rate

geo\time	2009	2010	2011	2012
EU27	4,13	3,82	4,31	3,74
BE	3,9	3,46	4,23	3
BG	7,22	6,01	5,36	4,5
CZ	4,84	3,88	3,71	2,78
DK	3,59	2,93	2,73	1,4
DE	3,22	2,74	2,61	1,5
IE	5,23	5,74	9,6	6,17
EL	5,17	9,09	15,75	22,5
ES	3,98	4,25	5,44	5,85
FR	3,65	3,12	3,32	2,54
IT	4,31	4,04	5,42	5,49
CY	4,6	4,6	5,79	7
LV	12,36	10,34	5,91	4,57
LT	14	5,57	5,16	4,83
LU	4,23	3,17	2,92	1,82
HU	9,12	7,28	7,64	7,89
MT	4,54	4,19	4,49	4,13
NL	3,69	2,99	2,99	1,93
AT	3,94	3,23	3,32	2,37
PL	6,12	5,78	5,96	5
PT	4,21	5,4	10,24	10,55
RO	9,69	7,34	7,29	6,68
SI	4,38	3,83	4,97	5,81

SK	4,71	3,87	4,45	4,55
FI	3,74	3,01	3,01	1,89
SE	3,25	2,89	2,61	1,59
UK	3,36	3,36	2,87	1,74

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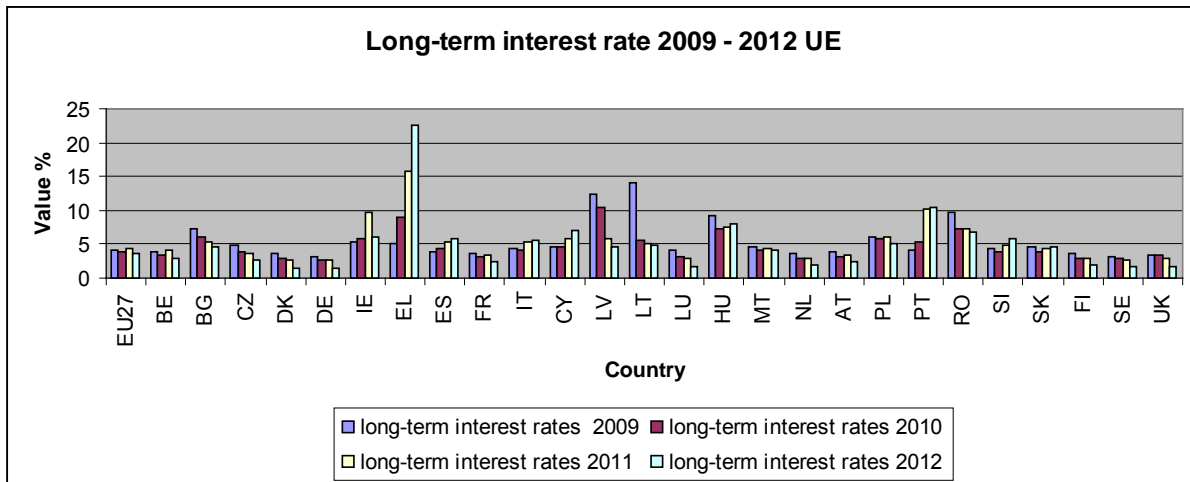
Source : Chart prepared by authors based on data taken from the Eurostat website

Figure 4

The graph in Figure 4 shows long-term interest rate developments for all EU countries for the years 2009 ÷ 2012. From Table 5 and the graph in Figure 4, we pulled the values of long-term interest rates for the three most performants economies each year, and we calculated the maximum percentage value of long-term interest rates accepted by Romania for meeting the criteria. As shown in Table 5, the real average long-term annual interest rate exceeds the maximum allowable percentage so that the criteria are not fulfilled. The exceeding ranges from 2.64 percentage points in 2011, the smallest overflow, and 4.4133 percentage points, the largest overflow. Also to be noted that the trend of the average annual long-term interest rates for Romania is low: from 9.69% in 2009 to 6.68% for 2012, but this decrease was not sufficient to reach the threshold required by the euro system exigencies. To be pointed out that this criterion, as well as "price stability" criterion, targets a dynamic value in the sense that the economic performance of EU countries are also variable in terms of hierarchy (which determines the three best performing EU economies) and annual average values. Therefore, the effort to achieve these goals must be sustained and the result of this effort cannot be known in advance. It should also be noted, Figure 5, that the long-term interest rate trend for the three best-performing EU countries in the period 2009 ÷ 2012 was a decreasing one. It results that, in order to catch up with the best three EU countries on these criteria, criteria 1 and 4, either 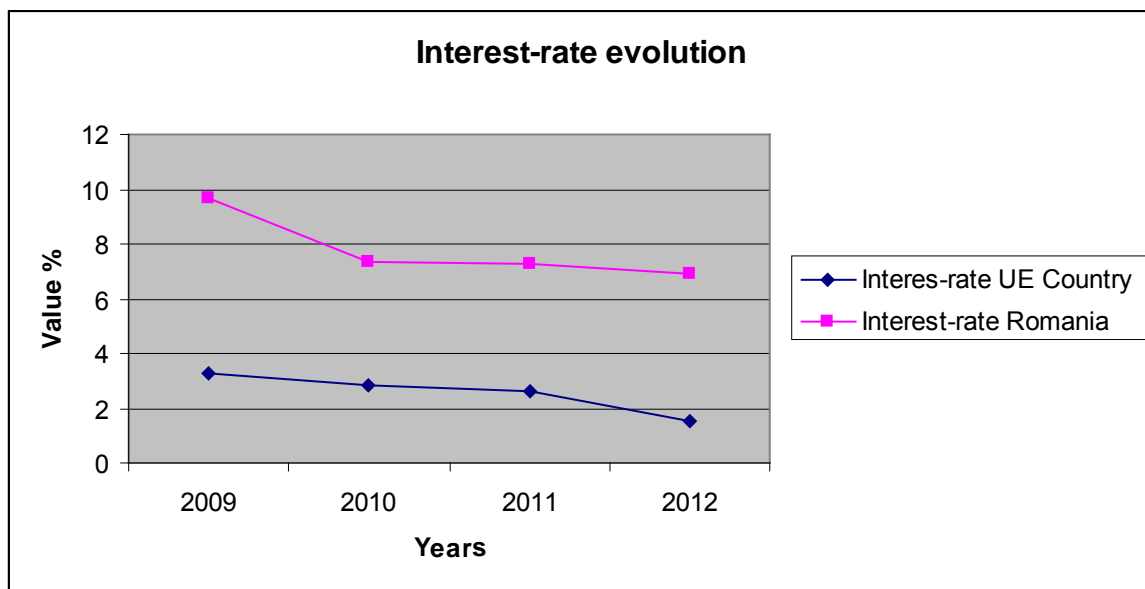Romania must decrease faster or benefit from an eventual economic favourable conjuncture, in which the economic performance of the three best performing EU economies are not so powerful. Otherwise, the gap will remain.

Table 5 : Analysis of the convergence criterion rates for Romania in 2013

Years	Country	Long-term interest rate %	Annual average value of the three best performing countries %	Annual average long-term interest rates for Romania %	The acceptable percentage of maximum excess for the average value <2%	Maximum percentage of long-term interest accepted by Romania for meeting the criteria	Overflow	Conclusions
2009	DE	3,22*	3,2767	9,69*	2	5,2767	4,4133	Does not meet criteria
	SE	3,25*						
	UK	3,36*						
2010	DE	2,74*	2,8533	7,34*	2	4,8533	2,4867	Does not meet criteria
	SE	2,89*						
	DK	2,93*						
2011	DE	2,61*	2,6500	7,29*	2	4,6500	2,6400	Does not meet criteria
	SE	2,61*						
	DK	2,73*						
2012	DK	1,4*	1,4967	6,68*	2	3,4967	3,1833	Does not meet criteria
	DE	1,5*						
	SE	1,59*						

* Eurostat data

Source : Table made by the authors

Source : Chart prepared by authors based on data taken from the Eurostat website.

Figure 5

Analyzing the actual data of nominal convergence[15] compared with the data predicted by the National Commission for Prognosis, it appears that the forecast was optimistic, both nominal convergence indicators not being reached. Thus, for 2012, it was projected an inflation rate of 2.6% but 0.8% more was actually achieved, totaling 3.4%. As for the exchange rate, the forecasted value was 3.3 ron/eur and actual value realized in the year 2012 was 4.4560 ron/eur. Therefore with a depreciation of 1,156 ron, 35.03% respectively.

În drum spre euro

Proiecţia principalilor indicatori macroeconomici de către Comisia Naţională de Prognoză

Indicator	2007	2008	2009	2010	2011	2012	2013
Produsul Intern Brut							
mld. euro	121,1	133,8	158,4	182,9	208,01	233,12	258,7
Creştere reală anuală (%)	6	6,5	6,1	5,8	5,8	5,7	5,7
Exporturi (mld. euro)	29,4	34,8	40,7	47,4	54,8	63,3	72,8
Importuri (mld. euro)	50,9	58,5	66,2	74,4	82,7	91,5	100,8
Deficit comercial FOB - CIF (mil. euro)	21,5	24	25,5	27	27,8	28,2	28
Deficitul de cont curent							
mld. euro	16,9	18,2	19,7	21,4	21,9	21,9	21,3
% din PIB	14	13,6	12,5	11,7	10,6	9,4	8,2
Inflaţia (sfârşitul anului) %	6,5	5,8	4,0	3,5	3,0	2,6	2,3
Cursul de schimb mediu lei/euro	3,34	3,55	3,45	3,38	3,33	3,30	3,25
Numărul mediu de salariaţi (mil. persoane)	4,7	4,8	4,9	5,05	5,1	5,2	5,28
Salariul mediu net (euro)	312	338	387	432	478	523	574

SURSA: CNP

Source : National Commission of Prognosis

Figure 6

Tables 6 and 7 and the graphs from Figures 7 and 8 present the comparative evolution of the long-term exchange rate and interest rate for Romania and for some of the main countries aspiring to the eurozone for 2003 ÷ 2012 based on actual statistical data, and for 2013 ÷ 2014 based on values expected. We also presented the evolution of EUR / USD and the development of a country aspiring to join the EU, namely Turkey. We noticed that the highest fluctuation of the exchange rate occurred in Poland, Romania and Turkey, and the least fluctuating were Bulgaria, Latvia and Lithuania. Therefore, it can be seen that all countries aspiring to the eurozone make the effort to achieve nominal convergence criteria.

Table 6 : ECU/EUR exchange rates versus national currencies

1 ECU/EUR = ... units of national currency (annual average)

currency\time	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
US dollar	1,1312	1,2439	1,2441	1,2556	1,3705	1,4708	1,3948	1,3257	1,392	1,2848	1,3119	1,3119
Bulgarian lev	1,949	1,9533	1,9558	1,9558	1,9558	1,9558	1,9558	1,9558	1,9558	1,9558	1,9558	1,9558
Latvian lats	0,6407	0,6652	0,6962	0,6962	0,7001	0,7027	0,7057	0,7087	0,7063	0,6973	0,6965	0,6965
Lithuanian litas	3,4527	3,4529	3,4528	3,4528	3,4528	3,4528	3,4528	3,4528	3,4528	3,4528	3,4528	3,4528
Polish zloty	4,3996	4,5268	4,023	3,8959	3,7837	3,5121	4,3276	3,9947	4,1206	4,1847	4,0956	4,0956
Romanian leu	3,7551	4,051	3,6209	3,5258	3,3353	3,6826	4,2399	4,2122	4,2391	4,4593	4,4899	4,4899
Turkish lira	1,6949	1,7771	1,6771	1,809	1,7865	1,9064	2,1631	1,9965	2,3378	2,3135	2,3439	2,3439

Source : data taken from the Eurostat website [16]

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[15] In this paper we only analyzed nominal convergence issues and only tangentially have made references to real convergence.

[16] http://appsso.eurostat.ec.europa.eu/nui/show.do?query=BOOKMARK_DS-054902_QID_-154EECFD_UID_-3F171EB0&layout=TIME,C,X,0;CURRENCY,L,Y,0;OTP,L,Z,0;UNIT,L,Z,1;INDICATORS,C,Z,2;&zSelection=DS-054902OTP,AVG;DS-054902INDICATORS,OBS_FLAG;DS-054902UNIT,NAC;&rankName1=OTP_1_2_-1_2&rankName2=INDICATORS_1_2_-1_2&rankName3=UNIT_1_2_-

1_2&rankName4=TIME_1_0_0_0&rankName5=CURRENCY_1_0_0_1&sortR=ASC_-1_FIRST&pprRK=FIRST&pprSO=CUSTOM&ppcRK=FIRST&ppcSO=ASC&sortC=ASC_-1_FIRST&rStp=&cStp=&rDCh=&cDCh=&rDM=true&cDM=true&footnes=false&empty=false&wai=false&time_mode=ROLLING&lang=EN&cfo=%23%23%23.%23%23%23%2C%23%23%23
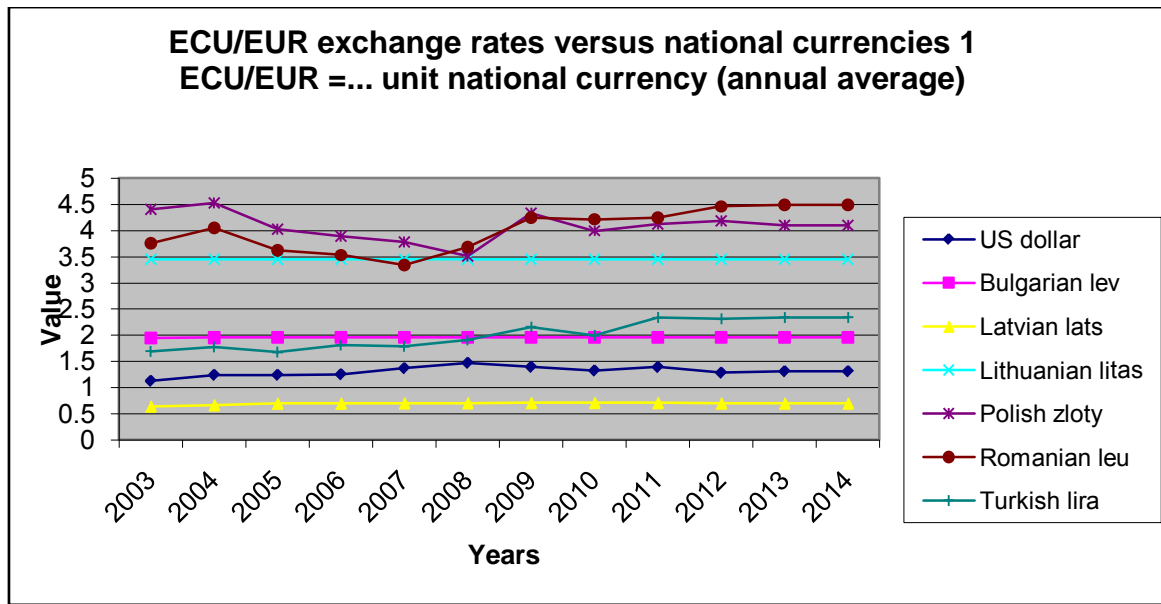
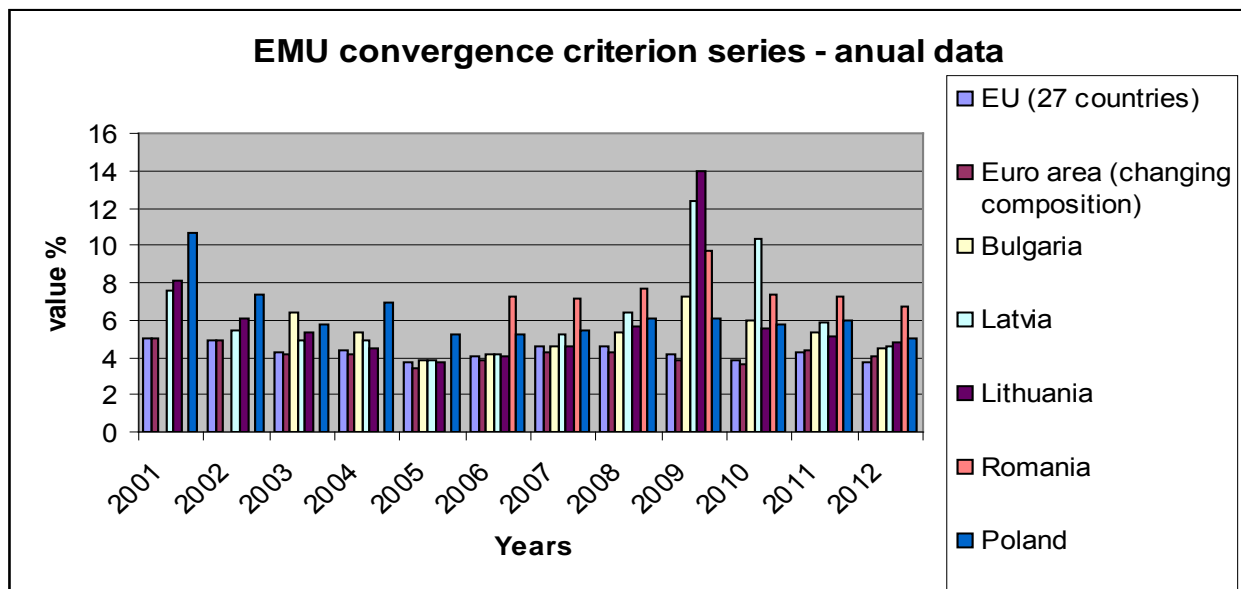*Source : Chart prepared by authors based on datataken from the Eurostat website*

Figure 7

Table 7: EMU convergence criterion series - annual data%

geo\time	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
EU (27 countries)	5	4,92	4,23	4,38	3,7	4,03	4,6	4,5	4,1	3,8	4,3	3,74
Euro area (changing composition)	5	4,91	4,14	4,12	3,42	3,84	4,3	4,3	3,8	3,6	4,4	4,01
Bulgaria	:	:	6,45	5,36	3,87	4,18	4,5	5,4	7,2	6	5,4	4,5
Latvia	7,57	5,41	4,9	4,86	3,88	4,13	5,3	6,4	12	10	5,9	4,57
Lithuania	8,15	6,06	5,32	4,5	3,7	4,08	4,6	5,6	14	5,6	5,2	4,83
Poland	10,68	7,36	5,78	6,9	5,22	5,23	5,5	6,1	6,1	5,8	6	5
Romania	:	:	:	:	:	7,23	7,1	7,7	9,7	7,3	7,3	6,68

Source : data taken from the Eurostat website [17]

EMU convergence criterion series - anual data

Source : Chart prepared by authors based on data taken from the Eurostat website

Figure 8

V. DISCUSSION

From the analysis presented above, in absolute terms, 'yes' or 'no', it results that Romania fulfills two nominal convergence criteria for the transition to euro. The other two criteria are not met.

However, if we consider that the nominal convergence criteria have been met in certain proportions, the situation can be nuanced. Criterion 1 had a hopeful evolution. Price stability, represented by the inflation rate was, in 2012, 3.4% as against 2.7666%. Therefore, there was an excess of 0.6334% meaning 22.89% higher than admitted criteria. In terms of effectiveness of achieving the target, it can be said that the objective was achieved at a rate of 77.1%.

Criterion 2 was met, being registered, for the budget deficit, an amount of 2.8% against the allowed 3%. So in terms of effectiveness of achieving the target we can say that the objective was achieved at a rate of 107.1%

Also, criterion 2 was satisfied, registering, for the public debt, a value of 34,34% compared to 60% as was allowed. And here, in terms of effectiveness in meeting the target, the percentage is above par,

meaning 174.72%. If it is granted, for the total of criterion 2, equal share to the two subcriteria, respectively the budget deficit and public debt, it can be said that, on average, criterion 2 was achieved at a rate of 141%.

Criterion 3 was also met, recording the following values: +10.04/+2.32% against the ±15%. If we use the same assumption of efficacy in reaching the objective, it can be considered that the goal has been achieved at rate of 345%.

Criterion 4 has been met with a value of 3.4% against the 2.7666% which could be maximum allowed. In terms of efficiency in reaching the objective, this was achieved at a rate of 77.1%.

Briefly, the situation of effectively meeting the nominal convergence criteria, as a whole, assuming equal shares assigned to each criterion and calculating the percentage of achieving the objective, is presented in Table 8. Column 2 shows the absolute terms of "yes" or "no" in meeting the criteria, and in column 3, in relative terms, the efficacy in reaching objective envisaged by comparing the actual values achieved at the maximum permitted levels, according to the convergence criteria rate.

Table 8 : The effectiveness of meeting the nominal convergence criteria

Criteria	Meeting the criteria	Meeting the criteria (percentage)
1	2	3
1. Price stability	No	77,1%.
2. Public finance situation;	Yes	141%.
3. Participation in the exchange rate mechanism of the European Monetary System	Yes	345%.

4. Convergence of interest rates	No	77,1%.
Overall rating assuming equal shares are allocated, respectively 25% to each criterion.	2 Yes 2 No	160,05

Source : table created by the authors

If the problem is approached in absolute terms, "yes" or "no", Romania in the year 2012, does not meet the criteria for nominal convergence for changeover to the euro and therefore Romania's request to switch to euro should be rejected.

The situation may change for a nuanced assessment. In the sense that, overall, the two criteria are fulfilled much better than required and the other two are not 100% satisfied, but have a high degree of compliance, namely 77.1%. Overall, analyzed from this perspective, and the percentages of achievment compensating each other, we believe that in the year 2012 Romania has met the criteria of nominal convergence at a rate of 160%. This approach, at least in theory, would allow the start of talks with the EU, and start procedures for switching to the euro.

The problem, we believe, is the political decision which must be based on a cost-benefit analysis from the perspective of the majority of citizens, not a minority. In our view, the changeover to euro should be top priority for Romania and should be done as soon as possible. First, because it is a criterion of European integration. Second that, according to the argument above, under the rules of general statistics, we meet the criteria of nominal convergence. Third, because we have this possibility: to use a strong and stable currency which will be, as highlighted for Latvia by his Finance Minister, "a faster economic growth is possible if Latvia is in the euro area".

The EU has many enemies and it still cannot be affirmed a hundred percent that the European integration process is irreversible. However, despite all the criticism, skeptics and even enemies of this construction, the EU develops, integrates and strengthens. Here's what Olli Rehn, European Commission Vice President and Commissioner for Economic and Monetary Affairs, declared in the Report regarding the alert mechanism: supporting macroeconomic adjustment in the EU [18]: "The EU is going through a difficult process of correcting macroeconomic imbalances that have accumulated in the decade before the crisis. There have been many developments and reforms already paying off. But the rebalancing process is far from being completed, marking the economic landscape for many years. Through the Procedure regarding macroeconomic imbalances, the Commission provides guidance to Member States to ensure appropriate policies to combat imbalances and promote sustainable economic growth and creation of jobs". Overall, EU has managed to handle all the undesirable effects of the crisis. Moreover, its vulnerabilities were identified, lessons were learned from mistakes or past shortcomings and an improvement and modernization has been achieved. One of these directions is the fiscal pact that will be implemented and which will contribute to the introduction of greater rigor and discipline in all EU economies. The mechanism has a relatively high degree of complexity but feasible. Accordingly, our politic decision to be made is: do we keep going with EU and take the last two major steps to integrate or not? Meaning do we enter the Schengen Area and adopt the euro currency or do we postpone it indefinitely?

We must bear in mind that EU does not stand still. And, as it grows, the gap between us and the EU increases. Moreover, there are rumors that the current nominal convergence criteria will be tightened even more, real [19] convergence criteria [20] will also be sought. Since february 2012 it was introduced a dashboard for monitoring macroeconomic indicators to detect trends manifestation of macroeconomic imbalances. These indicators [21] are:

1) 3 year backward moving average of the current account balance as % of GDP

2) net international investment position at end of year in % of GDP

3) 3 years percentage change of the real effective exchange rates based on HICP/CPI deflators

4) 5 years percentage change in share of world exports (export market shares) measured at current prices

5) 3 years percentage change in nominal unit labour cost

1) year-on-year changes in house prices relative to the final consumption price index

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[18] European Commission, Press release Alert Mechanism Report: Underpinning macroeconomic adjustment in the EU, Brussels, 28 November 2012, http://europa.eu/rapid/press-release_IP-12-1275_en.htm

[19] Annexes 1 ÷ 7 presents the evolution of some of the main indicators of real convergence

[20] As of 14/02/2012, was introduced in Eurostat a "Tableau board procedures déséquilibre macroéconomique (PDM)" which monitors "Les indicateurs d'Eurostat aident à la detection des déséquilibres macroéconomiques"

[21] Macroeconomic Imbalance Procedure Scoreboard Headline Indicators, 30 January 2012, Statistical information (Eurostat – February 2012) Commission européenne, Luxembourg, http://epp.eurostat.ec.europa.eu

2) private sector credit flow in % of GDP

3) private sector debt in % of GDP

4) general government sector debt in % of GDP

5) 3 year backward moving average of unemployment rate

6) year-on-year changes of total financial sector liabilities

It is expected that, in the demand analysis of the changeover to euro, some or all of these indicators, be requested and examined. And, perhaps, given the bad experience that the EU authorities have had with the Greeks, who have manipulated statistics, it is expected that these indicators be strictly monitored and enforced mandatory in the evaluation procedure of admission in the eurozone.

Therefore, in terms of opportunity, in our view, we now have a chance that we should exploit to the full. Or else there is the risk, for a long period of time, to remain on the outside. The future looms a united Europe but with two speeds: one for the elite and one for others. Based on cost-benefit analysis and the current state of convergence indicators to the requirements eurozone, we recommend Romania to be with European elite.

VI. Advantages and Disadvantages of Romania's Transition to the Euro

In an intervention at a seminar in 2006, the Czech National Bank Deputy Governor, Miroslav Singer [22], presented the main advantages of the changeover in a less technical language, more synthetic. They concern two levels: the macroeconomic and microeconomic level.

a) *Macroeconomic benefits*
- ✓ "Reducing the risk of monetary and financial turbulence
- ✓ Disciplinary effect on the economic policies undertaken
- ✓ Reducing the risk of premium loans to less developed economies
- ✓ The possible stabilization of long-term interest rates."

b) *Microeconomic benefits*
- ✓ "Eliminating the risk of exchange rate evolution in comparison with the eurozone

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[22] Miroslav Singer, Vice--Governor, Czech National Bank, Impacts expected after the adoption of the euro: dangers and opportunities Introduction of the EURO seminar Prague, 2nd October 2006 http://www.cnb.cz/miranda2/export/sites/www.cnb.cz/en/public/media_service/conferences/speeches/download/singer_20061002_introduction_euro.pdf

- ✓ Reducing transaction costs
- ✓ Increasing international transparency of prices
- ✓ Increasing foreign trade "

The changeover, however, would have a major advantage, not emphasized in the analyzes and reports we have consulted. What is it about. The competitiveness of Romania is always invoked, as a kind of fatality that could keep us on hold in terms of the euro currency. In our opinion, we are in a vicious circle. With african wages and western prices, work motivation is very low. And so, a natural reaction of a Romanian employee is born, of a somewhat passive resistance, performing this economically incorrect polarization for a European state. And this reaction manifests itself, synthetically, by a behaviour such as: you pay us poorly, we will not work well. To not work well is lack of production, meaning lack of receivables from which the employees will obviously be paid less and the cycle repeats. If the constant rise in prices is considered (inflation target failure is largely the responsibility of NBR) and the erosion of purchasing power of wages as a result of a controlled national currency depreciation, the circle becomes even „more vicious". Therefore, breaking the vicious circle can't be done other than by interrupting the chain that feeds it. And the changeover to euro would be a good opportunity to break such a vicious circle.

It is easy to prove that it's about labor demotivation and about a relatively "subversive", undeclared action in terms of using a weak currency. Over ten thousand doctors that work abroad and are well paid, are competitive. Otherwise they would not be employed and wouldn't have kept their workplace. The same reasoning can also be applied for engineers, construction workers, farmers, etc.. The changeover to euro would better reflect salary levels in Romania compared to other EU countries and it would not be left to the discretion of local monetary policy, but should be protected by a strong, stable and secure currency. A true financial flywheel would not be so easily influenced by economic and political shocks. In the summer of 2012, political instability led to a local currency depreciation in a fast pace. If we were in the eurozone, the monetary component wouldn't have emphasized the economic effects of the political crisis in 2012.

Moreover, the changeover could be used in meeting, perhaps, the most synthetical, important and necessary indicator, designed to reveal the diminishing gap between living standards in the EU and Romania, the average wage. The motivation of Romania's EU accession was Europe standards alignment. So setting a certain target of reaching European average wage level, in parallel with the euro changeover, would break the vicious circle of so-called "lack of competitiveness".

A correct view on this issue would be the setting, for a time horizon of, say, 15 years, a goal to reach European average salary. An example in shown in Table No. 9.

Table 9 : Targeting to achieve the European average salary

2015/2016	2020	2025
50% of the average European salary	75% of the average European salary	90% of the average European salary

This timeframe [23] would allow a viable adaptation of enterprises to the average European salary by improving technologies, restructuring production, introduction to manufacturing innovative, competitive products. It will stimulate to remove from offering of products or services that "withstand" the market just due to the fact that labor is poorly paid. This would cure the economy and lead to Romania's alignment in competitiveness to European standards in terms of sustainable growth in GDP.

c) *Other benefits of adopting the euro currency*

- European currency is a stable currency in relation to the RON, and the economy will assume this stability. In addition, the stability, specific to the euro, implies low inflation and low interest rates with beneficial effects on public finances.

- Establishing a single market and price transparency of products and services which, over time, should be homogenized.

- Elimination of currency exchange costs and simplification of commercial transactions.

- Stimulation of travel

- Constitutes a positive element from the point of view of the citizen psychology as a belonging to a set of economic and political values, euro currency representing, through its unity and symbolism, an element of togetherness and unity.

- Facilitates international trade and intra-community transactions of resident firms in Romania

- Protects against economic shocks and increases in raw materials (oil, minerals, coal, metals).

d) *Disadvantages*

✓ Abandonment of the independent monetary policy by the State which adopts the euro. This means it will not be able to regulate the money supply in circulation and will not be able to change interest rates. Therefore, a decrease in production or an increase in unemployment will not be "solved" through monetary methods, namely printing money.

✓ The mechanism of an imposed monetary policy eliminates the possibility of countries to solve their problem of internal imbalances, generating new imbalances, namely increases the budget deficit and public debt.

✓ As known, unofficially, the tone in the EU is given by Germans and French. In case of divergence of fiscal and monetary policy, it is difficult, if not impossible, for another country that adopted the euro, and especially eastern countries, to impose their views. Due to its economic strength, Romania will not have a decisive role in monetary policy making of the eurozone. Often though, economic decisions taken abroad on the basis of clear criteria, were better than internal solutions based on group interests.

✓ It is expected that, as a first step, Romania faces some price increases. But the use of euro currency will allow faster development of the Romanian economy that will allow wage growth, with direct implications on the purchasing power of employees. Also, wage growth will lead to the additional collection, without increases in rate quotas, of taxes and fees which will increase budgetary resources. Therefore, medium and long term, we expect an increase in living standards. Upward adjustment mechanism of prices and wages will allow harmonization of the cost structure between Romania and the eurozone countries.

VII. Main Actions to Fulfill Regarding the Obligation of Adopting the Euro Assumed by the Accession Treaty

Due to the fact that, so far, all all predictions of achieving this objective were missed, it is required a substantive reform strategy for the transition to the single european currency. We believe that the following areas should be considered:

- Setting up an interdisciplinary committee with government, civic participation, from the National Bank of Romania and the academic community.

- Discussion and review of Romania's strategy for the euro.

- Establishment of a working group and development of a schedule of activities necessary to implement the strategy with deadlines and responsibilities. Failure to undertake tasks under this planning leads to exclusion of persons who have not fulfilled its staff duties.

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[23] In our view this process should be accelerated, meaning achievement of the European average salary should be made between 5 and maximum 7 years.

- Monitoring by the Romanian government of the stage of the activities necessary to achieve the strategic objective of Romania's transition to the euro.
- Initiate and support all actions necessary to achieve the objectives of nominal convergence with a special attention on inflation and long term interest, with involvment of institutions whose responsibilities fits these aspects. The inclusion in management contracts of measurable objectives regarding convergence would act as a decisive step for the euro to enter the final phase.
- With the failure of 2015 for entry into the ERM, the closest term would be 2016 or 2017. Any extension of time will produce only losses for Romania.

VIII. Conclusions and Proposals

Adopting the euro should become a national priority.

It is necessary to also review the substantive reform of the national strategy regarding Romania's transition to the euro.

Several scenarios for Romania's transition to the euro must be developed and the most convenien scenario must be adopted, as a political decision, based on public debate. Strategy and scripts must be prepared for the move to the single currency and not to demonstrate the necessity of a delay or inability of a changeover.

There have to be taken necessary measures to implement fiscal and monetary policies for the achievement of nominal convergence criteria.

In parallel, efforts should be made for economic recovery and for achieving real convergence. To this end, economic policies should be revised and private business should be encouraged.

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Anexea 1

Tabel 1: Indicatorii economici de convergenţă

		Stabilitatea preţurilor	Finanţele publice			Cursul de schimb		Rata dobânzii pe termen lung
		Rata inflaţiei IAPC[1]	Ţară cu deficit excesiv[2],[3]	Excedentul (+)/deficitul (-) bugetar[4]	Datoria publică brută[4]	Monedă care participă la MCS II[5]	Cursul de schimb faţă de euro[5]	Rata dobânzii pe termen lung[6]
Bulgaria	2010	3,0	Nu	-3,1	16,3	Nu	0,0	6,0
	2011	3,4	Da	-2,1	16,3	Nu	0,0	5,4
	2012	2,7[1]	Da[3]	-1,9	17,6	Nu[5]	0,0[5]	5,3[6]
Republica Cehă	2010	1,2	Da	-4,8	38,1	Nu	4,4	3,9
	2011	2,1	Da	-3,1	41,2	Nu	2,7	3,7
	2012	2,7[1]	Da[3]	-2,9	43,9	Nu[5]	-1,8[5]	3,5[6]
Letonia	2010	-1,2	Da	-8,2	44,7	Da	-0,4	10,3
	2011	4,2	Da	-3,5	42,6	Da	0,3	5,9
	2012	4,1[1]	Da[3]	-2,1	43,5	Da[5]	1,1[5]	5,8[6]
Lituania	2010	1,2	Da	-7,2	38,0	Da	0,0	5,6
	2011	4,1	Da	-5,5	38,5	Da	0,0	5,2
	2012	4,2[1]	Da[3]	-3,2	40,4	Da[5]	0,0[5]	5,2[6]
Ungaria	2010	4,7	Da	-4,2	81,4	Nu	1,7	7,3
	2011	3,9	Da	4,3	80,6	Nu	-1,4	7,6
	2012	4,3[1]	Da[3]	-2,5	78,5	Nu[5]	-6,1[5]	8,0[6]
Polonia	2010	2,7	Da	-7,8	54,8	Nu	7,7	5,8
	2011	3,9	Da	-5,1	56,3	Nu	-3,2	6,0
	2012	4,0[1]	Da[3]	-3,0	55,0	Nu[5]	-2,4[5]	5,8[6]
România	2010	6,1	Da	-6,8	30,5	Nu	0,7	7,3
	2011	5,8	Da	-5,2	33,3	Nu	-0,6	7,3
	2012	4,6[1]	Da[3]	-2,8	34,6	Nu[5]	-2,8[5]	7,3[6]
Suedia	2010	1,9	Nu	0,3	39,4	Nu	10,2	2,9
	2011	1,4	Nu	0,3	38,4	Nu	5,3	2,6
	2012	1,3[1]	Nu[3]	-0,3	35,6	Nu[5]	1,9[5]	2,2[6]
Valoarea de referinţă[7]		3,1%		-3,0%	60,0%			5,8%

Sursa: Comisia Europeană (Eurostat) şi BCE.
1) Variaţii procentuale anuale medii. Datele pentru anul 2012 se referă la perioada aprilie 2011-martie 2012.
2) Se referă la situaţia în care o ţară a constituit obiectul unei decizii a Consiliului UE privind existenţa unui deficit excesiv pentru cel puţin o parte a anului.
3) Informaţiile pentru anul 2012 se referă la perioada anterioară datei-limită pentru transmiterea datelor statistice (30 aprilie 2012).
4) Procent în PIB. Datele pentru anul 2012 provin din prognozele Comisiei Europene – primăvara anului 2012.
5) Variaţii procentuale anuale medii. Datele pentru anul 2012 sunt calculate ca variaţii procentuale ale mediei pentru perioada 1 ianuarie 2012-30 aprilie 2012, comparativ cu media anului 2011. Valoarea pozitivă (negativă) indică aprecierea (deprecierea) în raport cu euro.
6) Rate ale dobânzii anuale medii. Datele pentru anul 2012 se referă la intervalul aprilie 2011-martie 2012.
7) Valoarea de referinţă se referă la perioada aprilie 2011-martie 2012 pentru inflaţia măsurată prin IAPC şi pentru ratele dobânzilor pe termen lung şi la anul 2011 pentru soldul bugetar şi datoria publică.

Figure 1

Anexa 2

Graficul I Ratele dobânzilor pe termen lung

(ianuarie 2006-martie 2012; procente)

— zona euro
······ zona euro (AAA)

Sursa: BCE.
Notă: „Zona euro" se referă la rata medie a dobânzii pe termen lung ponderată cu PIB pentru ţările zonei euro. „Zona euro (AAA)" se referă la randamentul la paritate pe termen lung al obligaţiunilor emise de ţările zonei euro cu rating AAA.
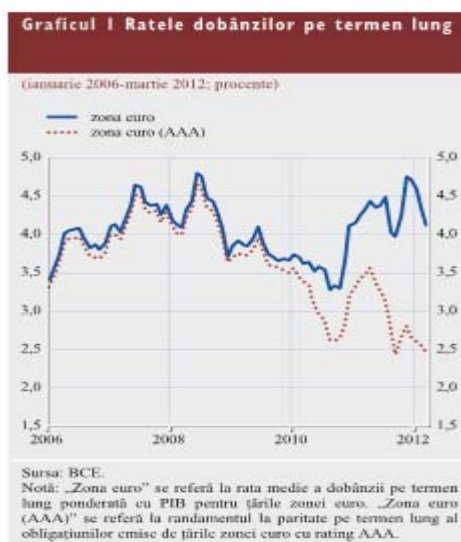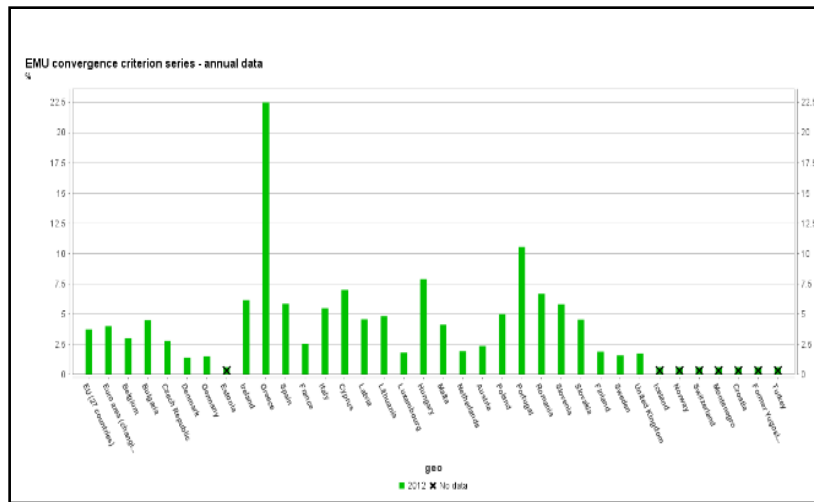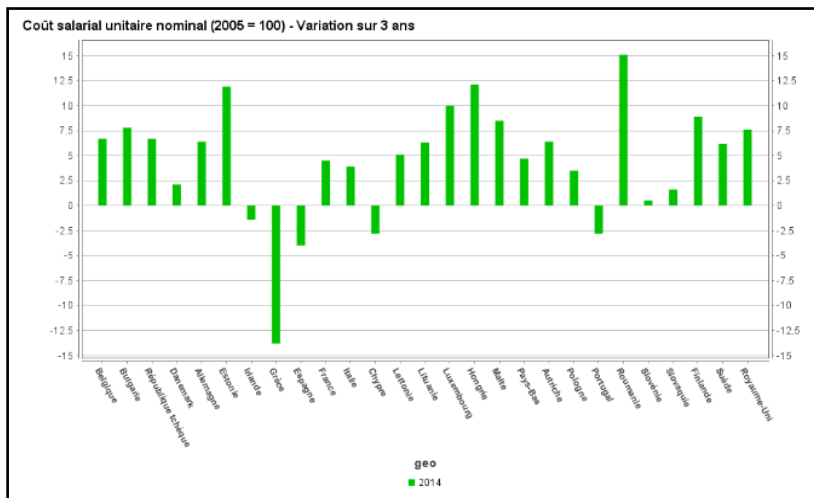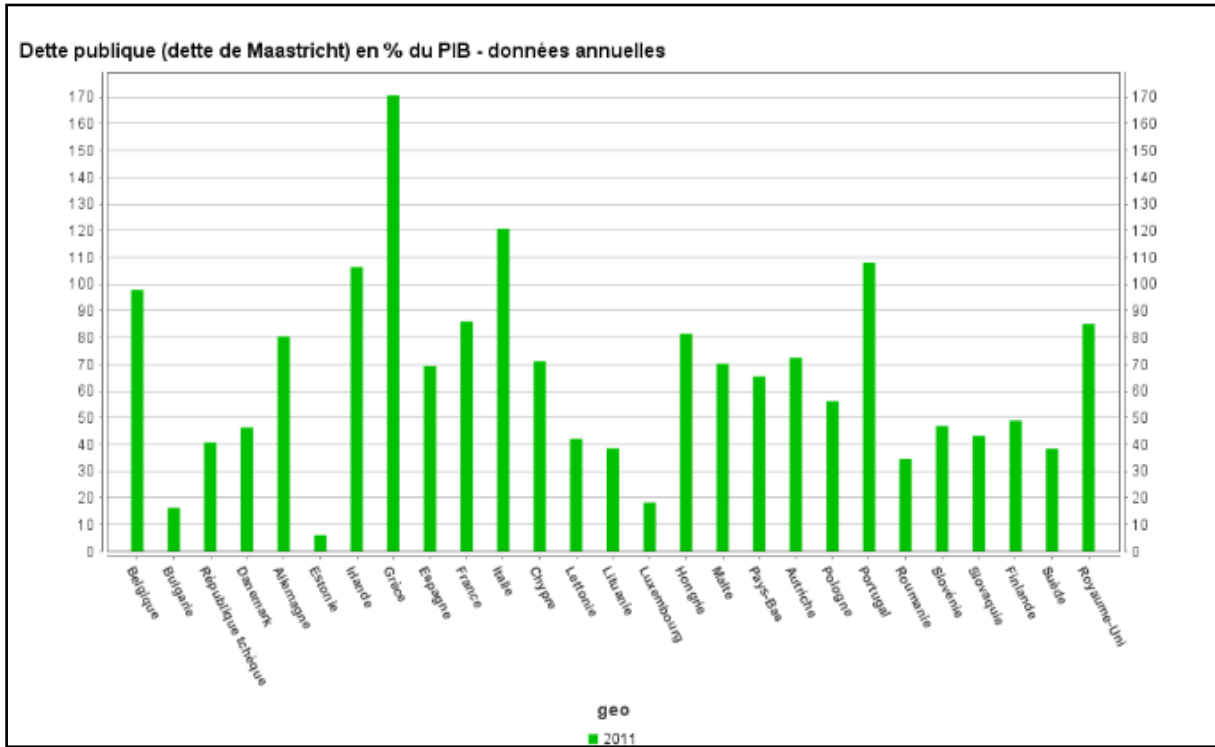
Figure 2

Source: Chart prepared by authors based on data taken from the Eurostat website

Figure 3

Source: http://epp.eurostat.ec.europa.eu/tgm/graph.do?pcode=tipslm10&language=fr

Figure 4

Source: http://epp.eurostat.ec.europa.eu/tgm/graph.do?pcode=tipsgo10&language=fr

Figure 5

Source: http://epp.eurostat.ec.europa.eu/tgm/graph.do?pcode=tipsun10&language=fr

Figure 6

Figure 7