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Monetary Policy before Euro Adoption: Challenges for EU New Members

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ABSTRACT

This article analyzes the main issues for monetary policy in new EU member states before their euro adoption. These are typically rooted in the challenge of fulfilling concurrently of the Maastricht inflation and exchange rate criterion, as these countries are experiencing equilibrium real exchange rate appreciation. In this article we first distinguish between the wording, written interpretation and “revealed” interpretation of the inflation and exchange rate criteria. Then we discuss the options for monetary policy in the period of fulfilment of these criteria in terms of its transparency, its continuity with the previous monetary policy regime, the choice of central parity for the ERM II, the setting of the fluctuation bandwidth, the probability of fulfilment of both criteria and the impact on economic stability.

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1. Introduction

Several European countries currently face, or will face in the near future, the question of whether and in what time frame their economies will be capable of fulfilling the conditions for entering the euro area. In general, those conditions can be understood as attaining such parameters in various fields of economic life that will ensure successful operation of the economy in the environment of the single monetary policy of the European Central Bank (hereinafter the “ECB”). More specifically, we can comprehend the conditions for entry into the euro area within the meaning of the convergence criteria officially incorporated into the EU Treaty (hereinafter the “Treaty”) at the Maastricht summit in 1992.

The requirement to fulfil these “Maastricht criteria” before entering the euro area implies a number of challenges for domestic economic policy-makers in relation to the state of the economy (see Angeloni *et al.*, 2005, Buiter and Grafe, 2002, Coricelli, 2002, de Grauwe and Schnabl, 2005, Hochreiter and Tavlas, 2004, or Dabrowski and Rostowski, 2006). This article focuses on the challenges ensuing from the Maastricht criteria for the monetary policies of the relevant countries’ national central banks. The inflation criterion, the exchange rate criterion and the long-term nominal interest rate criterion are of primary concern to the central banks. Fulfilment of the criterion for long-term nominal interest rates, in particular, is closely linked with fulfilment of the inflation criterion and with market confidence in the country’s entry into the euro area; for the sake of simplicity we will therefore consider this criterion as fulfilled.¹ Consequently, we will concentrate on the inflation and exchange rate criteria.

¹ Besides the three criteria mentioned, the Treaty formulates another two criteria in the fiscal policy area. These criteria within the euro adoption processes in the new EU member states are discussed, for example, by Coricelli (2004).

The added value of this paper compared to other studies discussing the preparations for euro area entry is its comprehensive approach, encompassing all the main issues relevant to the national central bank, including, for example, transparency and credibility of monetary policy strategies. Our pragmatic focus on the interpretation of the criteria, and, conversely, the fact that we refrain from analysing the economic meaningfulness of their wording in the Treaty, should, in our opinion, also be considered a step in the right direction. Pushing through changes in the wording of the Treaty itself (and its Protocols) is something that we consider politically very difficult and improbable. As a result, we regard any analysis of a potential change of the wording of the Treaty of limited use.

One of the main problems for domestic central banks is the degree of ambiguity which exists in the formulations of the inflation and exchange rate criteria in the Treaty. Given this indeterminacy, the manner in which the individual Maastricht criteria are interpreted by the ECB and the European Commission (hereinafter the “Commission”) in their Convergence Reports is gaining in importance. At the level of the practical implementation of monetary policy, the question, then, is which monetary policy regime is *a priori* appropriate from the point of view of the fulfilment of the criteria and from the point of view of the needs of the economy.

The questions to which this paper seeks answers, are, or will be, relevant to the EU member states with a derogation from adopting the euro that have not yet entered ERM II mechanism (currently the Czech Republic, Hungary and Poland), and also to those countries which find themselves standing at the gates of the euro area in the future after joining the European Union (e.g. Bulgaria, Croatia, Montenegro, Romania and Turkey). All these countries will for

simplicity be termed euro-candidates (even if some of them are not the EU members yet and thus their prospects of euro adoption are still quite distant). Notwithstanding all the evident differences between these countries, there are some prevailing tendencies in their current monetary policy strategies which should be borne in mind such as their clear preference for inflation targeting (this applies to all euro-candidates mentioned except Bulgaria). We can also see, at least in the countries where the question of ERM II entry is already relevant (the Czech Republic, Hungary and Poland), a prevailing intention to spend the minimum necessary time in the ERM II system. In order to simplify some of our considerations, in this paper we will assume that this intention applies generally, i.e. we will assume that the euro-candidates intend to enter the ERM II only for around 2–3 years in order to meet the requirements of the exchange rate criterion. Given that assumption, the period of membership in the ERM II more or less coincides with the period of fulfilment of the criterion. In the following text we will call this period, for simplicity's sake, the period of fulfilment of the criteria.

The paper is structured as follows: Section 2 looks in detail at the interpretation of the exchange rate and inflation criteria, drawing on the experience of countries which have already adopted the euro and on the Convergence Reports of the ECB and the Commission. Section 3 builds on the interpretations outlined in the preceding part, analysing the monetary policy regime options in the run-up to euro area entry. Section 4 concludes. The Annex discusses the relevant experience of selected countries with fulfilling the inflation and exchange rate criteria.

2. The Exchange Rate Criterion and the Inflation Criterion

In order to discuss the monetary policy options in the period of fulfilment of the criteria, we must first identify the requirements and restrictions ensuing from these criteria for monetary policy. In other words, we must identify the probable manner in which the euro-candidate will be evaluated against these criteria by the Commission and the ECB in their Convergence Reports. This problem may seem trivial at first sight: it is sufficient to read the wording of the criteria in the Treaty. In fact this is only the first step, as the wordings of both criteria in the Treaty (and in the relevant Protocol to the Treaty) contain some ambiguous passages.

Both these institutions are thus forced to choose and describe in their Convergence Reports interpretations which eliminate these ambiguities. A detailed reading of these interpretations, however, reveals that some vagueness remains even here. Our last chance to get a more precise idea of the application of the criteria is to rely on the principle of equal treatment and, in the light thereof, to examine the experience of countries which have already undergone the evaluation process. Where a given country with a particular value of a given parameter has (un)successfully undergone the review process, the Commission and the ECB have thereby revealed an interpretation of the relevant criterion under which that value is (un)acceptable, and it can be hoped that both institutions will retain this revealed interpretation in the future. The interpretation of the criteria described explicitly in the Convergence Reports will be called the “written interpretation”, while the interpretation derived from the experience of the countries which have already been evaluated will be called the “revealed interpretation”.

It should be borne in mind, of course, that at the time when a given euro-candidate asks for assessment of how it fulfils the Maastricht criteria, the situation in this euro-candidate's economy as well as the whole international macroeconomic and political environment may differ from circumstances that prevail when other euro-candidates asks for the assessment. These differences may then be reflected in slight differences in the revealed interpretation. Therefore, when taking lessons from past Commission's and ECB's Convergence Reports in terms of revealed interpretation of the criteria, we should be careful to avoid excessive generalization. In order to refrain from speculations, however, we will assume that both the Commission and the ECB will strictly follow the principle of equal treatment.

2.1. The Wording and Written and Revealed Interpretation of the Exchange Rate Criterion

The third indent of Article 121(1) of the Treaty stipulates a requirement to participate in the exchange rate mechanism for at least two years and that during this period the exchange rate should fluctuate in the normal fluctuation band and its central parity should not be devalued (without the need to spend an additional two years in the ERM II the parity may only be revalued). The exact wording of Article 121(1) of the Treaty is as follows:

“...the observance of the normal fluctuation margins provided for by the exchange-rate mechanism of the European Monetary System, for at least two years, without devaluing against the currency of any other Member State.”

Article 3 of Protocol No. 21 to the Treaty further specifies with respect to the convergence criteria that the exchange rate should fluctuate within the set band without severe tensions and

that the parity may not be devalued on the initiative of the member state striving to enter the EMU. The exact wording of Article 3 of Protocol No. 21 to the Treaty is as follows:

“... the criterion on participation in the exchange rate mechanism of the European Monetary System referred to in the third indent of Article 121 (1) of this Treaty shall mean that a Member State has respected the normal fluctuation margins provided for by the exchange rate mechanism of the European Monetary System without severe tensions for at least the last two years before the examination. In particular, the Member State shall not have devalued its currency’s bilateral central rate against any other Member State’s currency on its own initiative for the same period.”

The wording of the criterion in Article 121 of the Treaty, despite being clarified in the Protocol, remains ambiguous and has become the subject of much debate (see for example Égert *et al.*, 2005). A question mark hangs over the actual margins of the fluctuation band within which movement of the exchange rate is considered acceptable by the European institutions. Also not entirely clear, however, is the tolerated intensity of the tensions which accompany the maintenance of the exchange rate within this band, and the period of time for which the exchange rate must participate in the ERM II system.

Some clarification as regards the question of which band is in fact tolerated can be found in the formulations that have appeared in past Convergence Reports produced by the Commission and the ECB. Of these two reports, the one prepared by the Commission can be considered more important, for it is the Commission that will prepare, on the basis of the reports and the member state’s application to enter the EMU, the recommendation for the EU Council on whether to grant the application or not.

The Commission's convergence reports reveal that a deviation of the exchange rate in excess of the normal ERM fluctuation band of $\pm 2.25\%$ is not automatically evaluated as failure to satisfy the exchange rate criterion. When evaluating an exchange rate deviation outside the $\pm 2.25\%$ band, the Commission takes into consideration the duration of the deviation, its amplitude and above all its direction, i.e. whether it is on the weak or strong side of the band. A deviation towards a stronger exchange rate beyond the 2.25% limit is not, according to the Commission, inconsistent with fulfilment of the exchange rate criterion (Convergence Report 1998, p. 153). The ECB's approach in its convergence reports is similar.

Furthermore, we may attempt to trace the outlines of the revealed interpretation of this criterion by looking at the exchange rate developments which the present member countries underwent prior to entering the euro area and which were found to be in compliance with the Treaty. Specifically, the exchange rate of the Irish pound in the review period fluctuated within the margins of -5% to $+10\%$ relative to the parity and the exchange rate of the Greek drachma fluctuated near the limit of $+10\%$. Experience of Greece and Ireland is described in greater detail in the Annex.

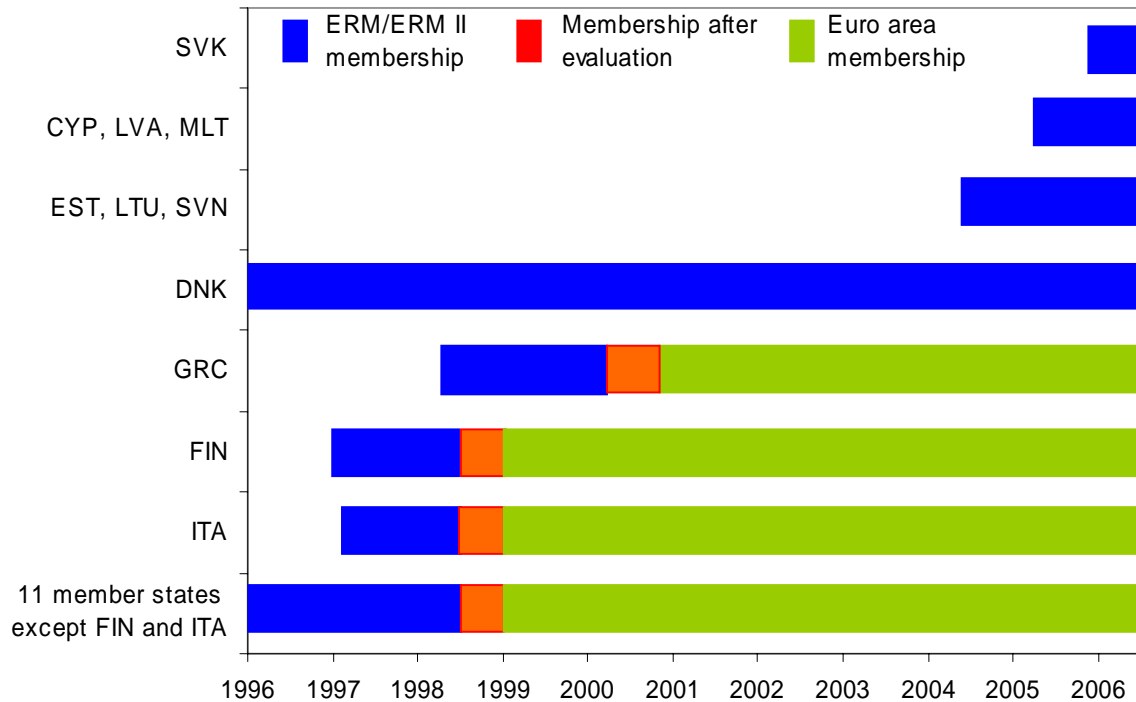
As regards the tolerated intensity of the tensions underlying the fluctuations of the exchange rate close to the central parity, the ECB concentrates on indicators such as the distance of the exchange rate from the central parity, the short-term interest rate differential and the size of foreign exchange interventions. It also takes into account whether there are any reasons for appreciation of the exchange rate (Convergence Report 2004, p. 11). It is not, however, clear from the ECB's and the Commission's statements, or from the experience of the founder

members of the EMU, whether there is a maximum permissible size of foreign exchange interventions which is still compatible with the fulfilment of the exchange rate criterion and whether significant interventions in one direction only are permissible.

In any case, one can assume that, provided the exchange rate is maintained – by whatever means – within the narrow band of $\pm 2.25\%$ during the ERM II, it would be very difficult for the Commission to talk of non-fulfilment of the exchange rate criterion. This assumption arises in particular in the case of the countries participating in the ERM II with a currency board (Estonia and Lithuania). Under this exchange rate regime, the size of the interventions is, by definition, beyond the decision of the central bank and may take on significant values.

Another uncertainty connected with the interpretation of the exchange rate criterion concerns the period of stay in the ERM II. Chart 1 sums up the experience of the countries that have participated in the past, or are currently participating, in the ERM/ERM II mechanisms, showing the timing of the evaluation of the exchange rate criterion and their euro area entry.

Chart 1: Length of ERM/ERM II membership and the timing of the evaluation of the criteria



What brings uncertainty into this seemingly unambiguous aspect of the exchange rate criterion is the experience of Finland and Italy had spent more than two years in the then ERM before adopting the euro. Nevertheless, the Commission and the ECB evaluated the fulfilment of the Maastricht criteria by these countries before they had participated for two years in the ERM II, and the same goes for the EU Council’s final decision on the fulfilment of the convergence criteria by these countries. In these two cases, therefore, the revealed interpretation of the criterion was inconsistent with the wording of the criterion, introducing a new ambiguity into the criterion. It may be, however, that the then more liberal approach of the European institutions was due in part to an endeavour not to complicate the early phase of existence of the euro area and that this tolerance will not be repeated in the case of the expansion of the euro area.

On the basis of all the information mentioned above, we can identify the following “pragmatic” interpretation of the exchange rate criterion, which on the one hand will provide clear scope for exchange rate fluctuations, and on the other should ensure, with an acceptable degree of probability, approval of the fulfilment of the criterion by the Council:

Participation in the ERM II exchange rate mechanism for a period of two years within a fluctuation band of -2.25% to +10%. A short-term deviation outside this band (even in the depreciation direction, see the experience of Ireland) may be tolerated; in the case of a marked strengthening, the parity may be revalued bilaterally. Significant interventions are acceptable at least where they lead to the exchange rate being maintained within a band of $\pm 2.25\%$.

Let us add that maintaining the exchange rate in any band narrower than the standard $\pm 15\%$ ERM II band is exclusively up to the given country: under the rules of the ERM II system any interventional assistance by the ECB can be expected mainly when the limit of $\pm 15\%$ is in jeopardy.

2.2. The Wording and Written and Revealed Interpretation of the Inflation Criterion

The first indent of Article 121(1) of the Treaty stipulates price stability as a further condition for adoption of the single currency. This condition is fulfilled if inflation in the candidate country does not exceed that in the three best performing countries by more than 1.5 percentage points.

The exact wording of the Treaty is as follows:

“the achievement of a high degree of price stability; this will be apparent from a rate of inflation which is close to that of, at most, the three best performing Member States in terms of price stability.”

The subsequent Protocol to the Treaty, first paragraph, specifies the calculation method. Inflation is measured by means of the HICP and as a twelve-month moving average:

“the criterion on price stability referred to in the first indent of Article 121 (1) of this Treaty shall mean that a Member State has a price performance that is sustainable and an average rate of inflation, observed over a period of one year before the examination, that does not exceed by more than 1½ percentage points that of, at most, the three best performing Member States in terms of price stability. Inflation shall be measured by means of the consumer price index on a comparable basis, taking into account differences in national definitions.”

Just as in the case of the exchange rate criterion, the wording of the inflation criterion, despite being clarified in the Protocol, is ambiguous.² The vagueness relates above all to the term “best performance”, which constitutes the key for selecting the three countries whose inflation rates are to enter the calculation of the reference value. Also vague, however, is the meaning of the term “sustainable”.

² Proposals have been made for a change of wording of the criterion directly in the Treaty (Buiters, 2004, Buiters and Grafe, 2002, *inter alia*). For example, it has been proposed to select the three reference countries only from among the euro area countries; to base the reference value of the criterion not on the average of the three countries with the best inflation results, but instead on the average for the entire euro area; to concentrate only on inflation of traded goods; and so on. In this paper, however, we concentrate exclusively on the issue of the interpretation within the limits of the present wording of the Treaty.

No matter how vague the words “best performance” may be, in the older Convergence Reports the Commission and ECB agreed on a plain and unambiguous written interpretation, i.e. that “best performance” means the lowest inflation. In the Convergence Reports for 2004 a country with negative inflation (Lithuania) appeared for the first time, and both institutions thus faced the question of whether to apply their interpretation to countries with negative inflation. The Commission took a rather strict and still unambiguous stand on this issue: “best performance”, according to the Commission, is the lowest non-negative inflation.

By comparison, the ECB adopted a rather more benevolent position:

“The price developments in Lithuania over the reference period, which resulted in a 12-month average rate of -0.2% due to the accumulation of specific factors, have been judged to be an outlier. This figure has consequently been excluded from the calculation of the reference value as it might otherwise have given rise to a distortion in the reference value and reduced the usefulness of the reference value as an economically meaningful benchmark.”

It is, therefore, the ECB’s written interpretation in particular that leaves some degree of ambiguity as regards the inflation criterion. This interpretation has so far explicitly been used only once. Thus, it is impossible to get a clear idea at least about the revealed interpretation. At least, we can perhaps infer that the ECB intends to use the outlier concept only very cautiously. What leads us to this hypothesis is the fact that in 2004 one of the countries included in the calculation of the reference value of the criterion in the ECB’s Convergence Report was Finland, with an inflation rate of mere 0.4%. Moreover, the extraordinarily low inflation in Finland during 2004 was largely due to a clearly exceptional, administrative measure: sharp decrease in excise

duty on alcohol (Bank of Finland, 2005). The reluctance of the ECB to use the concept of outlier transpires also from Spring 2006 Convergence Report where the reference value is calculated from three "best performers" of which at least two - Finland and Sweden - again are countries with exceptionally low inflation rates (not exceeding 1%).

Although it cannot be entirely ruled out that in the future countries with low positive inflation might also be exempted from the calculation of inflation in the reference countries, on the basis of the above-mentioned considerations it is possible to designate as a pragmatic interpretation of the inflation criterion the one which appeared in the Commission's Convergence Report for 2004, i.e. the interpretation in which the reference countries are the three EU member states with the lowest non-negative inflation.

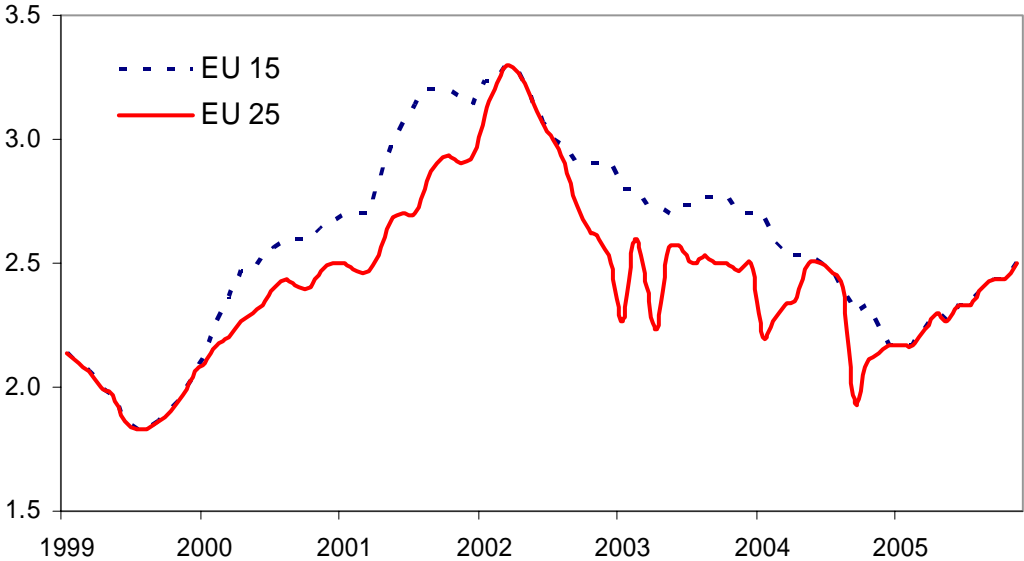
This interpretation, however, in no way clarifies the use of the term "sustainable". Sustainability was raised – at least indirectly – as an issue in the 2006 Convergence Reports for Lithuania and Slovenia where the assessment included a look at whether inflation had been above or below the reference values in the previous months, whether it was likely to grow or fall and whether it was likely to be above or below the reference values in the months ahead. For each of the two member states, however, these sustainability considerations were pointing in the same direction as the single-month comparison of the reference value versus actual value. Therefore, it is not obvious how much such considerations would influence the overall assessment in other cases. Even if Lithuanian inflation were below the reference value and the assessment were still negative, however, it would still be unclear to what extent the negative verdict would be based on the simple forecast of growing inflation or on the forecast of the difference between future

inflation and future reference values (these two types of forecast may obviously point into different directions). So far, thus, there is a lack of clear signals for a “pragmatic” interpretation of the term “sustainable”.

As an aside, we may note that the Convergence Report 2006 produced by the Commission confirmed that this institution intends to apply the criterion as it is written: while the reference value was only 0.1 of a percentage point below Lithuanian inflation at the moment of assessment (moreover, alternative ways of rounding the figures might squeeze this difference even further), the Commission made no effort to suggest that this difference was negligible in either statistical or economic terms.

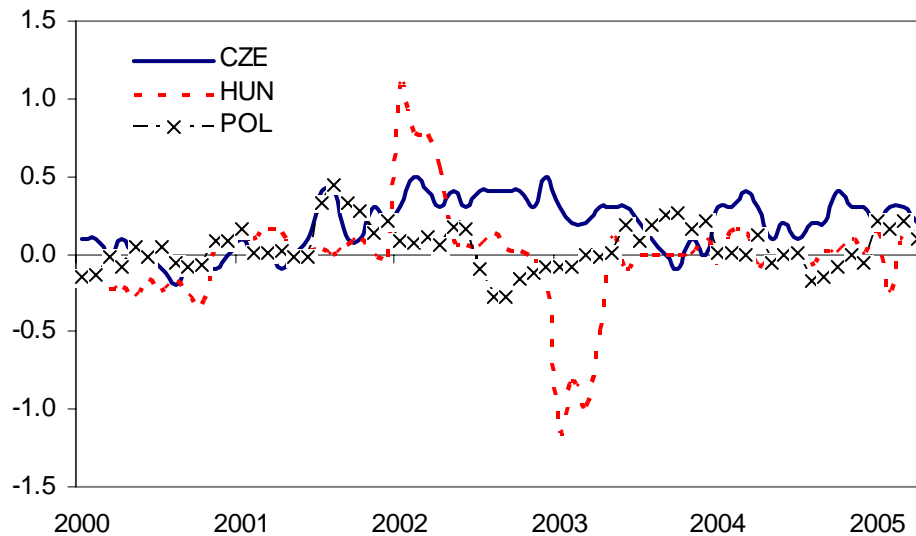
The past development of the reference value of the inflation criterion according to the above-mentioned interpretation is shown in Chart 2. The variability of this value over time is quite evident in the chart. At the same time one can see that the reference value computed on the basis of the EU-25 (regardless of when the EU-25 actually came into existence), has often fallen to a lower level than has been the value computed for the EU-15 (the maximum differences between the reference value based on EU-15 and EU-25 recorded so far have been 0.5 of a percentage point in early 2003). Both these factors increase the risk that not even relatively low inflation can guarantee with certainty the fulfilment of the inflation criterion in accordance with the above-mentioned pragmatic interpretation.

Chart 2: Development of the inflation criterion



As regards euro-candidates whose monetary policy operates under a regime of inflation targeting with inflation targets set in terms of their national consumer price indexes (CPI), these countries should, of course, also take into consideration any methodological, and therefore also quantitative, differences between this CPI and the harmonized index of consumer prices (HICP), with which the criterion operates. As indicated by Chart 3, this difference may be at least temporarily relatively large.

Chart 3: Difference between the CPI and HICP in selected countries targeting CPI inflation (Czech Rep., Hungary, and Poland)



Note: Positive values – in percentage points - indicate higher CPI inflation than HICP inflation.

3. Monetary Policy Regime Options in ERM II

This section discusses the main issues related to monetary policy strategy for euro-candidates. It first investigates the attributes of optimum monetary policy regime and then discusses the complexity of the choice of exchange rate regime and ERM II central parity.

3.1. Five Important Aspects of the Optimum Regime

The choice of optimum monetary policy regime is complicated by the fact that the concept of “optimum regime” may have a different content depending on what weight we attach to its individual aspects. When trying to structure the decision-making on the optimum monetary policy regime during the period of fulfilment of the criteria, we need to take the following five basic aspects into consideration:

(i) The probability of fulfilment of the Maastricht criteria

(ii) Internal consistency

(iii) Economic appropriateness

(iv) Transparency

(v) Continuity with the previous regime

Re (i) Almost all the countries that aspire, or will aspire in the future, to enter the euro area are experiencing marked long-term appreciation of their equilibrium real exchange rates (Egert *et al.*, 2006). This real appreciation can take place either through an inflation differential or through the nominal exchange rate appreciation, or through a combination of the two. Apparently, there is a trade-off between the fulfilment of the two criteria. The manoeuvring space for safe parallel fulfilment of both criteria is of course larger, the smaller is the equilibrium appreciation. Assuming that the period of fulfilment of the convergence criteria is too long for the national central bank to be able, or willing, to artificially maintain the economy out of equilibrium throughout this period using monetary policy instruments, monetary policy makers face indeed a difficult task: to distribute the overall equilibrium appreciation between the above-mentioned two channels in such a way that both the exchange rate and the inflation criteria are fulfilled, or in such a way that these criteria are fulfilled with the same probability.

Re (ii) Some aspects relating to ERM II membership, or to fulfilment of the Maastricht criteria, are not necessarily mutually consistent if the country retains its existing monetary policy regime. From the point of view of successful fulfilment of the exchange rate criterion it is very difficult to retain, for example, an unmanaged float. From the point of view of fulfilling the inflation criterion it is, on the contrary, dangerous to completely fix the exchange rate in a context of real

equilibrium appreciation. Another example of inconsistent monetary policy is targeting a rate of inflation that is clearly higher than the probable inflation criterion.

Re (iii) Even if monetary policy strategy is internally consistent during the period of fulfilment of the criteria, it might not necessarily be appropriate for the economy at that particular moment in time. For example, trying to keep inflation too low may result in an excessively restrictive monetary policy and a loss in the form of reduced economic growth. The opposite situation, i.e. an overheating of the economy, may occur if the exchange rate is fixed at too depreciated a level.

Re (iv) If the central bank is transparent to the public, it is usually also more credible and attains its aims more easily (Blinder, 1998). Transparency and the ensuing effectiveness is doubly important for a central bank which is obliged to attain several objectives at the same time and can only be successful if it fulfils every one of them. On the other hand, the pursuit of transparency has its limits, as it may lead to reduction in flexibility (Mishkin, 2004). In spite of this, during this period the central bank should be as open as possible as regards its objectives and should not attempt to conceal any facts from the public.

Re (v) A change of monetary policy regime entails considerable costs, especially if the previous regime has been in place for a long time and economic agents have adapted their behaviour to it. For this reason, central banks usually resort to a change of regime only in situations where there is no other way out (see, for example, Masson and Ruge-Murcia, 2005).

While some euro-candidates operate under a fixed exchange rate (e.g. Bulgaria and Montenegro), the majority are inflation targeters (e.g. the Czech Republic, Hungary, Poland, Romania, Sweden and Turkey), mostly with managed floating. It is within the latter group that ERM II entry and the need to fulfil the Maastricht criteria confronts the central bank with the dilemma of whether or not to modify its regime. If a country has a favourable experience with inflation targeting and if it has succeeded in making its inflation target credible, the costs of changing the regime are understandably higher. A credible inflation target may better anchor low inflation expectations and thus foster fulfilment of the inflation criterion. Regarding the former group, countries with a fixed exchange rate would find it difficult to explain the abandonment of their previous nominal anchor in the form of a fixed exchange rate, no matter how this might facilitate their fulfilment of the inflation criterion. This is also what the experience of the countries which have already entered the mechanism would suggest (Estonia, Lithuania and Latvia retained their currency boards, while Malta switched from an exchange rate fixed to a currency basket to a rate fixed to the euro).

For most of the euro-candidates there is no regime that would satisfy all the above-mentioned desirable aspects to the full. If, for example, we gave priority to the aspect of fulfilment of the criteria, this could be only done to the detriment of continuity with previous regime, internal consistency and/or economic sustainability. For the majority of the euro-candidates, therefore, the choice of monetary policy regime for the period of fulfilment of the criteria represents a challenge to find a suitable compromise between the aspects mentioned.

3.2. Exchange Rate Regime and Loss of Autonomy

In the case of exchange rate regimes, the practice of the last two decades, as well as the consensus in the academic literature (see Fischer, 2001), typically favours “corner solutions”, i.e. it recommends adopting either a very fixed exchange rate commitment (preferably without any inflation or other targets) or, on the contrary, a very loose exchange rate commitment (and, possibly, other targets). While a fixed exchange rate is in conformity with the “pragmatic” interpretation of the exchange rate criterion as mentioned in section 2, a flexible exchange rate regime may be at variance with it. From the point of view of fulfilment of the exchange rate criterion, the nearest solution to the above-mentioned “corner” is the widest possible fluctuation band compatible with the pragmatic definition of fulfilment of the exchange rate criterion. Fulfilment of the exchange rate criterion in the “pragmatic” interpretation, as mentioned in section 2, may be achieved by exchange rate regimes ranging from a completely fixed rate to a rate fluctuating within the maximum fluctuation band of -2.25% to approximately +10%. In this regard, we discuss only these two generic solutions, i.e. a completely fixed exchange rate and an exchange rate fluctuating within the maximum fluctuation band compatible with fulfilment of the exchange rate criterion.

For both these options there is an implicit possibility of a change of central parity; given the wording of the exchange rate criterion, however, only a revaluation comes into consideration. In the following text this possibility will be explicitly mentioned only in those cases where it will have to be allowed for in advance. In all the options it is also possible to consider sub-options differing in whether the fluctuation band would be officially declared or whether it would be targeted only implicitly (see Crespo-Cuaresma *et al.*, 2005 for empirical investigation on some

euro-candidates). Refraining from any active endeavour to fulfil the exchange rate criterion, i.e. the alternative of not targeting any exchange rate band except for that given directly by ERM II membership, can also, of course, be considered one of the generic alternatives; in such case, however, the risk of the actual development of the exchange rate leading to non-fulfilment of the criterion increases.

An unpleasant fact which the central bank of a euro-candidate must take into consideration is the loss of monetary policy autonomy.³ Although formally the loss of domestic monetary policy autonomy does not occur until accession to the euro area, in reality the central bank loses part of its autonomy much earlier. The reason for this is that as the credible date of the country's assumed entry into the euro area approaches, its long-term interest rates become increasingly determined by expectations of the future development of short-term euro rates, and not domestic rates. Where a fixed exchange rate is chosen for the period of fulfilment of the criteria, the central bank must maintain interest rates at the same level as euro rates (in the case of credible entry into the euro area the risk premium will equal zero), and will thus, for example, begin to lose its influence on annual rates a year before the expected fixing of the exchange rate. In the case of the wide fluctuation band the loss of autonomy is less apparent (the risk premium is non-zero even in the case of credible entry into the euro area). The movement of interest rates, however, is significantly curbed by the evolution of the exchange rate. Given that exchange rate appreciation expectations are typical of a large proportion of the euro-candidates, domestic interest rates should be roughly at the same level as those of the ECB (with a low, positive, risk premium), or lower than those of the ECB (with a zero risk premium).

³ Crespo-Cuaresma and Wojcik (2006) measure monetary policy autonomy in selected EU new member states and find that although greater exchange rate flexibility is associated with greater monetary policy autonomy, none of the countries analysed has a fully autonomous monetary policy, even with a floating exchange rate.

3.3. Fixing of the Exchange Rate Versus Utilization of the Maximum Bandwidth

In the following passage we address the question of choosing the optimum exchange rate bandwidth and central parity so as to minimize the risks ensuing from the requirement to fulfil the Maastricht criteria and make maximum use of the merits of each of the options discussed.

As aforementioned, the exchange rate criterion permits revaluation of the central parity. If the exchange rate, owing to adverse circumstances or a speculative attack, shows a strong tendency towards appreciation, it is, in principle, possible in both regimes discussed – the fixed exchange rate and the wide fluctuation band – to take advantage of this asymmetry and revalue the parity. However, the possibility that the pressure concerned is only transitory can never be ruled out; this might lead to a later requirement to devalue the parity back to its original level and thus to breach one of the requirements of the exchange rate criterion. It will therefore be important to make use of the possibility of revaluation only after careful consideration and, where appropriate, after making use of the possibilities for defending the original parity.

In many countries the fixed exchange rate regime has not proved successful ending often in numerous speculative attacks (Fisher, 2001). Nevertheless, this experience is not necessarily relevant to the euro-candidates. A fixed exchange rate based on a fixed point in the form of a permanent fixing of the exchange rate on euro area entry (so-called “exit”) at a predetermined moment in time may be much more robust to speculative pressures.⁴ A fixed exchange rate within the ERM II is the approach that so far predominates among the new EU member states

⁴ Nevertheless, it is vital to note that a breach of the fixed exchange rate commitment would not necessarily mean failure to satisfy the exchange rate criterion.

which, however, is probably due to the fact that these countries operated in the fixed exchange rate regime already before their ERM II entry.

It is true that in the case of a fixed exchange rate – provided that the selected assumptions of equilibrium exchange rate and price development apply – the stability of the nominal exchange rate implies some inflationary pressure and hence also the threat of failure to satisfy the inflation criterion. This danger, however, can be consciously reduced. The parity can be fixed, for example, at a slightly overvalued level which will roughly correspond to the equilibrium exchange rate at the horizon of the permanent fixing against the euro. The issues of the optimum parity setting will be discussed in greater detail in section 3.4. The contradiction between the fixed exchange rate and fulfilment of the inflation criterion, however, is not unambiguous. Firstly, in a small open economy, as is characteristic of the majority of the euro-candidates, any fluctuation in the exchange rate passes through significantly to the price level (Coricelli *et al.*, 2006). A fixed exchange rate, then, may eliminate the risk of inflation fluctuations resulting from excessive exchange rate movements.

The second generic exchange rate regime option for the period of fulfilment of the criteria is maximum utilization of the fluctuation band, i.e. within the margins of approximately -2.25% to +10%. The main theoretical advantage of the wide fluctuation band should be the ability to absorb shocks through the exchange rate. However, this has received little empirical support for euro-candidates. For example, Borghijs and Kuijs (2004) have studied the ability of Central European currencies to respond to shocks and have found that currencies in the Central Europe have tended to generate shocks rather than to absorb them. As regards the approximately two-

year period of fulfilment of the criteria, it is, therefore, not possible to say with certainty whether maximum utilization of exchange rate flexibility will foster a stabilization of the economy or, on the contrary, will damage it. Another advantage of the wide fluctuation band is that it preserves some degree of domestic monetary policy autonomy during the period of fulfilment of the criteria.

3.4. Setting the Parity

Regardless of the choice of exchange rate regime, during the period of fulfilment of the criteria each euro-candidate will be faced with the question of setting the suitable parity against the euro (see de Grauwe and Schnabl, 2005). The experience of the countries that are fulfilling, or have already fulfilled the criteria, speaks in favour of fixing the parity at the current market value. The only exceptions have been Slovenia, which, however, fixed at a rate other than the current market value due to its earlier than planned entry into the ERM II, and Cyprus, which set its parity at the level of an earlier parity (the current exchange rate was more appreciated). On the other hand, however, the relevance of these countries for many of the future members of the ERM II is reduced by the fact that neither of them had a floating exchange rate, hence they *de facto* continued to fix their exchange rate at the previous level.

Considerations of setting the parity at a rate other than the current exchange rate are supported by the asymmetry of the exchange rate criterion, which affords more space for appreciation than for depreciation. It would, therefore, be logical to set the parity at a more depreciated level than the current exchange rate and thus make the criterion more symmetrical around the current exchange

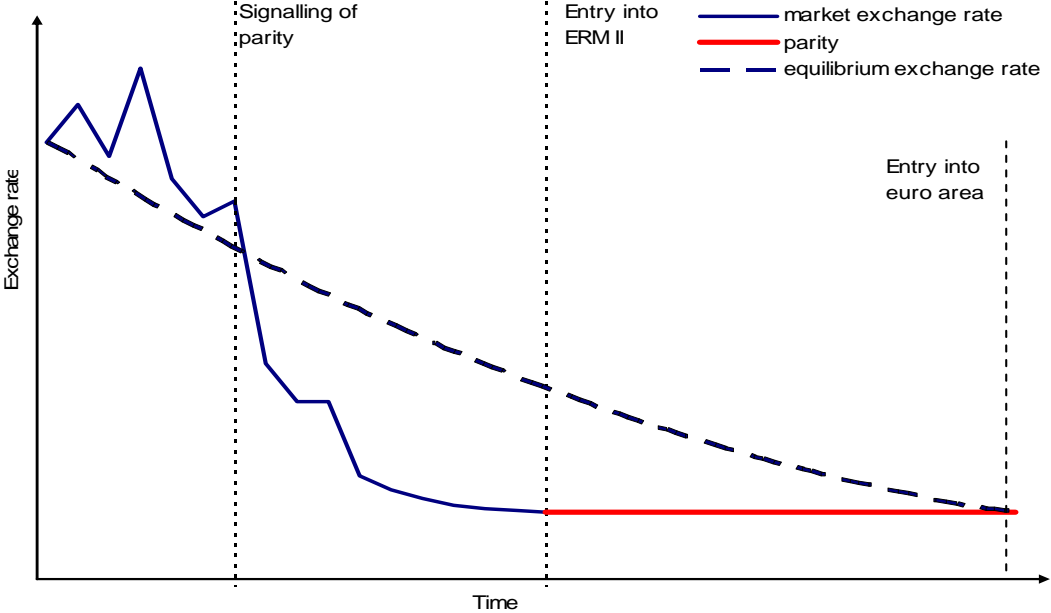
rate. The potential misinterpretation of this step by the markets, however, argues against such procedure.

Another issue that enters into the debate on the setting of the initial ERM II parity is that of the long-term equilibrium exchange rate. It is reasonable to assume, especially under the fixed exchange rate regime, that the irrevocable conversion rate of the domestic currency to the euro will be identical to the ERM II parity and so this parity should be set near to the equilibrium exchange rate at the time of expected entry to the euro area. This strategy is supportive for fulfilment of inflation criterion, as the real equilibrium appreciation will take place mainly via exchange rate. For most of the euro-candidates this would imply setting the parity at a stronger level. It is not, however, entirely clear whether the benefits of such a step (lower inflation over a longer period, i.e. an endeavour to maximize aspect (i) from section 3.1) will prevail over the potential costs (an excessively strong exchange rate over short period and increased market volatility, i.e. a deterioration of aspect (iii) from section 3.1).

The question is whether the expected parity value (equal to the estimated equilibrium exchange rate as of the ERM II entry date) should be signalled by the central bank in advance, and, if so, how far in advance. Early publication would on the one hand quash speculation and steer the exchange rate in the right direction from the central bank's point of view. On the other hand, however, such a signal represents a commitment which in time may prove to be hasty. It is also necessary to take into consideration that the parity is set by joint decision of the EU member states and the authorities of the EU and so any signalling of the parity may be seen as anticipating the result of this joint decision. This interpretation can be avoided by the central bank declaring in advance that the parity will be set roughly at the equilibrium value of the

exchange rate as of the ERM II entry date and by the central bank estimating this equilibrium value within a given range. A similar scenario is proposed by Buiters (2002). Chart 4 illustrates this hypothetical exchange rate scenario with early signalling of the parity.

Chart 4: Exchange rate development under the fixed exchange rate regime

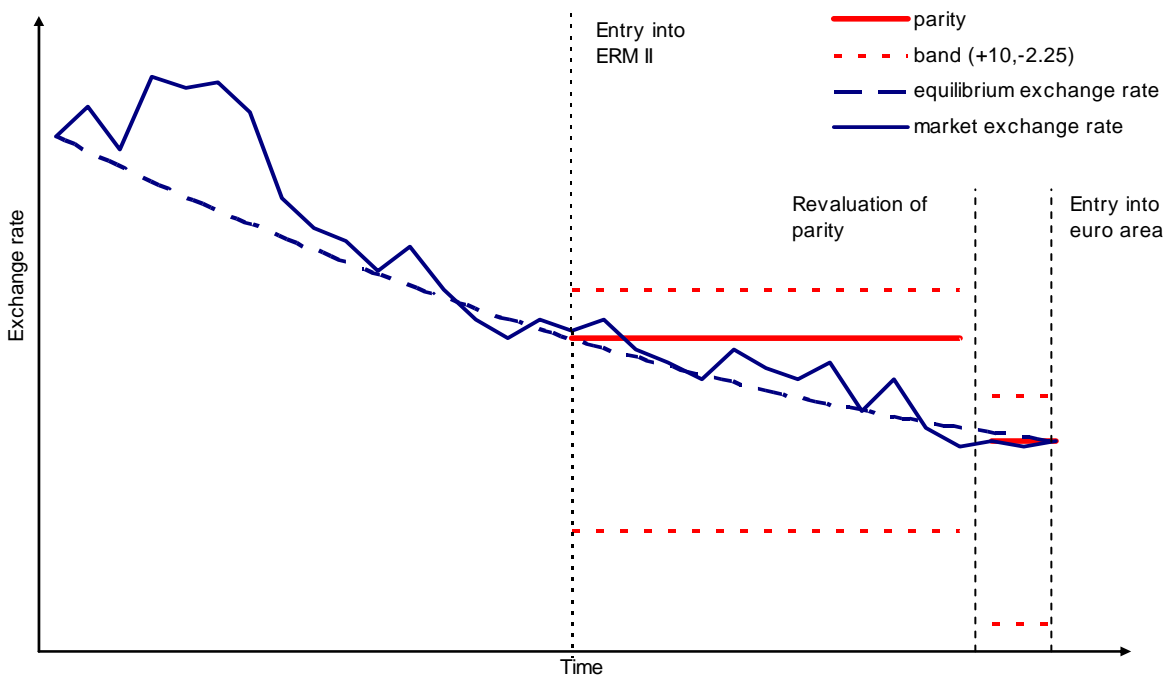


On the other hand, this strategy requires a fairly accurate idea of the value of the equilibrium real exchange rate at a horizon of around three years. Estimates of the equilibrium value of the exchange rate are associated with considerable uncertainty (see Egert *et al.*, 2006) and central banks tend to have only a general idea of the band within which the exchange range is more or less in equilibrium (and this band may be quite wide). A faster appreciation would, moreover, obviously have a negative impact on economic activity. The strategy of an overvalued parity also increases the risk of speculation on a devaluation of the exchange rate and hence the risk of a subsequent actual devaluation (depending on the effectiveness of foreign exchange interventions), leading to the commencement of a new compulsory two-year stay in the ERM II.

If the wide fluctuation band is opted for, the solution might be to set the ERM II parity near to the equilibrium exchange rate as of the ERM II entry date, from which the current market exchange rate should not differ too much. Assuming that the annual pace of real equilibrium appreciation is lower than 5% and that the exchange rate does not deviate markedly from its equilibrium path, the exchange rate would stay within the wide fluctuation band during the roughly two-year period of fulfilment of the criteria and there would likely be no need for any major interventions or early revaluation of the parity.

In such a situation it may be desirable to revalue the parity shortly – such as several months – before euro area entry (based on an assessment of the current market rate and on the authorities' idea of the development of the equilibrium), as in the case of Ireland and Greece. This would allay concerns that the currency will be fixed at the initial parity level (as these concerns would probably lead to depreciation of the exchange rate back towards this parity). The above-described exchange rate development under the wide fluctuation band regime is shown schematically in Chart 5.

Chart 5: Illustration of exchange rate development under the wide fluctuation band regime



4. Conclusions

The aim of this paper is to investigate the monetary policy options of a euro area accession country during the period of fulfillment of the Maastricht exchange rate and inflation criteria. We first analyze the “rules of the game” (i.e. how the two criteria are implemented by the Commission and the ECB) and then we identify possible monetary policy strategies within these rules.

We point out that some degree of ambiguity is contained not only in the wording of both criteria in the Treaty and the Protocols, but also in their interpretation of both criteria as recorded in the past Convergence Reports of the Commission and the ECB. Hence there is a need to search for the probable interpretation with the help of the experience of the countries that have already,

successfully or unsuccessfully, undergone the evaluation. Even at the end of this search, however, some ambiguities still persist with respect to both criteria, hence the efforts of the euro-candidates to satisfy these criteria are, to some extent like shooting at a target which is only vaguely defined.

We then give some thought to the question of whether and how a candidate can steer a course through the probable interpretations of the two criteria (with all their ambiguities). The considerations of the national central bank of a euro-candidate country in the period of fulfilment of the criteria are not concentrated solely on fulfilment of the criteria; the central bank must also keep in mind other aspects such as the internal consistency and economic appropriateness of its monetary policy, transparency, and continuity with the previous monetary policy regime. A deeper analysis of these aspects reveals that for most of the euro-candidates there is no regime which would satisfy all the above-mentioned desirable aspects to the full and hence that for the majority of the euro-candidates the choice of monetary policy regime for the period of fulfilment of the criteria represents a challenge to find a suitable compromise between the aspects mentioned.

In line with the prevailing current trend of favouring “corner” solutions in the exchange rate regimes, we have focused our attention on two specific exchange rate regime options for a euro-candidate country: a completely fixed exchange rate and an exchange rate fluctuating within the widest fluctuation band compatible with fulfilment of the exchange rate criterion. The choice between these two regimes depends on many factors which are typically country-specific, such as expected equilibrium real appreciation, the previous monetary policy regime and its credibility

or the ability and willingness of the government to coordinate fiscal policy. In the text, therefore, we investigate the advantages and disadvantages of both exchange rate regime options and make proposals for the specific implementation of the chosen regime until the setting of the central parity. It is, of course, up to the policy-makers in the relevant countries to set all these considerations into the specific context of their economy and to identify the approach that will maximize the chances of successful adoption of the euro.

References

- Angeloni, I., Flad, M. and F. P. Mongelli (2005) 'Economic and Monetary Integration of the New Member States: Helping to Chart the Route', *ECB Occasional Paper*, No. 36.
- Bank of Finland (2005) 'Bank of Finland Bulletin', 1/2005.
- Bank of Greece: Economic Bulletin, various issues.
- Barabas, G. (ed.), (2003): Coping with the Speculative Attack against Forint's Band, Magyar Nemzeti Bank Background Studies, No. 2/2003.
- Blinder, A. (1998) '*Central Banking in Theory and Practice*', MIT Press, Cambridge.
- Borghijis, A. and L. Kuijs (2004) 'Exchange Rates in Central Europe: Blessing or Curse?' *IMF Working Paper*, No. 2.
- Buiter, W. and C. Grafe (2002) 'Anchor, Float or Abandon Ship: Exchange Rate Regimes for the Accession Countries', *Banca Nazionale del Lavoro Quarterly Review*, 55, pp. 111–142.
- Buiter, W. (2004) 'To Purgatory and Beyond: When and How Should the Accession Countries from Central and Eastern Europe Become Full Members of the EMU?' *CEPR Discussion Paper* No. 4342.
- Central Bank of Ireland: Inflation Report, various issues.
- Coricelli, F. (2002) 'Exchange Rate Policy during Transition to the European Monetary Union: The Option of Euroization', *Economics of Transition*, pp. 405–417.
- Coricelli, F. (2004) 'Fiscal Policy in Enlarged Europe', *Revue de l'OFCE*, special issue, pp. 191–209.

- Coricelli, F., Jazbec, B. and I. Masten (2006) 'Exchange Rate Pass-Through in EMU Acceding Countries: Empirical Analysis and Policy Implications', *Journal of Banking and Finance*, 30(5), 1375-1391.
- Crespo-Cuaresma, J., Egert, B. and R. MacDonald (2005) 'Non-linear Exchange Rate Dynamics in Target Zones: A Bumpy Road Towards a Honeymoon', *The William Davidson Institute Working Paper*, No. 771.
- Crespo-Cuaresma, J. and C. Wojcik (2006) 'Measuring Monetary Independence: Evidence from a Group of New EU Member Countries', *Journal of Comparative Economics*, 34, pp. 24-43.
- Dabrowski, M. and J. Rostowski (eds.) (2006) 'The Eastern Enlargement of the Eurozone', Springer, Dodrecht.
- De Grauwe, P. and G. Schnabl (2005) 'Nominal Versus Real Convergence – EMU Entry Scenarios for the New Member States', *Kyklos*, 58 (4), pp. 537–555.
- ECB (2003) '*Policy Position of the Governing Council of the European Central Bank on Exchange Rate Issues Relating to the Acceding Countries*', 18th December 2003.
- ECB '*Report on the Functioning of ERM II*', annual reports for the years 1999–2004.
- Égert, B., Kierzenkowski, R. and T. Reininger (2005) 'Asymmetric Fluctuation Bands in the ERM and ERM II: Lessons and Challenges for New EU Member States of Central and Eastern Europe', *Eastern European Economics*, pp. 81–144.
- Égert, B., Halpern, L. and MacDonald, R. (2006) 'Equilibrium Exchange Rates in Transition Economies: Taking Stock of the Issues', *Journal of Economic Surveys*, 20 (2), pp. 257-324.

- Fischer, S. (2001) 'Exchange Rate Regimes: Is the Bipolar View Correct?' *Journal of Economic Perspectives*, Vol. 15, pp. 3–24.
- Garganas, N. (1998): Greece and EMU: Prospects and Challenges, *Economic Bulletin* No.12, Bank of Greece, December 1998, pp.7-20.
- Hochreiter, E. and G. Tavlas (2004) 'On the Road Again: an Essay on the Optimal Path to EMU for the New Member States', *Journal of Policy Modeling*, 26 (7), pp.793–816.
- Masson, P. and F. Ruge-Murcia (2005) 'Explaining the Transition between Exchange Rate Regimes', *Scandinavian Journal of Economics*, 107 (2), pp. 261–278.
- Mishkin, F. (2004) 'Can Central Bank Transparency Go Too Far?', *NBER working paper*, No. 10829.
- Mourmouras, I.A. a M.G. Arghyrou (2000): *Monetary Policy at the European Periphery: Greek Experience and Lessons for EU Candidates*, Springer, Berlin

Annex: The Experience of Selected Countries

In the Annex we look at the experience of Ireland and Greece as regards fulfilment of the exchange rate and inflation criterion and also at the experience of Hungary as regards concurrent targeting of the exchange rate and inflation.

The Irish and the Greek experience is interesting primarily from the point of view of the interpretation of the exchange rate criterion, as the development of the currencies of these countries in the period reviewed by the Convergence Report was rather volatile and deviated markedly from the central parity. As a result, it provides a precedent for the interpretation of the vague wording of the exchange rate criterion in terms of allowed deviation of currency from central parity. We discuss the fulfilment of the inflation criterion rather as a side issue, as this criterion is interpreted by the Commission and the ECB in still in clearer terms than exchange rate criterion. In the case of the inflation criterion the question is rather whether it is too “strict” for economies undergoing real convergence and whether the rate of inflation implied by this criterion is sustainable (Buitier and Grafe, 2002). Both Ireland and Greece recorded a lower rate of inflation in the reference period than before and after this period. The rate of inflation in the reference period was influenced by appreciation of currency and, in the case of Greece, also by cuts in indirect taxes. The Commission’s estimate in the Convergence Report 2000 states that the cuts in indirect taxes in Greece led to inflation being 0.7–1.0 percentage point lower in the reference period (under the assumption of full pass-through of the tax changes to consumer prices).

The Hungarian experience is also noteworthy, as with its dual targeting Hungary is *de facto* shadowing the ERM II regime in that it is maintaining its exchange rate within a fluctuation band of $\pm 15\%$ around the set parity while declaring an inflation targeting regime. The Hungarian experience also shows the importance of monetary and fiscal policy consistency.

I. Ireland

The Commission's Convergence Report 1998 found that Ireland had fulfilled the exchange rate criterion, as, in words of the Commission, the currency had not experienced severe tensions nor had its central rate been devalued during the period under review, i.e. between March 1996 and February 1998. Afterwards, in March 1998, the Commission proposed to the Council that Ireland had fulfilled all the preconditions for adopting the euro. On 3 May 1998, the Council decided that Ireland, along with another ten countries, had fulfilled the necessary conditions for adopting the euro. Ireland adopted the euro on 1 January 1999.

Ireland's experience during the ERM is interesting primarily from the point of view of the interpretation of the exchange rate criterion, as the development of the Irish currency during the period reviewed in the Convergence Report was rather volatile, as Chart I below shows. The chart illustrates the deviation of the currency from the central parity in per cent. It is clear that the Irish pound remained within the narrow margin of $\pm 2.25\%$ only from around April 1996 to October 1996, i.e. for only for 7 of the 24 months under review. At the start of the reference period the currency was even below the depreciation level of -2.25% , staying there for at least one month (to be precise for 32 trading days, i.e. 6% of all the trading days during the review

period).⁵ The maximum deviation of the pound from its parity was -4.24% (calculated against the “median” exchange rate, as this approach was used by the Commission when evaluating exchange rate stability⁶). This historical experience of Ireland, in line with the principle of equal treatment, leads to a legitimate assumption that a transitory breach (lasting a month and a half at least) of the depreciation level of -2.25% is tolerated.⁷ In such a situation, however, much will also probably depend on how the Commission evaluates the reasons which led to this short-term swing of the currency in the depreciation direction and on the ability of the country to defend such a swing.

Roughly from October 1996 until the end of the period under review, conversely, the Irish currency fluctuated above the appreciation level of +2.25% (the currency appreciated significantly from April to November 1996). The maximum deviation from the central parity was 10.91%. This appreciation was due in particular to optimism connected with the buoyant growth of the Irish economy and also to a strong appreciation of the UK pound. In the course of 1997 the exchange rate began to move slowly back towards the parity. On 16 March 1998 (after the close of the Commission’s two-year review period in February 1998), the parity was revalued by 3%, taking the exchange rate very near to the central parity. The Central Bank of Ireland justified this step by stating that without the revaluation the currency, given its fixing to the previous central

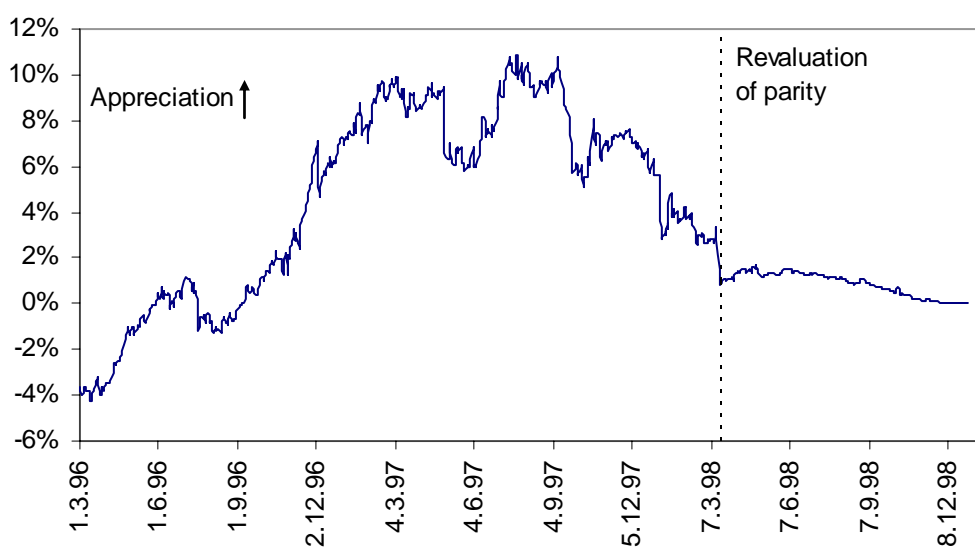
⁵ A similar situation arose with the Finnish mark and Italian lira. Both currencies were fluctuating well below the depreciation band of -2.25% during 1996; nevertheless, the two currencies did not enter the ERM until October and November 1996 respectively, by which time they were fluctuating within the narrow band of $\pm 2.25\%$.

⁶ The deviation from the parity was calculated as follows: A separate central parity against the ECU was set for the exchange rate of each country in the ERM; from this it was possible to calculate the percentage deviation of each exchange rate from this parity. The median currency was then selected as the currency for which the percentage deviation from its parity was the median of all the deviations of the individual exchange rates from their parities. Then, the percentage deviation was calculated for each currency by deducting this median deviation from the percentage deviation of the exchange rate from its parity against the ECU. This calculation was “necessary” due to the non-existence of the euro at that time.

⁷ France has a similar experience, as the franc deviated to -2.35% from its parity on two days of the reference period.

parity, would have had to depreciate too much, which, in turn, would have jeopardized price stability. The revaluation had been expected by the market. The Annual Report of the Central Bank of Ireland for 1998 also states that the interventions conducted in the foreign exchange market in 1997 reduced the official external reserves by £1,098 million, whereas there were no direct interventions in 1998. On 31 December 1998, ECOFIN announced the conversion rate of the Irish pound at £0.79 to the euro.

Chart A.I: Deviation of the Irish pound *vis-à-vis* the median currency, March 1996–December 1998



II. Greece

Greece did not fulfil the convergence criteria in 1998 as it had not participated in the ERM, and so, unlike the other 11 EU countries, it did not adopt the euro on 1 January 1999. Greece entered the ERM on 16 March 1998 and then moved smoothly into the ERM II when that came into being on 1 January 1999. This means that when assessing exchange rate stability the

Commission in 1998 took into consideration the development of the drachma vis-à-vis the median ERM currency, and from 1999 onwards the relevant indicator became the development of the drachma in relation to its parity against the euro.

Greece entered the ERM with its central parity markedly depreciated against the market exchange rate in the period before entry (the parity was set at 357 GRD/ECU, i.e. 12.3% more appreciated than the market exchange rate). The setting of the central parity was evaluated by both the Bank of Greece and the financial markets as sustainable and consistent with the overall euro adoption strategy. The devaluation of the parity was a result of the so-called “hard drachma” policy practised by the Bank of Greece in the mid-1990s, aimed at bringing down the rate of inflation.⁸ This policy resulted in appreciation of the real exchange rate, so the setting of a “depreciated” parity was evaluated as a return towards equilibrium. Entry into the ERM was accompanied by a declaration by the government of its intention to consolidate public finances.

Following a jump depreciation connected with the devaluation of the parity, the drachma began to gradually appreciate, thanks to a high interest rate differential and market optimism regarding the future development of the Greek economy. This appreciation was briefly interrupted by the Russian crisis at the end of the summer of 1998 (see Chart II). The large appreciation of the drachma significantly aided the fulfilment of the inflation criterion.

The Commission’s Convergence Report 2000 (p. 26) states that: “*The drachma had been relatively stable against the ERM currencies in the review period but had at times experienced*

⁸ More information on the monetary policy of the Bank of Greece during the pre-accession period can be found in Mourmouras and Arghyrou (2000) and Garganas (1998).

tensions which were counteracted by increases in domestic interest rates and by foreign exchange intervention". Such measures were particularly necessary during the crisis in Russia and Asia. The drachma was 5.7% above its parity on average in 1998. The maximum and minimum distances from the parity were +8.2% and +2.4% respectively (see Chart II).

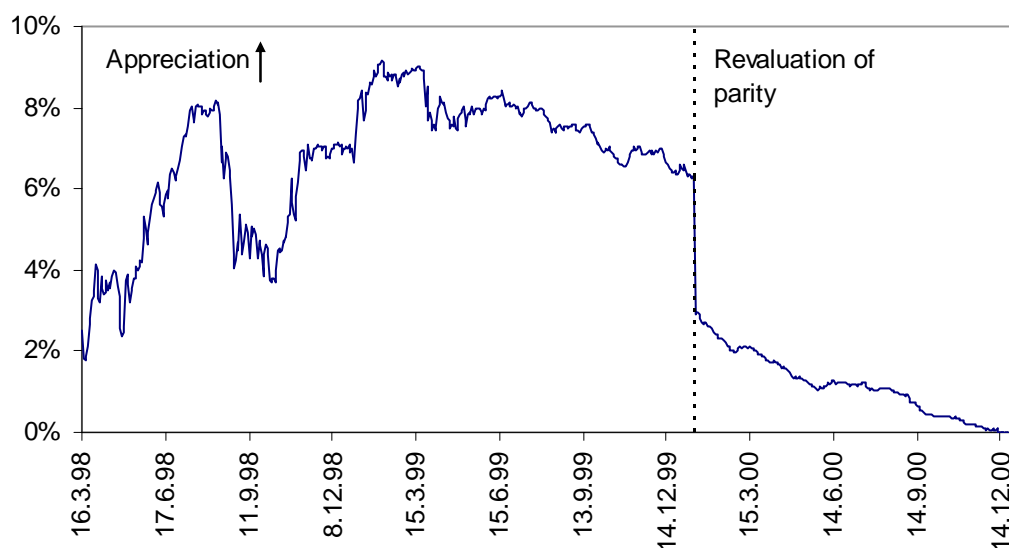
Greece entered the new ERM II on 1 January 1999 with a central parity of 353.109 GRD/EUR. This parity had been moderately revalued relative to the ERM parity (357 GRD/ECU), although this was merely the result of a recalculation of the parity via the final conversion rates. The revaluation was therefore a "technical", not an "economic", one. The average deviation from the ERM II parity during the review period was 6.76%. The maximum and the minimum deviations during the ERM II were +9.16% and +1.78% respectively. After the decision to set the conversion rate at the central parity, the exchange rate gradually converged towards the central parity. The drachma was therefore more appreciated than the central parity throughout its participation in the ERM II (as in the ERM).

The drachma's membership in the ERM II was characterized by depreciation, coupled with a reduction of the interest rate differential, and gradual convergence towards the parity. This convergence was hastened by a 3.6% revaluation of the parity on 17 January 2000. Thanks to this, the drachma did not have to depreciate so much in order to attain the parity.

Annual HICP inflation fell to approximately 2% during the reference period and increased to 3–4% after adoption of the euro. Cuts in indirect taxes implemented in 1998–1999 were another factor that aided fulfilment of the inflation criterion.

On 9 March 2000, Greece submitted an official request for the preparation of a Convergence Report and a subsequent assessment of the convergence criteria by the Council. On 19 June 2000, the Council decided that Greece had fulfilled all the necessary conditions for the adoption of the euro and set the conversion rate of the drachma at the existing central parity and also set the date of adoption of the euro. Greece adopted the euro on 1 January 2001.

Chart A.II: Deviation of the Greek drachma *vis-à-vis* the median currency (1998) and the euro (1999–2000)



III. Hungary

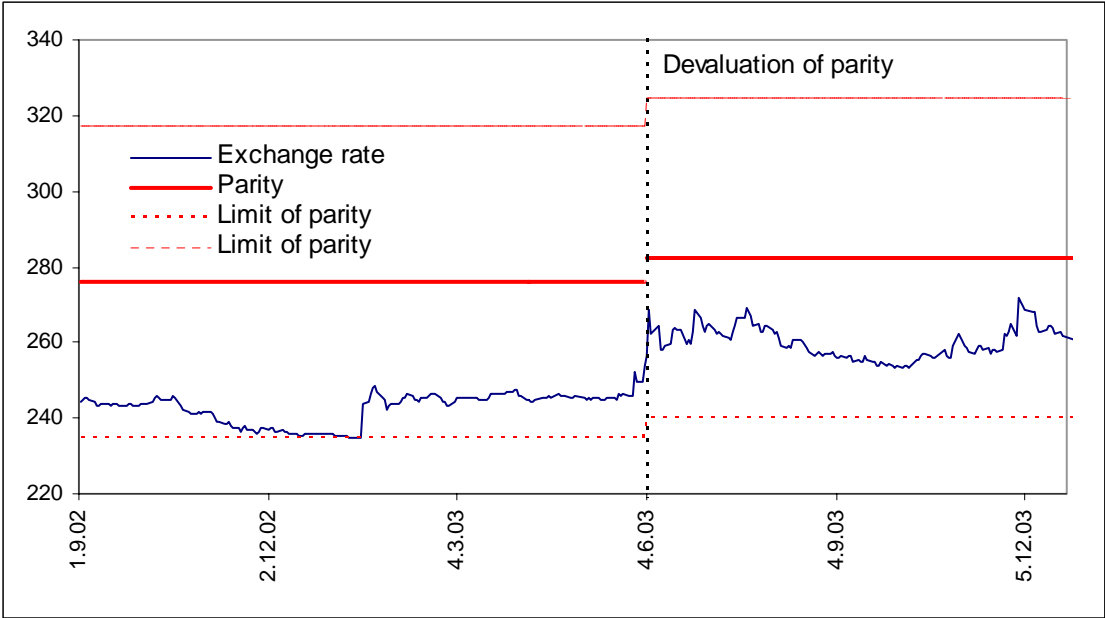
In May 2001, Hungary abandoned its crawling peg and widened the fluctuation band of the forint from $\pm 2.25\%$ to $\pm 15\%$. At the same time, the Hungarian central bank introduced inflation targeting and set inflation targets for 2001 and 2002. This put the Hungarian National Bank in a situation where it was targeting two variables simultaneously – the exchange rate and inflation. This regime of shadowing the ERM II and simultaneously targeting inflation was meant to be

temporary, aimed at bringing inflation down to the Maastricht criterion level and achieving rapid adoption of the euro. The fluctuation band of $\pm 15\%$ was evaluated as sufficiently wide to avoid conflicts between the inflation and exchange rate targets. This evaluation, however, was based on an assumption of restrained fiscal policy supporting disinflation. The approaching elections in April 2002, however, brought a large fiscal expansion, and in order to attain the inflation target tighter monetary conditions became necessary. The central bank responded by raising rates by 1 percentage point during the summer of 2002. As a result of the higher rates the Hungarian forint gradually appreciated, reaching the edge of the fluctuation band towards the end of 2002 (see Chart III).

Meanwhile, at the end of 2002, the EU accession treaties were signed and the Hungarian government communicated its willingness to markedly decrease the public finance deficit from 2003 onwards. On the strength of this development, the market believed the government's announcements in favour of the fastest possible adoption of the euro (Barabas, 2003). These factors fostered a short-term decrease of the risk premium and consequently also a further appreciation of the forint (by less than 1% towards the stronger margin of the band). However, the government, fearing a loss of competitiveness of Hungarian exporters on account of the strong forint, insisted that the exchange rate regime and the existing fluctuation band must not be abandoned (a change of exchange rate regime requires agreement between the government and the Hungarian National Bank). The Hungarian National Bank thus found itself in a situation where it evidently would not be able to fulfil one of the targets it had set itself (either the exchange rate target or the inflation target).

This economic policy inconsistency triggered a speculative attack on the strong boundary of the fluctuation band of the forint in January 2003. The Hungarian National Bank withstood the attack by means of a large interest rate cut (by 2 percentage points) and interventions in the foreign exchange market (over the two days of the speculative attack – 15–16 January 2003 – it purchased a total of EUR 5.3 billion) and thus *de facto* gave priority to the exchange rate target over the inflation target. As a result, the disinflation process of the Hungarian economy slowed, and the markets interpreted this step as meaning that the authorities valued exchange rate stability more than rapid incorporation into the euro area (the level of inflation at that time meant that the inflation criterion would not be fulfilled). The subsequent stability of the exchange rate observable in Chart III was due to intervention activity by the Hungarian National Bank. The bank was present in the foreign exchange market until May 2003 (although it did not publish the volumes of its interventions).

Chart A.III: HUF/EUR exchange rate, September 2002–December 2003



On 4 June 2003, the central parity of the forint was devalued by 2.26%. This step was again due to government concerns about an excessively strong forint. It was argued that any overshooting of the exchange rate would jeopardize export competitiveness. The markets, however, viewed this step as a change in the central bank's priorities towards a weaker forint and a weaker future central parity in the ERM II.⁹ A rapid depreciation of the forint – by almost 10% – followed. The central bank responded by gradually increasing rates by 3 percentage points. The bank justified this increase by the fact that the forint had depreciated too far (to the limit of 270 HUF/EUR), whereas it preferred to maintain the exchange rate within the band of 250–260 HUF/EUR. For the market this was a signal that the central parity was again not to anchor exchange rate expectations. Given such uncertainty (exacerbated by the low credibility of both fiscal and monetary policy), it is no surprise that the forint was very volatile for several months thereafter. There has been no repeat of such dramatic exchange rate changes since then.

⁹ The then intention was to enter the ERM II in 2004 and to adopt the euro as late as 2008, which is why the market considerations as regards the parity for the ERM II were relevant.

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