

Maastricht Criteria of...Divergence?

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Abstract: This article focuses on problematic issues of the Maastricht criteria. The possible effect of attempt to meets the criteria is confronted with its intended purpose. Each criterion is analysed generally by pointing out problematic issues, subsequently, fulfilment by Eurozone members and risks for the Czech Republic, too, are shortly analysed. It is shown that in many cases fulfilling criteria can lead to a different development than was initially intended. The analysis reveals that attempts to meet the criteria can lead to divergence from Eurozone, can cause several economic problems and can bring pain with no gain.

Key words: Maastricht criteria, euro, Eurozone, monetary policy

JEL Classification: E61, F15, F3

Introduction

Maastricht criteria, despite being called a convergence one, must not lead to convergence of countries, but by contrast, as will be shown, an effort to meet these criteria can lead to divergence and additional costs for the country. But as fulfillment of the Maastricht criteria (MC) is a necessary condition for adoption of euro, an analysis of impact of the MC on the economy should be an essential part of the analysis of euro adoption.³

The aim of this paper is to analyse Maastricht criteria from the perspective of their ability to examine readiness for euro adoption, and also to analyse possible impact of its fulfilling by economies attempting to adopt euro. The aim of this paper is neither to access the fulfilment of Maastricht criteria, nor to propose any way how to fulfil them.

The Maastricht convergence criteria (further MC) were formulated at the beginning of the 1990s. Its purpose was to create new monetary union and new currency, but they did not focus on enlargement or trying to solve a number of members of the union. The text of MC reflects the fact that Eurozone (further EZ) is to a large extent result of political

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³ Maastricht criteria can be avoided by unilateral euroization, but the Commission repeatedly describes such an approach as undesirable. This step could be also considered as braking of the European law. EU legislation clearly identifies euro adoption as a 3-step process, EU membership being the first step, ERM-II membership the second and fulfillment of the Maastricht criteria the third. (Levasseur, 2004).

process based on lot of compromises. As Wyplosz (2004, in Dabrowski 2005) says: “The form of Maastricht convergence criteria reflects the fact that most of EU countries achieved high degree of real convergence, but nominal divergence persisted”. This was perhaps true when EZ was created, but seems to be too optimistic after EU enlargement.

According Wyplosz (2004, in Dabrowski 2005) the origin of the MC pointed to the background of two different views of sustainability of monetary union: “economic” and “monetarist” approach. MC are the result of the “economic” approach, but the signs of compromises can be seen.

During the analysis of MC, it is necessary to keep in mind that macroeconomic and financial environment about 20 years ago, when EZ was being planned, was very different from today's situation. In the past, some countries regulated capital flows, and financial markets were less developed and sophisticated. Nowadays, all EU countries have fully liberalized capital accounts of balance of payment and capital mobility is significantly higher. All of these factors have an influence on impact of fulfilling of Maastricht criteria and also on their consistency.

Aims of Maastricht criteria

There was an extensive debate about the aims and purposes of the Maastricht criteria, and there was often a difference between the view and arguments of official institutions and academic experts. It is obvious that the primary aim of MC is to allow only those countries to adopt euro which meet the criteria. But there are disputes about why should countries do it, or why is it advisable to meet the MC. MC should officially determine whether the country achieved “sustainable convergence” and if it is qualified to adopt euro (Buiter et. al., 1993).⁴ But as Afxentiou (2000) pointed out, MC have only little to do with the true convergence. Convergence is a “process, which technologically, in non-rivalry way, converge the territory, and the institutionally and structurally less developed countries is catching up more developed countries” (Afxentiou, 2000). On the other hand, Maastricht criteria are only rules of price and fiscal stability.

The criteria are well known, we shall present them just as a reminder.

- Price level is on sustainable level, whereas average level of inflation for the last year before examination does not exceed the average level of three countries of EU with lowest inflation by more than 1.5 p.p.,
- Exchange rate moves within the “normal fluctuation band” of ERM II for at least two years without devaluation against common currency,
- Nominal long term interest rate must not exceed the average of three EU countries with lowest inflation by more than 2 p.p.,
- Government budget deficit must not exceed 3% of GDP,
- Public debt must not exceed 60% GDP.

The first three criteria are designed to maintain monetary stability and exchange rate stability. Last two criteria should ensure stability of euro by protecting it against inflation pressures induced by excessive budget deficits (Afxentiou, 2000).

⁴ Final decision about acceptance of country into EZ is issued by Council in form of Ecofin according the evaluation of the Commission and ECB.

Monetary or financial character of MC is obvious because there is no link to real indicator, such as product, investment or employment. From this point of view we can say that MC have strong neo-liberal or monetarist basis, mainly because of focus on low inflation (Coakley, 1995). At the background of Maastricht treaty was, according to Coakley (1995), very optimistic (or even naive) belief that economies with extremely heterogenic performance can converge to some common goals. But despite this, Coakley (1995) found two factors which make achievement of these goals suitable: market forces encouraged by common market program and political will.

A different point of view presents Winkler (1996); in his opinion, the criteria can be explained as indicators of past, present and future credibility, because during the second phase of monetary integration candidates must demonstrate their orientation on stability with emphasis on independency of monetary policy. Reasoning for this stems from a conviction (mainly of German institutions) that only a deeply rooted culture of price stability shall make keeping the price level in Eurozone low with low costs possible. But it is a question whether MC are able to reveal “deeply rooted” culture of stability, if they are (with the exception of exchange rate criterion) spot or forward looking.

The Maastricht criteria was criticized by a lot of experts, and deemed unreasonable (Buiter et al., 1993), useless or even harmful and self-defensive (De Grauwe, 2009).

In the following text, we shall analyse each criterion in detail, with focus on sense, controversy, and potential economic impacts of fulfilling of each criterion. First, the criterion is analysed generally and subsequently empirically with focus on Czech Republic. We are well aware of the fact that the crises from 2008 and further development could have dramatically changed development of some indicators, mainly, but not only, in fiscal criteria. We do not focus to these changes as our aim is to access the long term problems inherent with the Maastricht criteria.

Inflation criterion

According to Taylor (1995), the logics of inflation criterion is a straightforward one: convergence of inflation rates is essential condition for success of monetary union; otherwise ECB should not be effective in carrying out common monetary policy. The principle argument for inflation criterion touches the inflation target of ECB. ECB targets weighted inflation in Eurozone, and if a group of countries or a bigger country should have significantly higher inflation, the average for EZ would increase, which would lead to monetary restriction with possible negative impact for countries with low inflation.⁵ But this argument for criterion is valid only if we suppose that development of inflation before euro adoption is an indicator for development after adoption. This assumption can be supported by inertia of inflation. But we must bear in mind that entrance to the EZ means fundamental change of economic policy indicators. While before euro adoption country could, at least mostly, use independent monetary policy, after adoption monetary policy is fully in intentions of ECB

De Grauwe (2003) argues that inflation criterion can be read as preference revelation mechanism. Country which tries to enter EZ must make such steps which ensure that its inflation will not exceed reference value. These steps reveal that country is willing to

⁵ It is worth mentioning that there were no fears about lower inflation in some countries.

accept short term pain to achieve long term gain. The main aim is to minimize risk of promoting expansive monetary policy.

At the background criterion, there can also be fears that in case of asymmetric shock a country would like to leave EZ. These tensions could rise either from countries in problems (Greece, Portugal) or from countries which will be thus forced to finance countries in problems (Germany)

Both Wyplosz (2006) and De Grauwe (2003) argue that the main purpose of the criterion was to bind South European countries with traditionally highest inflation to lower inflation typical for Germany. In this context it is remarkable that despite the Treaty refers to “high degree of price stability”, it is in fact possible to have any rate of inflation until one year prior euro adoption.

There was no bigger problem with fulfilling inflation criterion by founding members of Eurozone. Temperton (1998) points out that convergence was achieved in the worldwide low inflation climate, low aggregate demand in Eurozone countries, and no country was high above its potential product. Rapid fiscal consolidation also supported decrease of inflation but the side effect was divergence of real interest rates between the core and south EU countries. Among other things, it is true that countries with higher inflations carried out more restrictive economic policy, and therefore the convergence of inflation should not be surprising. The question is, though, whether the lower inflation was not achieved only in exchange for lower production and higher level of unemployment.

Another question we have already mentioned is if convergence of inflation before euro adoption is a guarantee for simultaneous development after it. The following table clearly answers this question.

Table 1: Fulfilling of inflation criterion by EU countries

country	Months of fulfilling inflation criterion	Months with available data	% time of fulfilling criterion
Belgium	121	140	86.43
Bulgaria	5	44	11.36
Czech rep.	48	76	63.16
Denmark	125	140	89.29
Germany	140	140	100.00
Estonia	14	76	18.42
Ireland	58	140	41.43
Greece	12	116	10.34
Spain	45	140	32.14
France	133	140	95.00
Italy	119	140	85.00

Cyprus	25	32	78.13
Latvia	7	76	9.21
Lithuania	16	76	21.05
Luxemburg	88	140	62.86
Hungary	1	76	1.32
Malta	17	32	53.13
Netherland	107	140	76.43
Austria	138	140	98.57
Poland	37	76	48.68
Portugal	65	140	46.43
Romania	1	44	2.27
Slovenia	20	44	45.45
Slovakia	12	20	60.00
Finland	121	140	86.43
Sweden	127	140	90.71
United Kingdom	125	140	89.29

Source: data Eurostat, own calculations of the author

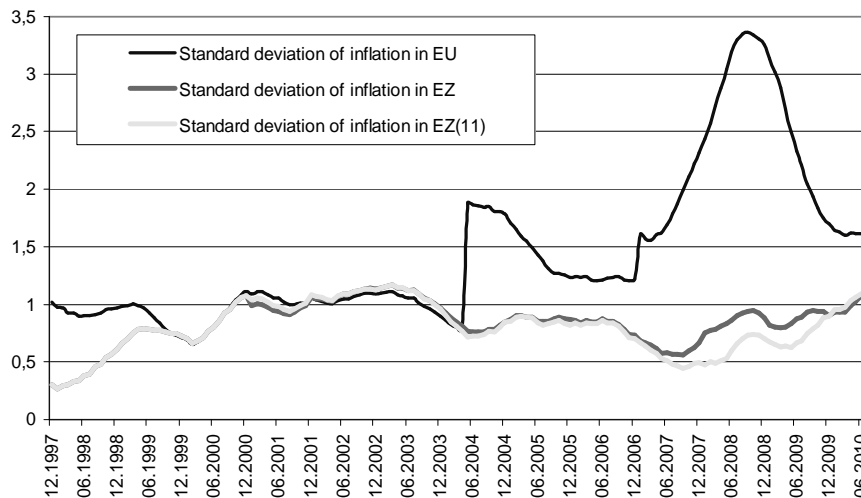
Data: from according availability till 07/2010

Note: EZ members are in bold (at 07/2010)

As can be seen in the Table 1, from 1999 to July 2010, only Germany fulfilled Maastricht inflation criterion all the time. On the other hand, Greece, Spain, Portugal, Ireland and others, too, exceed the criterion for more than half time. It is worth to mention that countries which exceeded inflation criterion lie at the EU periphery and (with exception of Portugal) in the first years of EZ were achieving quite high growth of GDP. But there might be a bigger problem than just not meeting the inflation criterion: the divergence of inflation which also occurred (see below).⁶

⁶ If inflation in part of EZ grows faster, real interest rates fall down. It again supports growth and inflation, and if it is not accompanied by fiscal restriction, new equilibrium is achieved by real appreciation. Real appreciation lowers export and growth, and makes unemployment increase. But the problem is that adjustment via real appreciation (price changes) takes longer time than via nominal ER. As results from experiences, inflation has quite big inertia, and once the inflation spiral has started spinning, we need severe restrictions to curb inflation. Moreover, to achieve equilibrium in production, real exchange rate must undershoot equilibrium level because if production factors moved away, they would need some incentive to return back. And as inflation in EZ is generally quite low, to regain competitiveness inflation in such case would have to be below EZ level. (Temperton, 1998).

Graph 1: Standard deviation of average 12 month inflation of EU and EZ members (unweighted)



Source: Eurostat, own calculation of the author

Data reveals that inflation of EZ members was most converged in 1998, then some divergence occurred until 2000 and there was another period of convergence from 2000 to 2007; since 2008, we can see divergence again.

We can also see that enlargement of EU led – not surprisingly - to higher standard deviation of inflation in EU; but we can also observe convergence in the following years. Admission of Romania and Bulgaria again increased the heterogeneity of inflation in EU – it is the “jump” in 2007. For the increase of standard deviation in 2007 and 2008 mainly new members (EU10) are responsible. Inflation in some EU10 countries achieved two digit values in 2008 while in the core countries inflation remained stable. With the economic slowdown in 2009 inflation decreased as well as did the standard deviation.

Problematic issues of inflation criterion

Only low or no connection to real indicators is the first issue for which criterion can be criticized; and this criticism is the same for all Maastricht criteria.

A conflict rooted in Maastricht criteria is for some authors even more important. Dabrowski (2005) notes that there is a conflict between inflation and exchange rate criteria. By fixing the exchange rate for monetary authority, inflation became an exogenous variable. In the world with full capital mobility, central bank is not able to control money demand and inflation, and fix the exchange rate at the same time (e.g. Mankiw, 1992). And because part of liabilities stemming from EU membership are also

fully liberalized capital flows, fixing exchange rate is not compatible with autonomous monetary policy aimed to low inflation.⁷

Inflation differential can have varied sources. It can stem from productivity rate differential (Balassa-Samuelson effect), from changes in demand structure (in favour of non-tradable goods) or initial differences in purchasing power parities of particular currencies. Dabrowski (2005) estimates that new members states (NMS = EU10) with lower economic level can probably count (in case of a fixed exchange rate) with all of the sources of inflation mentioned above. In this fact there is a risk for fulfilling inflation criterion.

It is true that existence of +/-15% fluctuation band (and in case of appreciation probably even wider) gives relatively large space for appreciation. But there is no debate that exchange rate criterion interferes with inflation criterion and limits the room for manoeuvring monetary policy. But this argument can be weakened. Combination of inflation criterion and exchange rate stability creates reasonable requirement for stable real exchange rate. This combination therefore hides the only Maastricht requirement for real economic variables, and this can be hardly marked as a drawback.

The next problem may arise from the fact that reference value of criterion is calculated from simple arithmetic average of three EU members with lowest inflation. First issue is the relation to the whole EU and not only to EZ. By using EU as a referential group, linkage with inflation in Eurozone is not ensured; moreover, the referential group could be economically non-relevant and/or suffer from some asymmetric shock.⁸ If we take inflation differential into account, it can happen that reference value will be calculated from inflation of three countries outside EZ with inflation deeply under EZ and EU average and with minimal share on GDP.^{9,10}

This is not only hypothetical situation: for example, the referential group consisting, among others, of Sweden and Denmark, which were not part of Eurozone (ECB, 2004) in 2004, and in 2007, Malta, the smallest economy of EU (Eurostat), could be found among three countries with lowest inflation.

It is also possible that the country itself will be in the reference group, i.e. it will be within three countries with the lowest non-negative inflation, and will not meet the criterion.¹¹ It could happen for example in the following situation: the first (applicant)

⁷ Treaty of EU (EC, 2010) allows temporary control of capital movement, but only in special case and not as a standard measure of economic policy. To achieve the goals mentioned, only monetary policy is available. Fiscal restriction would not probably help, because it has long response time, relatively small impact on inflation and if combined with negative impact on growth, it could endanger fulfilment of budget criterion.

⁸ In Treaty of EU is stated "at most three" countries, in practice the reference group always consists of three countries.

⁹ Every country which creates a reference group has the same weight in the calculation of the reference value.

¹⁰ Because inflation in small countries is usually more variable than in the larger ones, we can expect that, *ceteris paribus*, small countries will be over-proportionally present in reference group.

¹¹ According Commission decision, countries with negative inflation are not considered as "best performers" in sense of price stability. But, as neither in Treaty nor in Protocol is no definition of

country would have inflation 2.5%, two other countries 0% and other countries 2.6% or higher. Reference value would be 2.33% and the first country would not meet the criterion despite of being in reference group.

Unstable reference value of a criterion can be seen as both an advantage and disadvantage simultaneously. The advantage of variability lies in the fact that if the whole EU is hit by a shock, the fulfilment is not endangered. Disadvantage can be seen in the fact that there is no clear target to be the guideline for economic policy. The only target could be the 1.5% inflation which ensures fulfilment of criteria every time. This level of inflation can be considered too low for converging countries.

The fact that there is requirement of sustainability in the criterion formulation which leaves quite a big room for institutions approving joining of EZ can be also seen as a problematic issue. Moreover, requirement of sustainability is defined vaguely. As a literal example, we could mention a country with a long history of a two-digit inflation which suddenly sees a sharp decrease of its inflation. New, potentially exceptional, low inflation could be considered as compatible with the criterion. But in practise, HICP prediction for next 12 months is required to be under the prediction of reference value for the same time. And these predictions are exactly the place where institutions creating Convergence report could apply its influence.

Further criticism of inflation criterion is stemming from the fact of existence of common monetary policy. There was no problem with the criterion before creating EZ because monetary policy of each country was carried out by independent central bank and inflation in each country was, at least mostly, affected by monetary and fiscal policy of national institutions. But as Jonáš (2006) notes, situation changed after euro adoption when monetary policy started to be carried out by ECB. In this context, the original formulation of inflation criterion, with linkage to all 27 countries, became meaningless.¹² First, ECB has its own definition of price stability (lower, but close to 2%) and second, inflation in EZ countries is not influenced by independent monetary policy, but by ECB policy of country-specific structural factors and shocks. It leads to relatively divergent inflation within EZ. In lower income countries with more rapid growth rate, inflation tends to be higher and vice versa. From the point of view of structural characteristics, the new member states (further NMS) can be compared to lower income, rapidly growing members of EZ. But according the inflation criterion, they are potentially required to carry out such a monetary policy which is not following the ECB policy, but hypothetical asymmetric shocks and structural characteristics typical rather, but not only, for slowly growing countries.

European Commission persistently argues for keeping current version of criterion, because of "principle of equal treatment" (De Grauwe, 2009). According to Staehr (2008), it is controversial if clinging on unchanged inflation criterion is in line with this principle. Controversy lies in nominal and real convergence and in the necessity to change tax system before entering the EU.

"best performers", there is uncertainty if this definition shall last.

¹² As mentioned by the former governor of ECB Duisenberg, measuring inflation in particular countries does not have much sense; inflation in Germany and France has the same meaning as inflation in Texas or California.

We should note that inflation pressures are highest in countries with fixed exchange rate against euro, while countries with floating rate can let the exchange rate appreciate. It looks quite ironical that countries with fixed exchange rate, and therefore monetary integrated with EZ, could be also furthest from membership in EZ.

Besides the simple criticism of inflation criterion, there are also suggestions for its modification. The starting point of most analysis is principle of equal treatment promoted by the EU. It used to be argued that from the time of criterion formulation, the economic and institutional environment changed significantly, and application of original formulation is not consistent with principle of equal treatment. Kenen a Meade (2003) hold the view that “equal” treatment should not be interpreted as “identical”, but rather as “equivalent”, and should take into account changes of economic and institutional environment.

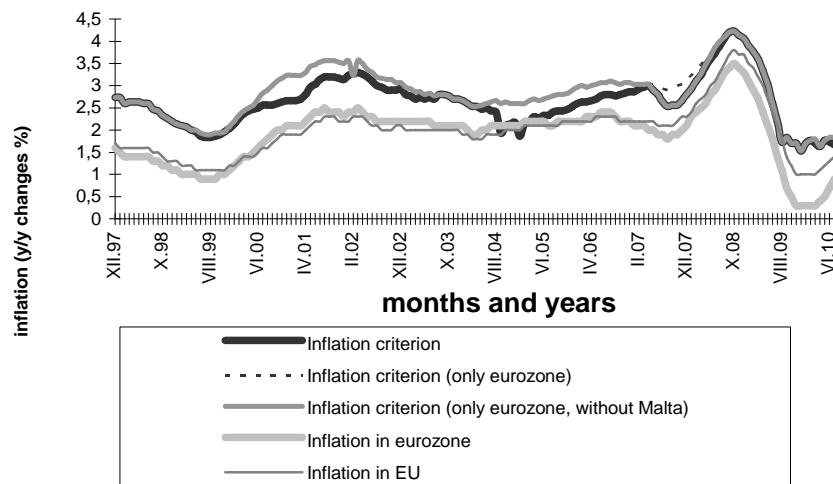
Dabrowski (2005) argues that from economical point of view it is clear that the criterion should evaluate the period before entrance of ERM II and should be abandoned for countries with long experience with currency board with euro as the referential currency.

For example Jonáš (2006) suggests two varieties of changes of a criterion. First is stemming from inflation target of ECB plus 1.5 p.p. Limit above the target of ECB would take into account different structural characteristics of NMS, mostly on process of convergence, connected with higher growth and therefore possibly higher inflation. Using inflation target of ECB would provide relatively stable reference value for inflation target, which would ease the decision making of national central banks, because it is definitely better to know what should be the inflation target. The next advantage of this modification is bigger resistance against country specific shocks in particular EU countries.

According to Jonáš (2006), maintaining the current text of criterion, but a change of definition of “three members with best performance in price stability” is the second proposal for criterion modification. Instead of countries with lowest inflation, it should be countries closest to ECB inflation target. Similar proposal introduces Dabrowski (2005), who suggests reference value to result from average inflation in Eurozone.

In spite of obvious drawback in inflation criterion, there are arguments against its change – some economical and some political. Rise of inflation because of real converge is not reason for revocation of criterion. The key question is, whether the criterion serves its purpose. If the aim of the criterion would be to test if country is willing to undergo unpopular steps, than there will be no reason for cancelation of the criterion. Political arguments are touching the process of approval of a potential new criterion. Though the arguments against the criterion could be valid, it is highly probable that any attempt to change would take long time with uncertain result. It is also not ensured that the final form of new criterion would be economically more effective and rational.

As can be seen from following graph 2, alternative criteria often provide higher reference value than current criterion.

Graph 2: Inflation criterion and its alternatives

Source: Eurostat, own calculation of the author.

In graph we illustrate development of inflation, inflation criterion and its alternatives. If we compare inflation in EU and EZ, we can, with no big surprise, see high correlation – coefficient of correlation is 0.93. For most of the time, the average inflation in EZ was higher than in whole EU, but only slightly, and average value differs only by 0.03 percentage point. But situation changes if we focus on alternative criteria. From graph we can see that if the reference group consisted of whole EU, the reference value of criterion would be lower for the most of the time, compared to criterion calculated only from EZ members. The criterion based only on EZ is sometimes higher by more than 0.7 p.p. than according to the current criterion. A specific case, and one we have already mentioned, is the influence of Malta on reference value. Malta is a part of Eurozone, but its economic importance is really insignificant.¹³ Nevertheless, in 2007 Malta was one of three EU countries with lowest inflation, and as such influenced the value of inflation criterion, concretely it lowers the value by 0.4 percentage points (further p.p.). If we consider that Lithuania was not allowed to join Eurozone because of exceeding reference value by 0.1 p. p, such big influence by economically marginal country is highly debatable.

Situation in 2004 and 2005 is worth mentioning, too - in three months, the reference value of criterion was lower than average inflation in EZ and in one month even than in whole EU. In this case we simply cannot speak about convergence because countries would be forced to “undershoot” inflation to which it should converge. It would be odd to call this criterion the convergence one. It should be noted that the founding members of EZ could not face such a situation.

¹³ Weight of Malta in calculation of inflation in EZ is 0,81 per mille (source: eurostat).

As analysis reveals, inflation criterion is not able to evaluate nominal converge with Eurozone. It is focused on whole EU, and its unstable and unpredictable value is not providing any guidance to an attempting country. Current criterion could lead to divergence of EZ instead of convergence to it.

Fulfilling of inflation criterion – case of Czech Republic

When we have a look at the inflation criterion from the point of view of MNS, we can see other issues. The first issue being the fact that inflation is calculated according the HICP and includes also highly volatile prices, such as food and energy. Sharp increase of prices of these commodities can lead to problems with inflation and fulfilling the criterion because in MNS (and the Czech Rep. not excluded) industry is still more energy-intensive than in EZ. Yet another risk lies in price regulation in NMS, because inflation can rise due liberalization of prices and also endangers fulfilling of a criterion.

For NMS it is important that higher growth used to be accompanied by higher inflation. Due to Balassa-Samuelson effect, it could be also more difficult to fulfil the criterion. De Grauwe (2003) notes that if there are differences in productivity within union, than there must also be differences in inflation. But it does not mean that all differences in inflation are caused by the Balassa-Samuelson effect. Inflation differential can be result of asymmetric shock and so on. We can actually say that inflation criterion is not suitable for NMS. The same fear expresses Jonáš (2006 who says that inflation criterion forces NMS to target inflation too low. Targeting such a low inflation may require too restrictive a monetary policy or use of administrative tools (administrative prices), i.e. using of methods which do not prove ability to contain low inflation, but can lead to an interest rate increase, output volatility and other deformations.

Fulfilling of criterion is definitely not impossible. As Staehr (2008) shows on case of Slovakia, using of active monetary policy is an accepted way of how to fulfil both criteria and the requirement of sustainability “on the spot”. According Staehr (2008), this is the shortcut for countries, where appreciation would be no problem for competitiveness. Revaluation also seems to be a way how to meet the criterion (Staehr, 2008; Darvas – Szapary, 2008).

The fear of current members of rising inflation by NMS is unjustified. ECB targets average weighted inflation, and the weight of NMS (with exception of Poland) is small (see Table 3). Their impact on inflation in EZ would be rather small. So the base argument is no longer meaningful.

Table 2: Weight of countries for inflation calculation in EU (per mille, in year 2010)

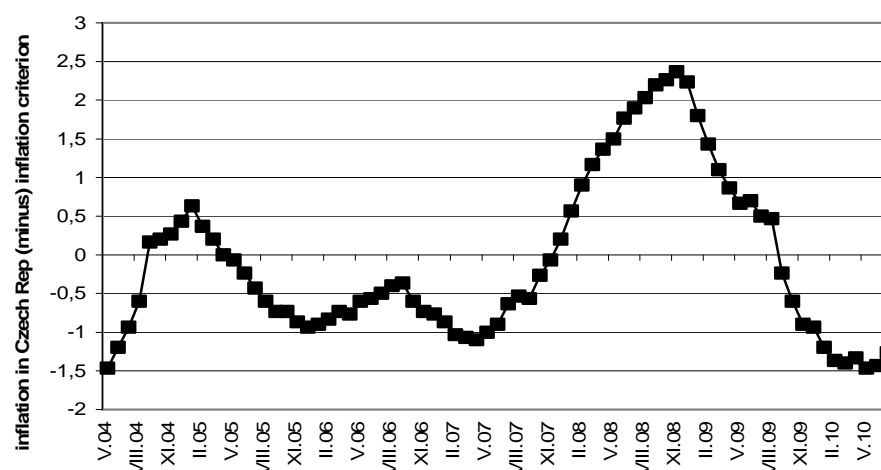
Eurozone (EZ11-2000, EZ12-2006, EZ13-2007, EZ15-2008, EZ16-2010)	699.25
Bulgaria	7.74
Czech Republic	14.39
Denmark	10.03
Estonia	1.77
Latvia	2.70
Lithuania	5.07
Hungary	12.81
Poland	49.94
Romania	22.46
Sweden	18.60
United Kingdom	155.25

Source: Eurostat

As we can see from table, the weight of 9 countries (in 2010, without countries having opt-out) is 13.5%, without Poland only 8.6%. In this light, we can relativize the fear of the inflation in the Eurozone caused by the NMS.

We must notice that fulfilling of inflation criterion has advantages, too. Lower inflation in the long run is interconnected with lower interest rates, and greater stability of prices, too, which could encourage economic growth. But this advantage is already present in the Czech Republic, where inflation is rather low.

Our analysis of possibilities of meeting criterion in Czech Republic is starting by historical development. The relation between inflation and inflation criterion is illustrated in following graph. Values below zero mean fulfilment of criterion and values above zero mean inflation above the referential value.

Graph 3: Difference of inflation in Czech Republic and inflation criterion. (in percentage points)

Source: Eurostat, own calculation of the author

As we can see, in a period starting with joining EMU and ending in 2007, with a exception lasting for about half a year at the end of 2004, the Czech Republic fulfilled the inflation criterion. The beginning of 2008 is the breaking point connected with inflation rising significantly above the referential value, where inflation remained until September 2009. Sharp increase of inflation was caused by factors out of reach of monetary policy. Therefore, we can say that CNB would have probably been able to keep inflation within the limits of the requirements of inflation criterion. Monetary policy therefore should not be anyproblem for fulfilment of criterion, but other possible drawbacks exist. First risk lies in government policy leading to price increase. This development seems to be improbable in situation when a country is trying to access Eurozone. The second risk would be a steep increase of energy prices, which could reflect in inflation in the Czech Republic more than in another, more developed and less industrial country. A potential collision with exchange rate is possible in Czech Republic, too.¹⁴

Fiscal criteria

The reason for implementing fiscal criteria into requirements was and still is a subject of debates.¹⁵ Prior to signing of the Maastricht treaty, most experts emphasized a more active role of fiscal policy in union, where exchange rate adjustment mechanism and

¹⁴ More in the chapter on the exchange rate criterion.

¹⁵ Maastricht treaty contains reference values which must be achieved, or which must not be exceeded. But there is also "escape clause" which allows a country to enter EZ even if the reference values are exceeded. In case if budget deficit escape clause can be applied if the deficit/GDP ratio is declining continually and actual value is close to reference value, or if the exceed is only exceptional and actual value remain close to reference value. In case of debt criterion, escape clause can be used, if debt/GDP ratio je declining sufficiently and is reaching reference value in satisfactory pace.

national monetary policy will not be the option. The reversed approach, i.e. monetary union requires monetary restriction that is rooted in Maastricht criteria and Stability and Growth Pact (SGP) is based on suppose presupposition that excessive deficits can lead to debt monetization. Monetary authorities, mainly Bundesbank, were afraid of high debt in some countries, mainly in Italy – its debt was 18% of European GDP (Eijffinger - De Haan, 2000). There were concerns that explicit or implicit function of lender of the last resort would force ECB to apply indirect monetization in case of bank or debt crisis. These concerns are reflected not only in the criteria, but also in an “excessive deficit procedure” rooted in SGP. But SGP proved to be only “toothless” declaration, because the group of “the bad” turned out to be larger than the group of “the good”, and here was nobody to approve sanctions.¹⁶ Despite the development after 2008 proved this fear to be legitimate, careless approach of the European Commission and combination of other factors led to factual monetization.

Fulfilling the fiscal criteria by founding members of EZ was more problematic than in the case of inflation. According to Wyplosz (2000), restrictive monetary policy, aimed to decrease inflation, create environment of slow growth with high unemployment and without job creation, which had side-effect of lower tax income and led to other restrictive measures. After creation of EZ, some divergence of fiscal indicator occurred, and were caused probably mainly by insufficient control mechanisms of the EU.

Problematic issues of the fiscal criteria

First problem of the fiscal criteria is that there is no connection between development before and after joining EZ. According to Wyplosz (2000), definition of excessive deficit would be based on sustainability, but such definition is not easy. Maastricht approach, which insists on arbitrary chosen indicators, is, according to Wyplosz (2000) quite unsophisticated.

Referential values of fiscal criteria were also chosen because it represented average values for EU countries in Maastricht negotiations.^{17,18} Some economical relevance of the criterion can be found in the so called “golden rule”: government could borrow for investment spending that is not harmful, and this is usually 3%. The logics of the golden rule is based on calculation that if the starting point is a debt of 60% GDP, then with 3% of real GDP growth, 2% inflation a 3% deficit, debt share on GDP remains stable at the starting position. Of course, there exist other combinations of indicators that ensure stable debt ratio. Golden rule can be criticized for 3% of investment alone, but even if we ignore this fact, this rule ignores socially productive expenditures such as education, and reversely can include irrational investments.¹⁹ Artis (2002) disputes that despite arbitral reference values, fiscal criteria, as well as SGP, has meaningful targets and are “a good thing”.

¹⁶ It leads to a paradoxical situation that applicants must fulfill more severe conditions than current members.

¹⁷ It is remarkable that after entering EZ, fiscal position of most countries worsened.

¹⁸ Not only the EU has quantitative limits on budget policy. The practice is that particular countries must have balanced budget, and obligations can be issued only for specific project.

¹⁹ Logic of golden rule is based on calculation that if in country debt/GDP ratio is 60%, than growth of 3%, inflation of 2% and annual deficit of 3% debt ratio remain stable at 60 % level. But of course there are other combinations of the indicators mentioned which ensure stable debt ratio.

Important point, according to Artis (2003), was a focus on countries whose fiscal history was the reason for concerns about its solvency. Criteria involved, according to Artis (2003), strong stimulus for corrective actions. As subsequent development showed, his view was too optimistic. Admission into EZ did not change behaviour of countries – countries which “liked” debt financing continued in this practice. Moreover, decline of interest rates allowed cheaper credits and postponed or even worsened the problems.

Government debt prior to EMU creation and in the following decade is in following table.

Table 3: Government debt of EZ countries (% GDP)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Yrs, of meeting criterion
Belgium	117.1	113.6	107.8	106.5	103.5	98.7	94.4	92.2	87.9	84	89.6	96.2	96.8	0
Germany	60.3	60.9	59.7	58.8	60.3	63.8	65.6	67.8	67.6	65.1	65.9	73.5	83.2	2
Ireland	53.6	48.5	37.8	35.5	32.1	30.9	29.6	27.4	24.8	25	44.4	65.6	96.2	11
Greece	94.5	94	103	104	102	97.4	98.6	100	106	105	111	127	142	0
Spain	64.1	62.3	59.3	55.5	52.5	48.7	46.2	43	39.6	36.1	39.8	53.3	60.1	10
France	59.4	58.9	57.3	56.9	58.8	62.9	64.9	66.4	63.7	63.9	67.7	78.3	81.7	5
Italy	115	114	109	109	106	104	104	106	107	104	106	116	119	0
Cyprus	58.6	58.9	58.8	60.7	64.6	68.9	70.2	69.1	64.6	58.3	48.3	58	60.8	2
Luxembourg	7.1	6.4	6.2	6.3	6.3	6.1	6.3	6.1	6.7	6.7	13.6	14.6	18.4	12
Malta	53.4	57.1	55.9	62.1	60.1	69.3	72.4	69.6	64.2	62	61.5	67.6	68	0
Netherlands	65.7	61.1	53.8	50.7	50.5	52	52.4	51.8	47.4	45.3	58.2	60.8	62.7	9
Austria	64.8	67.3	66.5	67.3	66.7	65.8	65.2	64.6	62.8	60.7	63.8	69.6	72.3	1
Portugal	50.4	49.6	48.5	51.2	53.8	55.9	57.6	62.8	63.9	68.3	71.6	83	93	7
Slovenia				26.7	27.9	27.3	27.4	26.7	26.4	23.1	21.9	35.2	38	4
Slovakia	34.5	47.9	50.3	48.9	43.4	42.4	41.5	34.2	30.5	29.6	27.8	35.4	41	2
Finland	48.4	45.7	43.8	42.5	41.5	44.5	44.4	41.7	39.7	35.2	34.1	43.8	48.4	12

Source: Eurostat, own calculation of the author

Note: bold are values in the year of joining EMU

From the Table 3 it is apparent that lot of countries did not meet the criterion. Six of eleven founding members of EZ, and subsequently Greece, too, exceeded the debt criterion. Even with application of escape clause, which allowed debt to exceed 60% of GDP, if it “is decreasing significantly and approximate to referential value in satisfactory pace” (art. 126 Treaty of EU, see EC, 2010) Germany, Greece and Austria should be allowed to enter EZ, because its debt exceeded 60% and was rising. Also decrease of debt in Italy and Belgium cannot be, according De Grauwe (2009), considered as “satisfactory” even with a great portion of imagination. Escape clause could be, at one time, applied only on Spain and Netherlands, and later on Malta. As showed afterwards, some countries fulfilled criteria in a “non-standard” way or even dishonestly. Buiter et al. (1993) note that fulfilment of the deficit criterion was achieved by the means of specific, one-time measures. In case of Greece even a book swindle. In

other countries (Belgium, Italy, France), the real deficit was hidden by “creative” book keeping. Italian budget included special euro tax for 1997 which should be returned in following years, French government received irregular dividend form France Telecom in exchange for pension liabilities, irregular payments were received also by the government of Denmark (from TeleDenmark), Austria (from Postsparkasse) or Portugal (from Banco Nacional Ultramarino). There were suspicions in many countries that infrastructure expenditures were transferred from 1997 budget either to 1996 budget (decline of deficit than seemed to be sharper), or postponed (but not necessarily cancelled). Even in Germany, traditionally a fiscally honest country, there was suspicion that in 1997, the minister of finance tried to force Bundesbank to overvalue golden and foreign exchange reserves. Eurostat, officially responsible for accounting rules of the EU, rejected accepting overvaluation of reserves as a budget revenue, but other operations were accepted.

Deficit criterion meant smaller problem, and as the Table 4 shows, only Greece and Spain exceeded the reference value of 3% GDP.

Table 4: Budget deficit in EZ (in % GDP)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Years of meeting criterion
Belgium	-0.9	-0.6	0	0.4	-0.1	-0.1	-0.3	-2.7	0.1	-0.3	-1.3	-5.9	-4.1	11
Germany	-2.2	-1.5	1.3	-2.8	-3.7	-4	-3.8	-3.3	-1.6	0.3	0.1	-3	-3.3	8
Ireland	2.4	2.7	4.7	0.9	-0.4	0.4	1.4	1.6	2.9	0.1	-7.3	-14.3	-32.4	10
Greece			-3.7	-4.5	-4.8	-5.6	-7.5	-5.2	-5.7	-6.4	-9.8	-15.4	-10.5	0
Spain	-3.2	-1.4	-1	-0.6	-0.5	-0.2	-0.3	1	2	1.9	-4.2	-11.1	-9.2	9
France	-2.6	-1.8	-1.5	-1.5	-3.1	-4.1	-3.6	-2.9	-2.3	-2.7	-3.3	-7.5	-7	7
Italy	-2.8	-1.7	-0.8	-3.1	-2.9	-3.5	-3.5	-4.3	-3.3	-1.5	-2.7	-5.6	-4.6	6
Cyprus											0.9	-6	-5.3	1
Luxembourg	3.4	3.4	6	6.1	2.1	0.5	-1.1	0	1.4	3.7	3	-0.9	-0.7	13
Malta											-4.5	-3.7	-3.6	0
Netherlands	-0.9	0.4	2	-0.2	-2.1	-3.1	-1.7	-0.3	0.5	0.2	0.6	-5.5	-5.4	10
Austria	-2.4	-2.3	-1.7	0	-0.7	-1.4	-4.4	-1.6	-1.6	-0.9	-0.9	-4.1	-4.6	10
Portugal	-3.4	-2.8	-2.9	-4.3	-2.8	-2.9	-3.4	-5.9	-4.1	-3.1	-3.5	-10.1	-9.1	6
Slovenia										-0.1	-1.9	-6	-5.6	2
Slovakia												-8	-7.9	0
Finland	1.6	1.6	6.9	5	4.1	2.6	2.4	2.8	4	5.2	4.2	-2.6	-2.5	13

Source: Eurostat, own calculation of the author

The escape clause can be applied in case of excessive deficit, too (art. 126, EC, 2010). It could be applicable in case of Spain, but in case of Greece it is highly controversial. The key question is how it is possible that countries which definitely did not meet the criteria were allowed to join Eurozone. As De Grauwe (2009) claims, the answer can be found in political background of the whole project of monetary union. In the 1990s,

most countries had political will to continue with monetary integration. And as date of founding EMU was coming in, it was obvious that a lot of countries would not meet the criteria. Only few “marginal” countries would succeed and the whole project would have been cancelled. As De Grauwe (2009) says, politics won, and “annoying” Maastricht criteria was set aside

Fulfilling of the fiscal criteria – case of the Czech Republic

Due to relation to GDP, meeting the criteria is easier in faster growing countries. On the other hand, growth could mask structural problems of budget, which would be revealed after the phase of growth was over. This is nowadays case not only of the Czech Republic.

Table 5: Budget deficit in Czech Republic

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Budget deficit (% GDP)	-5	-3.7	-3.7	-5.7	-6.8	-6.6	-3	-3.6	-2.6	-0.6	-2.7	-5.9
Budget deficit (Billions. CZK)	-100	-77.3	-81.5	-131.9	-166.8	-170.6	-83.3	-106.7	-84.9	-23.9	-100.3	-215
Government debt (% GDP)	15	16.4	18.5	24.9	28.2	29.8	30.1	29.7	29.4	29	30	35.4

Source: Eurostat

As the Table 5 shows, at least in mid-range period, Czech Republic would have no problem with meeting debt criteria. In case of the budget criterion we can see a possible problem – Czech Republic met the requirements only in 2006 and 2007, which were years of an outstanding growth. When the country is attempting to join EZ and is not meeting these criteria, the political will for budget cut is needed. Here lies the greatest risk – cuts are not what can bring political points. Greece can serve as an example as it preferred faking statistics, or France and Germany, which enforced ignorance of SGP.

For Czech Republic, the main risk lies in a potentially painful period of reforms which could lower economic growth (in the short run), increase unemployment and lead to strikes in most hit sectors. But if reforms pass through successfully, Czech Rep. could gain from better rating and lower debt service.

How easy or hard the meeting of criteria will be, it also depends on approach of the Commission, or if the Commission evaluates indicators with some benevolence. In the context of attempt of some countries to enter EZ at the end of 2008, De Grauwe (2009) notes that a clear declaration came from Frankfurt: “criteria for new members of EU, which want to enter Eurozone, should not be eased. Sharp inherency on rules should be kept, in order not to make a threat to the whole Eurozone”. We can therefore expect that benevolence time is over, and it will be rather replaced with strictness.

Exchange rate criterion

As a result of decision ratified at the meeting of commission in Amsterdam in June 1997, mechanisms ERM II replaced original mechanism (Eijffinger - De Haan, 2000). In comparison to ERM, ERM II was designed as an asymmetric, euro-centric exchange

rate mechanism. Its main feature is wide fluctuation band $\pm 15\%$ between euro and a participating currency. Among signs of asymmetry we can also include the fact that it is obligation of countries outside EZ to adapt their fiscal and monetary policy.²⁰ ERM II formalizes relation between EZ and other EU members (Eijffinger - De Haan, 2000). According to Maastricht treaty, each member who does not participate in monetary union must consider its exchange rate policy to be a matter of common interest. In principle it is also valid for countries with opt-out, but in fact participation in ERM II is not obligatory.

The exchange rate criterion was adopted without any major controversy. The official aim of ERM II, and therefore of this criterion, too, is to ensure smooth working of common market and stability of euro because it will protect against competitive devaluations a support convergence, mainly of long term interest rates (Eijffinger - De Haan, 2000).

The requirement of two years membership in ERM II was probably set to test central parity and to test mutual consistency of economic policies. But we must notice that at the time EZ was created, three countries (Austria, Finland and Italy) had been in ERM II for a shorter time (Dabrowski, 2005) which again uncovers the political background of the Maastricht criteria, and the whole project of monetary union.

Problematic issues of the exchange rate criterion

According to the neoclassical approach, an exchange rate arrangement has only fractional impact on real economy performance (Stockman, 1999). Evidence from international monetary system supports this assumption. It seems that credibility of exchange rate arrangement depends on credibility provided by a government. Government structures and institutions that ensure enforceable law and abiding of rules, plus a political system with credible non-inflationary policy are presumptions of sustainable exchange rate (Tavlas, 2003 in Hochreiter - Tavlas (2004).

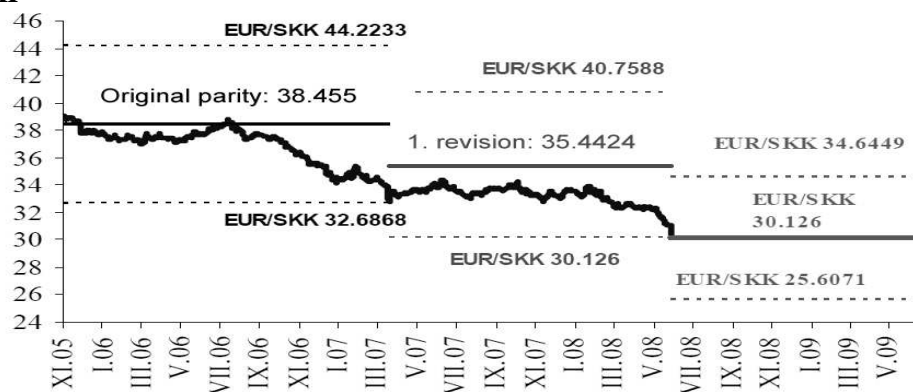
The first problem of ERM II and the exchange rate criterion is context in which it was arranged and created. Twenty years ago, world was significantly less interconnected and globalized, and capital mobility was much more lower (Dabrowski, 2005). ERM II that is in fact soft peg can be perceived as highly vulnerable to speculative attacks, with all accompanying problems. Risk is increased by the fact that EU membership is conditioned by fully liberalized financial account, which could lead to higher volatility of exchange rate as investment sentiments change.

For example Buitier - Grafe (2002) criticize the insisting on the criterion and argue that a small share of NMS will have minimal impact on current members of EZ, whatever kind of adjustment problems would emerge. They also claim that there is no evidence that quick entrance into EZ would cause bigger adjustment pains than if the admission was postponed. But there is no proof of their conclusion and it is not exactly clear how they reached to it.

²⁰ Analogically to ERM, ERM-II too includes engagement to unlimited intervention of ECB and national central bank on borders of the band, with the exception that price stability target would be endangered.

There is yet another problem: interpretation of the criterion; its relation to ERM was been already void in the time of creation and widening of fluctuation band in 1993 increased the vagueness of the criterion. According to the article 3 of the Protocol of convergence criteria “criterion of participation in ERM II...means that member state must respect normal fluctuation band of exchange rate mechanism....without dramatic tension. Member state namely must not devaluate central parity against euro from its own initiative” (ECB, 2004). The definition of exchange rate stability stated above was a subject of controversy. The first issue was the phrase “normal fluctuation band”. After ERM crisis in 1992 and 1993, the fluctuation band was widened to +/- 15 %. First, ECB and Commission indicated that „normal” means spread +/- 2.25 % around central parity (see Taylor, 2005), but countries which entered ERM-II in 2004 (Estonia, Lithuania, Slovenia) were formally obliged to follow the band of +/- 15 % (ECB, 2004). According to Taylor (1995), there is no doubt that authors of Treaty referred to narrow fluctuation band of ERM, which the Committee for the Study of Economic and Monetary union considered a necessary condition for Eurozone (see Delors et. al, 1989). But as narrow band was never restored after 1993, it could not be used as a criterion. The Commission decided that *de facto stability* is important, without providing a precisedefinition of what does it mean (Ravasio, 1994 in Taylor, 1995). Another issue is also the phrase “without dramatic tension”. It seems that currencies must remain within the +/-15% band, and there should not be any strong fluctuations (Ravasio, 1994, in Taylor, 1995). Admission of Slovakia, which revaluated the central parity twice, and it wasn't considered as violating of criterion (Graph 4: Development of exchange rate SKK/EUR and of central parity) was yet another uncertainty. The first revaluation occurred in 2007 and the second in 2008, both less than two years before euro adoption, and could be considered a failure because Slovakia had not met the requirement of two years. But despite this development, Slovakia was allowed to join EZ, which caused confusion in criterion interpretation.

Graph 4: Development of exchange rate SKK/EUR and of central parity of ERM II



Source: Čechovičová (2008)

As we can see, revaluation only few months before euro adoption was accepted by Commission, and it brings about speculations that there is more than a 15% space for revaluation. In this case, some arguments against the Maastricht criteria would lose its

meaningfulness; reversely, some arguments for the criteria would be also invalid. In case of possibility of revaluation, the criterion could be best interpreted as, and only as, a means of protection of current members against countries with undervalued currency and unmerited competitiveness advantage. But there exists uncertainty if this attitude of the Commission founded precedence for future decisions or if it was only a one-time decision. An asymmetric view of Commission on appreciation and depreciation can reflect the real appreciation trend in NMS, but on the other hand, it creates incentive for entrance with undervalued currency.

Fulfilling of exchange rate criteria – case of Czech Republic

Role of ERM-II in process of potential euro adoption is a controversial issue. According to the opinion of ECB council, ERM-II provides meaningful frame for combination of nominal and real economic policy, and should not be considered only as a waiting room for euro. ERM-II should be considered a useful arrangement, in which most issues of economic policy, needed for euro adoption policy, can be solved (ECB, 2002 in Hochreiter – Tavlas, 2004). The length of participation should be judged in accordance with easing convergence process, and not only by minimal requirement of two year (Papademos, 2005). Papademos obviously meant that even longer time could be helpful, but there are also opposite opinions. In converging countries, including Czech Republic, inconsistency between inflation and exchange rate criterion (see above) can exist, and it could raise doubts about rationality of this requirement as precondition for euro adoption. Dabrowski (2005) concluded that the criterion can be best achieved either in fix exchange rate (further ER) arrangement or within free floating rate. The wider the fluctuation band is, the greater room for inflation targeting, which, in case of its credibility and accompanied by fiscal discipline, could lead to smooth meeting of the inflation and interest criteria without volatility of ER. Because nobody could rule out the possibility of speculative testing of central parity, currency board seems to be a better option. Currency board can ensure quick convergence of inflation and interest rates, and moreover, there is not (or at least not so big) uncertainty about the final rate of conversion to euro.²¹

The attitude of the Czech Republic, or of CNB in particular, has been stable at least since 2003, when a then member of the central bank council, Jan Frait (2003), said: “I personally see no value added in using of ERM II. Czech Republic is stabilizing inflation by inflation targeting and ERM II can hardly be mechanism of ER stabilization. The width of band (+- 15%) is too wide...”

According to the experience of Slovakia, it seems that there will be relative freedom in setting of central parity for ERM II, and therefore final conversion rate, too. But it does not mean that finding such a rate is easy. Choice of central parity and, more importantly, of final conversion rate to euro, will always be more or less arbitrary and will include risk of mistake. Should central parity in ERM-II be undervalued, country can have problems with fulfilment of the inflation criterion. In case of overvalued parity, country

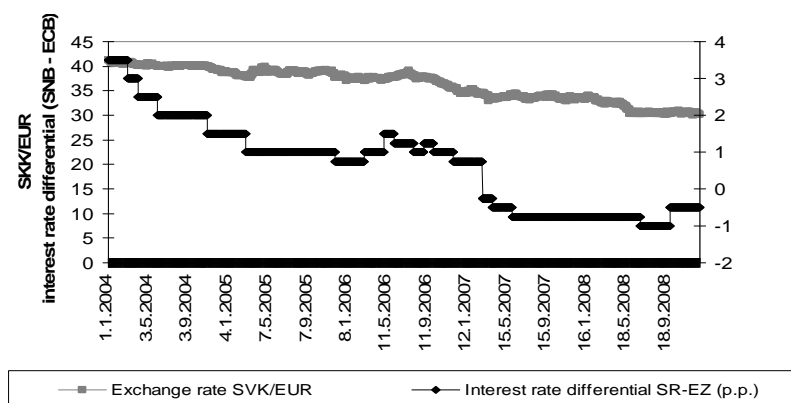
²¹ Dabrowski (2005) suggests evaluating a two-year test retroactively in case of countries with currency board with euro as reference currency, or with stable fix ER. Also suggest unilateral euroization as one of the possible ways of ERM-II membership.

could suffer from lower employment and product decline, and there is a risk of the balance of payment disequilibrium. NMS could have some advantage because in case of faster growth, there is room for some overvaluation of central parity.

The aforementioned conflict between the inflation criterion and the ER criterion could be seen as not so severe. Because both criteria are defined with some scope, there are a lot of combinations of values of inflation and ER which could be (ex post) considered as compatible with the Maastricht criteria. Because of wide scope of combination of inflation and exchange rate, the risk of conflict is quite low, but not zero. According to Jonáš (2006), a conflict can occur in case exchange rate appreciates to the borders of band and depreciation would require lowering of the interest rates, which could endanger inflation target. This problem could be even worse if the inflation were above the level required. Moreover, it is better to consider a relation between inflation and exchange rate criterion as complementary rather than competitive. This approach brings the only real value into the criterion, because combination of stability of inflation and nominal exchange rate gives requirement of stable real exchange rate.

As stressed by Coricelli (2002), exchange rate chosen as the parity in the ERM II is becoming usually the ceiling for ER movement, and ER tends to move toward lower (appreciated) part of the band. The reason for this tendency is as follows: Because the central parity must not be devaluated and expectation of incapability of the euro adoption would lead to self-fulfilling process of devaluation, central banks tend to promote strong currency mainly by higher interest rates, which keep currency within the lower part of band²². Responsible for this development is the so called “convergence game”, where foreign investors speculate on parity which will be chosen for ERM-II and on capital earnings flowing from higher nominal interest rates (Coricelli, 2002).

Graph 5: Interest rates differential between Slovakia and EZ and SVK/EUR development



Source: *www.oanda.com, eurostat, own calculation of the author*

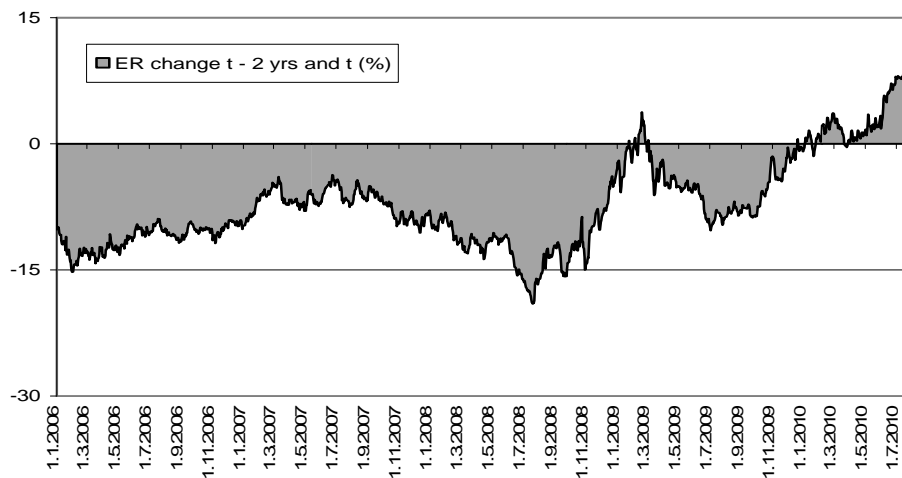
²² Central parity can be preserved or revaluated at the end of ERM-II membership.

As shown in Graph 5, development in Slovakia did not correspond with the Coricelli's theory. Two years before euro adoption, Slovak monetary policy was less restrictive than ECB policy, and despite this there was perpetual appreciation of Slovak crown and central parity was revaluated twice. It seems that financial market believed in setting the conversion rate in the lower part of the fluctuation band. But we must notice that situation in 2008, in the time of decision about the conversion rate, was specific in many aspects, and sharp appreciation occurred not only in Slovakia, but many other NMSs.²³

CNB steadily advocated only a two-year membership in ERM-II. According to CNB, longer membership is not necessary, nor gainful for maintaining macroeconomic stability, because ERM-II membership, contrary to irrevocably fixed rate, does not eliminate the risk of exchange rate fluctuation (ČNB, 2003).

If we analyse the history of Czech crown development, we can see some intervals when Czech Republic would not meet the criterion.

Graph 6: Exchange rate change between $t - 2$ years and t (in %)



Source: *www.oanda.com, own calculation of the author*

If we take into account change of CZK/EUR between two time spots with span of two years between each other, there are episodes of change (here appreciation) being bigger than required 15%. In particular, we have 66 incidents whilst 62 of them are from summer 2008 (i.e. change against summer 2006) and 4 are from the end of January 2006. If the Czech Republic had entered ERM-II in 2006, it would not have met the requirement of staying within $\pm 15\%$ band. The development between July 2008 and July 2010 could be also seen as not compatible with the criterion because the volatility of CZK/EUR could be seen as too high. But the development in 2008 and the following

²³ In 2008, dollar was sharply depreciating against world currencies and capital temporarily moved i.a. into Central European countries. It led to a sharp appreciation of regional currencies which were reversed at the end of 2008, when conversion rate of SVK to EUR was already set.

years was highly unusual, and therefore we can conclude that the Czech Republic would, at least in stable global environment, meet the criterion.

Interest rate criterion

The interest rate (further IR) criterion can be justified as a forward-looking indicator of inflation convergence between economies (Taylor, 1995). In the long run, the nominal IR differential is an approximate indicator of expected inflation differential (in case there are no capital movement regulations). Because in the most countries long-term IRs were determined by conditions of the government obligation market, the criterion could be understood as an indicator of confidence of fiscal position, and as such could be interpreted as complementary to the fiscal and inflation criteria.

Problematic issues of the interest rate criterion

The criterion can be criticized from two points of view. The first point is argument that the allowed deviation of 2 p.p. is too lax for the test; within ERM mechanism, the IRs differ less, even if the expected inflation differential was quite large (Bishop 1991c, in Taylor, 1995). Long-term IRs within ERM were close together until market believed that the given rules would lead to lowering of the inflation differential. But it proved not to be a valid premise, as the crisis of ERM in 1992 and 1993 showed (Taylor, 1995). The crisis of ERM showed that the IR differential is not a reliable indicator of convergence, and small divergence of IR can give too optimistic a picture about the given situation. But we can also criticize the criticisms mentioned above for being too sceptical. If proximity of the IRs does not guarantee sustainability of convergence, it provides at least some guidelines. If the interest rates differed too much, it should be a warning either in case of inflation or in case of fiscal position and eventually in both cases that the long-term convergence is not expected.

The second criticism lies in the fact that the rule for criterion calculation gives random results, albeit not as random as in the case of the inflation criterion. Within the Eurozone (or at least within countries with low inflation), interest rates were quite close to each other, and it is not probable that outside the EZ interest rates could be significantly lower.

Linkage to the countries with lowest inflation is also debatable because as it shows, correlation between inflation and long-term IRs is not high. Interest rates are influenced by fiscal policy and credibility, in meaning of debt repaying. There is a risk that countries (possibly outside EZ) with low economic performance, low inflation and big fiscal problems could emerge, which could form reference group with relatively high interest rates. In this case the criterion would lose its purpose of ensuring convergence towards EZ.

Fulfilling of the interest rate criterion – the case of the Czech Republic

Fulfilment of the IR criterion to the large extent depends on confidence of the financial markets. If the fiscal position of the Czech Republic will be sustainable with stable perspective, it is probable that the IR will be decreasing.

Relatively high informative value has differential from the German government bonds. With only sporadic exceptions, the yield of the German bonds was lowest in the EU, and therefore we can use the Germany as lower limit for criterion calculation. In fact, there

is almost zero probability that criterion value will be lower than two percentage points above IR in Germany. Contrary, we can await rather higher values.

Table 6: Interest rate differential against German long-term government bonds (2000-2008)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010 ²⁴
EU(27)							0.32	0.35	0.55	0.98	0.91
Eurozone	0.17	0.2	0.13	0.07	0.08	0.07	0.08	0.1	0.3	0.73	0.62
Belgium	0.33	0.33	0.2	0.11	0.11	0.08	0.05	0.11	0.42	0.61	0.68
Bulgaria				2.38	1.32	0.52	0.42	0.32	1.38	3.20	3.99
ČR		1.51	0.1	0.05	0.78	0.19	0.04	0.08	0.63	1.19	1.62
Denmark	0.38	0.28	0.27	0.24	0.26	0.05	0.05	0.07	0.3	0.24	0.37
Estonia	5.21	5.35	3.64	1.18	0.35	0.82	1.25	1.87	4.16	-	-
Ireland	0.25	0.21	0.23	0.06	0.04	-0.03	0.01	0.09	0.53	1.98	2.00
Greece	0.83	0.5	0.33	0.2	0.21	0.23	0.31	0.28	0.81	4.78	1.95
Spain	0.26	0.32	0.18	0.05	0.06	0.03	0.02	0.09	0.37	1.18	0.76
France	0.13	0.14	0.08	0.06	0.06	0.06	0.04	0.08	0.24	0.36	0.43
Italy	0.31	0.39	0.26	0.18	0.22	0.2	0.29	0.27	0.69	1.10	1.09
Cyprus		2.83	0.92	0.67	1.76	1.81	0.37	0.26	0.6	1.67	1.38
Latvia		2.77	0.63	0.83	0.82	0.53	0.37	1.06	2.43	8.26	9.14
Lithuania		3.35	1.28	1.25	0.46	0.35	0.32	0.33	1.61	2.94	10.78
Luxembourg	0.25	0.06	-0.07	-0.03	0.14	0.01	0.15	0.34	0.61	0.46	1.01
Hungary		3.15	2.31	2.75	4.15	3.25	3.36	2.52	4.24	4.37	5.90
Malta		1.39	1.04	0.97	0.65	1.21	0.56	0.5	0.81	1.35	1.32
Netherlands	0.14	0.16	0.11	0.05	0.05	0.02	0.02	0.07	0.23	0.26	0.46
Austria	0.29	0.27	0.18	0.08	0.11	0.03	0.03	0.07	0.27	0.41	0.71
Poland		5.88	2.58	1.71	2.86	1.87	1.47	1.26	2.07	2.92	2.90
Portugal	0.33	0.36	0.22	0.11	0.1	0.09	0.15	0.21	0.53	1.91	0.99
Romania							3.47	2.91	3.7	4.59	6.47
Slovenia			3.94	2.33	0.64	0.46	0.09	0.31	0.61	0.97	1.15
Slovakia		3.24	2.16	0.92	0.99	0.17	0.65	0.27	0.72	1.02	1.48
Finland	0.22	0.24	0.2	0.06	0.07	0	0.02	0.07	0.3	0.26	0.52
Sweden	0.1	0.31	0.52	0.57	0.38	0.03	-0.06	-0.05	-0.1	0.08	0.03
Great Britain	0.06	0.21	0.13	0.51	0.89	1.11	0.62	0.84	0.51	0.74	0.14

Source: Eurostat, own calculation of the author

²⁴ Average of monthly rates 01-07/2010

As we can see from the data, interest rates in the Czech Republic were always higher not more than 1 p.p., the only exception being the year 2000. Presently, there is no significant risk which could increase this value excessively and from this title we can say that the Czech Republic should fulfil the criterion smoothly.

Conclusion

The Maastricht convergence criteria are integral part of the process of euro adoption. An attempt to meet the criteria can bring additional costs and divergence instead of convergence. Problems could be found in many aspects. The first of them is the focus on price stability without taking into account real indicators. In this point of view there is a risk that EZ will be joined by countries with very different economic level, which could worsen effectiveness and usefulness of common currency. In context with development in Ireland, Portugal, Spain, Italy and mainly Greece, it would be irresponsible to consider such a risk to be hypothetical only.

There are several issues in the criteria. We analysed mutual conflict between the inflation criterion and the exchange rate criterion; in the environment with the high capital mobility, the exchange rate movement could be quite high although the impulse was quite small and this could endanger fulfilment of ER criterion. When the criteria were formulated, capital mobility was lower and capital accounts in many countries were regulated, volatility of ER was also lower. In such point of view, we can consider MK as obsolete.

Political background of the criteria is also a source of problems. Existence of the escape clauses and dependence on predictions in some cases gives decent influence to the evaluating institutions, and creates environment of increased uncertainty. Political decisions which were made during creation of the EZ and lead, in some cases, to ignoring the criteria, and which cannot be expected for the current adepts could act somewhat disincentive. Ignoring the criteria and also the Stability and the Growth pact means that harder requirements are often laid on the NMS than on the members of EZ, which can be demotivating and may suggest unequal treatment. It could also be difficult for the NMS government to explain potential reforms to the public.

The linkage to the whole EU is clear anachronism, too, and can aim against the original intention of the criteria, but the modification of the criterion is very complicated or even impossible due to political and procedural process and fear about the final form of the new criteria.

From the Czech point of view, evaluating and possible impact is clearly hypothetical, because the government (nor the CNB) is not in favour of a quick euro adoption in the Czech Republic. If government was for the euro adoption in the near future, we could assume that the only problem would be in the budget deficit criterion. From this point of view, the period of economic growth, which, *ceteris paribus*, lowers the deficit/GDP ratio is the most suitable for the euro adoption. In the EZ we can also expect less fear from the NMSs, and therefore a more benevolent approach. Although it is debatable if “masking” of a budget problem by economic growth is a wise strategy, it is definitely politically more passable than painful reforms.

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