

EUROPEAN MONETARY INTEGRATION: BETWEEN HOPE AND FULFILLMENT

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1. General considerations

According to the *Annual Report of the National Bank of Romania (2009)*, the fulfillment of the criteria in the Maastricht Treaty and adopting the Euro currency is a part of Romania's European integration process. The integration into the Euro zone implies the transfer of development and monetary policy management by the European Central Bank, an institution whose actions are undertaken in a uniform manner in the Euro area, without taking into account the particularities of national economies, whose degree of homogeneity is assumed to be high. In this context, prior to adopting the Euro currency, it is essential that the national economy to undergo the necessary adjustments for the Euro area integration. Since participation for a minimum of two years in the Exchange Rate Mechanism II (ERM II) is one of the conditions which must be fulfilled in order to obtain a favorable decision from the European bodies, the integration in this mechanism starting with 2012 is consistent with the objective of Romania's Euro adoption starting with 2015.

The same report states that, according with the Maastricht Treaty, the economic evaluation of a European Union (EU) member state in terms of preparation for the adoption of the euro is based on the nominal convergence criteria. Economic indicators target the price stability, sustainability of public finances and indebtedness, exchange rate stability and long-term interest rate developments. Moreover, they are taking

into account a number of other relevant factors with predictive role, which utility is considered significant for analyzing the sustainability of the convergence process and the relationship between costs and benefits of adopting the single currency.

2. European Monetary Union – a monetary paradise?

What lacks the European Monetary Union to be what we expect from it?¹ is the question that Jacques Delors, former European Commission president, one of the most fervent supporters of the single currency, author of the report "Delors, 1989, in an interview conducted by Jaillet and Jean Oierre Pisani-Fery, aims to respond to.

First, it needs a greater consistency of economic policies, especially in the fiscal plan. The current economic and financial crisis also hides the danger of a political crisis that could have as a starting point how different countries address the debt problem. For example, if we take only the states with the highest GDP, France and Germany, the government deficit in 2009 was 8.2% for the first and only 3.2% of GDP for the second. This gap is likely to create tensions between the two countries, even if they are not manifest. France can be blamed that they "protect" taxpayers,

¹Delors Jacques, "L'union econommique et monetaire a besoin d'une impulsion politique", in Revue d'economie financiere, Revue trimestrielle de l'Association d'economie financiere, No. 96, January 2010, pp. 19-31

compared with the situation in Germany, given the significance of this difference.

Second, considering the dominance of the United States and therefore of the dollar in the financial plan, Jacques Delors sustains the need for a new American - European partnership for the two currencies management. Competition between the euro and dollar takes place, in the first place, at market level. But the Euro's attractiveness depends also on geopolitical conditions, what will happen in emerging economies, primarily in China. The influence of these countries in international organizations, including the International Monetary Fund (IMF), will soon increase and the economic growth in the euro area countries, only 2%, is unable to support a strengthened role of the euro as an international currency.

Thirdly, Jacques Delors considers that the attractiveness of the Euro area must increase through economic reform and by political impetus leading to a clear orientation of the European Union to a close partnership with the United States. This requirement implies, by necessity, a perfection of financial market integration, integration regarding which the Great Britain still manifests serious cautions. And so, even the effects of introducing the euro surpassed expectations, if we take into account even the mere fact that during 1999 - 2008 have been created 15 million new jobs in the euro area countries. "This adventure is a success." - says Jacques Delors.

The European Monetary Union *is based* on a completely original and unique design, unprecedented in history, which in theory, would have been impossible to do: a single monetary policy entrusted to a federal institution - the European Central Bank; a fiscal policy that remained the responsibility of national states - so national budgetary policies; a limited federal budget from 1.3% of Community GDP, which is intended to play a more marginal role than it was intended. It is likely that this asymmetric institutional

framework that corresponds to the political reality of the European Union since its creation will not change until the horizon of 2019. But as shows Otmar Issing², a single currency does not necessarily presumes, a full political union, subject to collective management of the currency to be based on clear commitments and respect them in their entirety. But experience has shown that in the early years it was not the case. It is therefore necessary to produce certain financial mutations, but also related to the economic policies.

Looking ahead ten years, to strengthen the single currency, first of all, it is crucial to improve macroeconomic surveillance which must be completed and extended with other key indicators capable to reflect the imbalances in national economies.

It is then imperative to draw the main conclusions of the current financial crisis because the crisis was the best possible test for the Euro and the Euro area. One of them might be the need to establish a European Board for systemic risk, reporting to the European Central Bank, connected to other European institutions, in particular, Economic and Financial Committee, but also with international institutions, such as: IMF, the International Regulations, G20 etc.

The completion of financial integration process in the Euro area is another condition for strengthening the single currency. Implementation of the SEPA program (Single Euro Payment Area), for example, will accelerate the integration of retail payment infrastructures.

Finally, last but not least, ensuring the spheres that will generate a

² ISSING Otmar, "L'euro: une réussite appelée à perdurer?", in Revue d'économie financière, Revue trimestrielle de l'Association d'économie financière, Nr.96, janvier 2010, pag. 31 -38. Otmar Issing is a famous German economist, board member of German Bank (1990 -1998) and European Central Bank executive board (1998-2006). currently is a consultant to "Goldman Sachs.

strong and steady growth of the euro area will allow easing the pressures on public finances caused by the aging of the population - which will ensure monetary stability. The return to strong economic growth is possible only if it is pursued with structural reforms in the consumer goods market, and labor market.

3. The effects of International Financial Crisis on the Euro area

Greek crisis is certainly the strongest example. For a long period of time, Greece provided to the European Commission false reports, recklessly or knowingly. The truth is difficult or even impossible to determine. Thus, while the old government announced a deficit of 6%, Georges Papandreou, who was appointed as prime-minister in October 2009, revealed that the deficit was 12.9% (compared with less than 3% set by Brussels) and public debt amounts to 115% of GDP (228 billion dollars - a figure provided by the World Bank and IMF which have as reference currency the dollar), while the underground economy accounts for 20% of GDP. This is a real general tax fraud. The enormous amount of EUR 57 billion was the emergency aid that Greece should receive it only in 2010, to avoid total collapse of the country economy, with all the negative consequences of extremely hard, both financially and on the social. 95.6 percent of the debts are toward non-residents, as the Greeks did not have confidence in their own state, to grant loans, which raises and honesty of government officials. An analysis of the euro area countries has shown that the three countries are about to enter into a similar crisis - Italy, Spain and Portugal, labeled by the Germans the pejorative appellation of "Mediterranean Club". The effect on the euro exchange rate was a decrease in rate to the dollar from 1.51 to 1.33, i.e. a depreciation of 13%. The Franco-German Agreement, signed on 25 March 2010, ended any fears that someday, some Euro area country could be allowed to become insolvent, although

Article 50 of the Treaty of Lisbon provides for sanction the exclusion of a Member of the European Union who "serious shortfalls" in standards, but only in respect of slippage from the principles of European democracy.

After Greece's financial problems had a deep impact on the Euro zone economy, a new question raises from all Europeans: the crisis in Ireland is worse than the Greek State³?

At first glance, their problems are quite similar, but the reality is different. Having as background the crisis that has shaken the world since 2008, Ireland is the second country in the euro area came to seek support of the European Commission and the IMF to save their finances at risk, since Greece has done so.

The fact is that whatever problems the two countries have, their economies are at the "periphery" of the European Union. After a strong economical growth in years 2000, with salaries that have increased very fast (5-6% growth per year, compared to 2% in the euro area average), these countries have not managed their money well. The excess made them to need hundreds of billions of euros to decrease the economical gap. For Europe, both episodes have the same meaning: it needs better monitoring and more severe sanctions.

If before the crisis Ireland had a budget surplus (3% of GDP surplus in 2006 and a national debt of 25% of GDP), Greece had not a very balanced situation (the best deficit was a 4% in 2006 while public debt was about 100% of GDP).

The events in the recent months have reflected these differences. More specifically, there are three major differences. While Greece is facing a public debt crisis, Ireland was hit by a crisis of private debt. If the government in Athens is responsible for excessive costs

³ Alina Bardas - Ziare.com, 1st December 2010 – *The Greek Crisis versus the Irish Crisis. Which one is worst?*

and conceal the truth, in Dublin, the banks are those that are responsible for raising private debt.

Being in a situation without precedent, the Irish government was forced to nationalize institutions with problems and crisis has become public de facto (with an amazing deficit of 32% of GDP in 2010). And this happened even though Dublin has asked banks to seek massive funds from the ECB. Basically, the Irish origin of the crisis is private, while in Greece, where banks have entered later in shock, the public, explains the French daily "Les Echos"⁴.

The second difference concerns the behavior. While Greece made a desperate call to Europeans, because the state treasury was empty and had no resources to pay the borrowed money or to pay public servants, Ireland was too proud to admit that the problems started, as European Union rather forced to accept help.

A third difference between the two countries is even greater. Ireland adopted the euro despite the fact that it was not ready, but for only reason that was a country seemed too small to endanger the Euro area.

In Ireland, however, everything was completely different, because this state seemed to be the "perfect student" for the Union. The country took advantage of EU subventions, paid to create an economic boom. In late 2006, when some problems were in sight, the government imposed solutions just like by handbook, by reducing taxes and government spending to balance the economy, before Brussels to pull the alarm.

After the problems of Greece and Ireland have messed up any predictions of the Euro area economy and the exit out of recession, is Portugal and Spain turn to be a concern for the markets⁵.

Threatened by a debt crisis are also Italy and France. The announcement of a possible intervention by the EU and the IMF to ease the Ireland debt apparently not reassured investors, who see a domino effect on these problems.

In **Portugal**⁶, even prime minister declarations does not inspire credibility in business area, although, unlike Ireland, Lisbon is not faced with any major banking crisis or a real estate bubble. "There is no correlation between Portugal and Ireland", said Jose Socrates, Portuguese Socialist Prime Minister. But Portugal is facing an unsustainable economic growth model and a lack of competitiveness. For 10 years, the country registered a slow growth and the markets are skeptical about government's capacity to reduce the budget deficit from 9.3% in 2009 to 7.3% by year end.

A concern was generated as a result of gloomy prospects for 2011. When most of the austerity measures will be applied, the country could plunge into recession. In April-June, refinancing loans of 9.46 billion euros will be a challenge, writes the daily "Le Point".

Bank of **Spain** Governor recognizes that the effects of the Ireland crisis "have expanded rapidly" for countries placed at the periphery of the euro area and make themselves "felt" at the Spanish debt level. For Mercier Thibault, specialist in PIGS issues (Portugal, Ireland, Greece, Spain), from BNP Paribas, Madrid is far from going into insolvency, although its debt in 2009 reached 53.2% of GDP.

However, doubts about government's ability to reduce the deficit that has increased in 2009 to 11.2% of GDP continues. And all the while the Spanish economy is expected to know the recession in both 2010 and 2011.

For Canadian economist Robert Mundell, **Italy** is the "biggest threat" to the Euro currency area. The winner of the Nobel Prize for economics is concerned that the public debt of the

⁴ Jean-Marc Vittori - *Les Echos* - 3/11/10, *L'Irlande, c'est pire que la Grèce !*

⁵ Alina Bardas - Ziare.com, November 29, 2010 - *Which country follows next after Greece and Ireland?*

⁶ Op. cit.

peninsula, which reached about 116% of GDP in 2009 (around 1,800 billion euro), could cause serious imbalances in the euro area.

After Portugal and Spain, Italy is next on the list, believes Antonio Garcia Pascual, the economist responsible for Southern Europe at Barclays Capital in London. With the country's deficit reached 5% of GDP in 2009, without a real plan to revitalize the economy, the extent of debt will increase.

Somewhat more pessimistic analysts argue that **France** will not escape the domino effect of the debt crisis in the Euro zone. This possibility is not excluded either by U.S. economist Nouriel Roubini⁷, who predicted the subprime crisis. According to him, the current state of public finances in France is not much better than that of EU countries placed at the periphery, but they are not even in the same point. But France is still a AAA rating, the highest possible rating given by the profile agencies, which is encouraging. Pension reform may also be considered a positive signal to the market about the ability of France to begin reducing its debt over the medium term. In the French public finance program for the period 2011-2014, the government hopes to reverse the upward trend in 2012: this time, the debt is expected to reach a record 87.4% of GDP, and then begin to decline slowly.

Regarding the situation of **Romania**, Adrian Vasilescu, advisor to the BNR Governor, says that the exit of the crisis in 2010 is an illusion and explained that recession is just one phase of the crisis, and Romania will register a positive growth only in 2011. "Many voices say that we can be out of the recession in 2011, but not out of the crisis. It's an illusion. I do not want to use the term false signal," said Adrian Vasilescu at The Money Channel.

"The end of the crisis is not approaching anywhere in the world,

much less in our country. We need to make some cuts, recession is just a phase, the crisis has multiple segments. Recession refers to economic growth, to GDP, measured horizontally and vertically, quarter to quarter and this quarter to last year. Two consecutive quarters of growth can not occur this year. Nobody says we can come out of recession this year but many people say that next year will be the case. We are not out of the crisis, the IMF report says that the financial sequence remains vulnerable and this is the Achilles heel. We don't get out quickly from this story, we still have to deal with credit bottlenecks, labour market crisis remains, the restructuring one also remains. Exit of the crisis is an illusion, wages may increase but we are not out of the crisis," said Vasilescu.

NBR representative believes that Romania will overcome the recession next year but it will emerge from the crisis at 6-7 months after other countries. Romania seems to mark an economic decline of 1.9% in 2010, the most severe of emerging countries of Central and Eastern Europe, and in 2011, Romania will record the weakest growth of 1.5%, according to a report published by the IMF.

Romania has become, according to an IMF report, the country with the lowest standard of living in the European Union. Romania's GDP per capita expressed in purchasing power in 2009 decreased by 6% from 2008 to 11,869 dollars. Until last year, Bulgaria was the European country with the lowest standard of living, but the IMF statistics show that last year Bulgaria recorded a gross domestic product per capita, adjusted for purchasing power for 11,883 dollars, more than the one of Romania. Estimates based on IMF data show that the gap between the two countries will increase until 2015 in favour of the neighbours south of the Danube. Vasilescu believes that Romania cannot be the last place in terms of welfare, since the calculations on which these data are based on, are not very accurate, our country being

⁷ Le Point.fr – nr. din 19/11/2010 - *Nouriel Roubini, l'économiste qui a prévu la crise des subprimes, compare la France à la Grèce*

ahead of Bulgaria and other EU countries as regards the country's wealth.

4. The Romania's preparation stage for accession the Euro area

The current crisis has shown that EU members that are not in the euro area were more exposed mainly due to the flotation of exchange rate of currencies against the euro. It is natural then that a candidate country to want to join the Euro zone as soon as possible. It is only natural that ECB hesitates when it makes a conditional access by the "real" convergence criteria. From my point of view - says Alessandro Profumo⁸ - I believe that the best course of action is to accelerate the expansion and for this, current members must activate the debate on the necessary adjustments and support the candidate members on the line to make progress on reforms undertaken to meet the convergence criteria. If now emphasis is on the "real" convergence criteria, one country must also meet the "nominal" convergence criteria, especially in terms of the Maastricht criteria on budget policies. In face of the crisis, many countries of euro area have exceeded the ceiling of 3% of GDP for the budget deficit, but also the one for the public debt of 60%. And this is due to the absence of an unique budgetary authority of the European Union. After years of record growth, virtually not a single euro area country found itself in a healthy budgetary position in order to cope with the crisis and not to exceed the limits of budget deficit and public debt, Maastricht self-imposed. It seems therefore that a priority should be a rethinking of these criteria, but also the possibility of

centralizing some powers of budgetary policies in the euro area as a whole.

Of course, progress can be noted: there is an European budget that enables the European Union's own objectives. Also a progress can be considered the report of the group "Larosiere" where it is made the proposal of establishing a European system of financial supervision that could perform the task of legal arbitrage between national supervisors. This centralization, coordination and harmonization of sector financial supervision will be even more needed as the euro area will expand.

A review of the situation which now shows the space that we call "new Europe", where most candidates in the euro area (except for Sweden, where the problems are quite different in nature, Euro zone being rejected by people, by referendum in 2004), allowed us to formulate some interesting conclusions.

At the end of 2010, the euro area had a total of 17 states with an above average level of development of the European Union as a whole by 8.9%. Note that while for the 11 countries in "old Europe" who have adopted the euro in 1999 and later, Greece in 2001, the main issue was a criterion of public debt (when joining, Belgium, Germany, Italy, Netherlands, Austria, Greece and Spain exceeded 60% of GDP ceiling set by the Maastricht Treaty), for the seven countries of "new Europe", to adopt the euro, inflation is the most difficult criterion to meet. At the end of 2010, none of these countries did meet the inflation criterion.

However, with the exception of Hungary, all other six countries meet to ease public debt criterion which for founding countries of the euro area this was the main difficulty. But in this calculation is not taken into account the private debt, which is higher than the public, including for Romania.

The worst part of the economic crisis in 2009 was the explosion of budget deficits that had reached unimaginable levels (over 9.0% of GDP in Spain, Italy, United Kingdom, and

⁸ PROFUMO Alessandro - "Doublér la mise: vers une zone euro plus large, plus intégrée et plus forte", Revue d'économie financière, Revue trimestrielle de l'Association d'économie financière, No. 96, janvier 2010, pag. 59-68. Alessandro Profumo is a well known Italian financial manager who made an important contribution to the consolidation of the Italian banking system.

Ireland). For example, public revenues in the first six months in Spain were eight times lower than those recorded on the same period of 2008, a situation unprecedented in the history of this country. If we consider that even Germany will not be able to return to a budget deficit below 3.0% of GDP earlier than 2013 to 2014, what will happen to the eastern countries that will adopt the euro?

The current crisis has been brutally reversed priorities of the countries of Central and Eastern Europe. If by 2008, their top priority was how to comply with the inflation criterion, after the year 2010, uncontrollable budget deficits will raise the biggest problems, because their adjustment takes time and, especially, it involves political and social costs very difficult to be accepted by the population on the short and medium term.

If a country like Germany, with a reasonable debt (65% of GDP) and a relatively small deficit, compared to other Western countries (4.4% in 2009 and 6.0% in 2010), needs five years to return to 3.0% of GDP, how many years will need countries like Hungary, Lithuania, Latvia, Poland, Czech Republic, Bulgaria or Romania?

It is time to offer an "officially" point of view of the European Union, expressed in the eleventh report⁹ of the European Commission on Romania's preparations for joining the Euro zone.

Romania fixed, prior the financial and economic crisis, as the date of joining the ERM II - 1 January 2012, and as the date of euro adoption - 1 January 2015.

The most qualified "voice" in this field, BNR Governor Mugur Isărescu,

said in December 2010, during the events celebrating the 10th anniversary of the establishment of the European Institute of Romania, that although it is possible to modify the Euro adoption date, because of time required to implement reforms that will allow us to enter the ERM II, "National Bank has maintained the objective of the changeover to Euro currency in 2015 and acts in this sense." Romania's fundamental objectives, as response to economic and financial crisis, are - as Isărescu underlined¹⁰: "... getting out of the recession, keeping the inflation stable and at low rates, maintaining in the reasonable parameters the fiscal and current account deficit (...) If further, Romania will gain greater credibility to convince the European authorities that adopted measures are good, that shows seriousness in carrying them and also acts specifically to improve the business environment, our country will smooth its way for the Euro area alone. " At National Bank of Romania operates a " ... broad specialized committee to prepare the changeover to Euro currency" - as central bank governor stated, in which also have been co-opted representatives of the Ministry of Finance. Unlike other candidate countries for the Euro area, except Bulgaria, there is still no plan, or a national strategy to changeover to Euro currency, although such an instrument has been pointed out as necessary by Mugur Isărescu - "We believe that enhancing preparations for accession to the Euro area within a national program, will give new impetus to the transformation and modernization of the entire Romanian society.". But to achieve such a goal would need and interest from the Government for, as said Cristian Popa, NBR vice governor, referring to the euro adoption: "The convergence program is not part of a certain government nor Central Bank, but must

⁹*Commission Staff Working Document - accompanying document to the Communication from the Commission to the European Parliament, the Council, the European Central Bank, the European Economic and Social Committee and the Committee of the Regions. Eleventh Report on the practical preparations for the enlargement of the euro area, <http://eur-lex.europa.eu>.*

¹⁰ Mugur Isărescu - Speech celebrating the 10th anniversary of the establishment of the European Institute of Romania, December 13, 2010, www.bnro.ro

represent the cumulative efforts of successive governments, plus the contribution of the monetary authority, which has neutral nature." (Popa, Cristian – „The Romanian leu: present and perspectives. Transition to euro”, p. 51).

But what is stated in the Report? Reality, as it appears. Thus, the National Bank is the central landmark in this report, just as in the case of the other states, the basic parts of the transition to the euro are the established and national government bodies dedicated to this complex and delicate process. In the Report there is emphasized that "in the absence of a national coordinating body to prepare the transition to euro, the National Bank of Romania has set up in

late 2009, a committee to study the changeover, chaired by the Governor in this form but the Committee remains only a national forum for discussion on the currency and the euro area. BNR is actively involved in raising awareness of target groups represented by the general population, but also specific groups, namely, financial environment and academic on the convergence criteria and the introduction of the euro. "

Based on the above, we present the situation in Romania and in some candidate countries to the euro area, in the year 2009 based on statistics in Table no. 1.

Table no. 1. Maastricht criteria (Indicators of the nominal convergence) – 2009

Indicators of the nominal convergence	Maastricht criteria	Romania	Bulgaria	Czech Republic	Hungary	Poland
Inflation rate (HICP) (percent, annual average)	<1.5 pp above the average of the top performing three EU members (1.6%)	5,6	2,5	0,6	4,0	4,0
Long-term interest rates (percent per year)	<2 percentage points above the average of the top performers in terms of three members of the EU price stability (5.3%)	9,7	7,2	4,8	9,1	6,1
Exchange rate against euro (appreciation (+) / depreciation(-) Maximum percentage)	± 15 percent	-15,1	0,0	-6,0	-11,5	-23,2
Consolidated budget deficit (percent of GDP)	below 3 percent	8,3	3,9	5,9	4,0	7,1
Public debt (percent of GDP)	below 60 percent	23,7	14,8	35,4	78,3	51,0

Source: BCE Convergence Report, May 2010

5. Conclusions

Euro area enters the second decade of existence with the ambition to become an important actor on the stage of world economy. As new countries join the euro area, the euro area will become one of the greatest actors through both its population share, and by that of GDP.

But for this position to give it influence on the international scene, the euro area is subject to increased integration, since, by contrast, some euro zone countries will resort to protectionist and isolationist measures and the competitiveness of the euro area and its influence on the international stage will diminish considerably - feels Profumo. Also, the strength of the euro area is depending on the structural reforms to be undertaken without delay in order to solve the problems that threaten its stability, respectively: the aging of the European population which puts great pressure on public finances which were already weakened by the impact of the

crisis, the regime of the pensions, particularly in terms of increasing the retirement age, labour market must become more flexible in the whole euro area, increasing flexibility and competition in the market for goods and services.

The objective of the euro area over the next decade should be to strengthen the euro as an alternative to the dollar and become the reference currency for more countries outside the Euro zone, so that the euro becomes over the next decade the main reserve currency in the world economy.

What will be the global role of the euro? Its role is important now because, after the dollar, it is the second currency of the international monetary system. But there is no reason to believe that the euro could go ahead the dollar, at least in the short term. As for the experts' opinions, the estimates range from predicting a relative decline of the dollar, up to see in euro a coin that will not hamper the dominance of the dollar.

REFERENCES

Alina Bardas	Ziare.com, 1 st December 2010 – <i>The Greek Crisis versus the Irish Crisis. Which one is worst?</i> . Ziare.com, November 29, 2010 – <i>Which country follows next after Greece and Ireland?</i> ;
Mugur Isărescu	Speech celebrating the 10th anniversary of the establishment of the European Institute of Romania, December 13, 2010, www.bnro.ro;
Florin Georgescu	<i>Romania's economic policies for euro adoption - Project NBR - Open Days for economist students - Polytechnic University of Bucharest</i> , December 2010;
Agnes Nagy	<i>Adopting the Euro: the case of Romania - Draft NBR - Open Days for economist students - Babes-Bolyai University of Cluj-Napoca</i> , 16 November 2010, University Petru Maior of Targu Mures;
Cristian Popa	„ <i>The Romanian leu: present and perspectives. Transition to euro - the history and civilization Banking Symposium - Cristian Popișteanu</i> ”, Bucharest, April 25, 2007;
National Bank of Romania	<i>Annual Report, 2009</i> ;
*****	http://eur-lex.europa.eu ;
*****	BCE Convergence Report, May 2010.

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