The Maastricht Inflation Criterion and the New EU Members from Central and Eastern Europe

Karsten Staehr

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Abstract

This paper discusses the prospects of the new EU members from Central and Eastern Europe joining the European Economic and Monetary Union in the short and medium term. The countries must attain and sustain inflation rates sufficiently low to abide by the Maastricht inflation criterion, but this is complicated by the process of real convergence exerting upward pressure on the inflation rate. The paper discusses different strategies which the new EU countries can apply. It is argued that no one-size-fits-all policy is available and that some countries might be better off postponing EMU membership in pursuit of other goals. Still, the special circumstances concerning the Central and Eastern European EU countries suggest that the process of admission of new countries to the EMU should be adaptive and pragmatic.

Non-technical summary

The enlargements of the European Union in 2004 and 2007 meant that in total 12 new countries joined the EU, of which 10 are former Soviet bloc countries from Central and Eastern Europe and two are Mediterranean island states. As part of the entry requirements to the EU, each new EU members has the obligation to join the Economic and Monetary Union, subject to the country fulfilling the Maastricht convergence criteria.

Slovenia joined the EMU in 2007 and Malta and Cyprus in 2008, while Slovakia will enter in 2009. The remaining eight new EU countries from Central and Eastern Europe face one major stumbling block in their way towards the EMU, namely the Maastricht inflation criterion. This paper discusses the criterion, its implications for the new EU members and the possible strategies for euro adoption available to these countries.

The Maastricht inflation criterion comprises two rather distinct parts. The temporal component imposes conditions on the current inflation of a country and is relatively concise. The sustainability component is broader and it has been evaluated based on inflation forecasts. The formulation of the inflation criterion in the Maastricht Treaty and its Protocols leaves substantial discretion to the institutions undertaking the assessments as well as the policymakers making the final decision.

It is debatable whether the continued use of the original inflation criterion is consistent with the "principle of equal treatment" within the European Union. First, increases in excise taxes and controlled prices in connection with the EU accession contribute to higher inflation. Second, the parallel real and nominal convergence processes imply upward pressures on the inflation rate in these countries, in particular in countries with fixed parities towards the euro. Third, the enlargement of the European Union from 15 to 27 member countries has lowered the expected inflation reference value. It is argued, however, that a review of the inflation criterion must consider the underlying rationales for the criterion.

While there are arguments for altering the inflation criterion, there are also arguments in favour of retaining it in an unaltered form. Moreover, the outcome of the complex political process of changing the criterion is highly uncertain. The paper argued that the special circumstances concerning the Central and Eastern European EU countries suggest that the process of admitting new countries to the EMU should be pragmatic and adaptive.

The new EU members from Central and Eastern Europe entered the EU with relatively low levels of income, but have since been experiencing fast growth and, consequently, the convergence of income levels towards the EU

average. In light of the inflationary pressures stemming from the real convergence process, the new EU members from Central and Eastern Europe essentially have three possibilities when mapping out their euro adoption strategies.

A country may A) postpone EMU membership preparations, B) enter the ERM II while pursuing extraordinary disinflationary policies, or C) enter the ERM II without extraordinary disinflationary policies. The best choice is likely to depend on the initial conditions of the country, the functioning of the economy and the preferences of the policymakers. Some countries may push back EMU preparations in pursuit of other goals; some countries may undertake revaluations to bring down inflation; while some countries may prefer to join the ERM II and only enter the EMU when inflationary pressures abate. The paper brings up the possibility of a country maintaining a fixed exchange rate against the euro, while using tax policies as a "hidden revaluation" in order to contain inflationary pressures. There is no one-size-fits-all euro adoption policy available for the eight new EU countries from Central and Eastern Europe.

Contents

1. Introduction

The European Economic and Monetary Union (EMU) began operating in January 1999 after years of debate and legislative and practical preparation. The EMU started out with 11 members, but by mid-2008, five additional members have been admitted, including two of the new EU countries from Central and Eastern Europe. This paper discusses the prospects of the remaining new EU members from Central and Eastern Europe joining the EMU in the short and medium term.

The Maastricht Treaty together with a number of Protocols spell out the requirements for membership of the Economic Monetary Union (ECB, 2008: Sec.2).[1] To qualify for EMU membership, a country must be a member of the European Union and satisfy a set of economic convergence criteria as well as a set of legal convergence criteria.

The economic convergence criteria, imposing conditions on various economic variables, can be collected in five bullet points:

- The price performance must be sustainable, and the inflation rate cannot be more than 1.5 percentage points above the average inflation in the three EU countries with the best performance in terms of price stability.

- The general government fiscal deficit cannot be more than 3 percent of GDP.

- The general government debt cannot be larger than 60 percent of GDP, or it must be converging towards this level at "a satisfactory pace".

- The exchange rate must be held stable vis-à-vis the euro for at least two years through participation in the exchange rate mechanism ERM II.

- The long-term nominal interest rate cannot be more than 2 percentage points above the average rate for the three EU countries with the best performance in terms of price stability.

The legal convergence criteria require that there is national legislation in place which guarantees the independence of the national central bank from political interference, rules out monetary financing of government spending, and ensures that the national central bank can be legally integrated into the Eurosystem, the ECB's system of central banks.

The final decision on the acceptance of a country to the EMU is made by the Council of Finance Ministers based on assessments from the European

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[1]The criteria were set out in the main text of the Maastricht Treaty (Eurotreaties, 2008a) and detailed in its Protocols (Eurotreaties, 2008b).

Commission and from the European Central Bank (before 1999 its predecessor the European Monetary Institute). The assessments or Convergence Reports evaluate whether or not a country meets the convergence criteria. In practice the recommendations of the Convergence Reports have been followed by the Council. All countries are meant to satisfy the same criteria and to be assessed on the same basis, cf. the "principle of equal treatment" (Darvas and Szapary, 2008; Stark, 2008).

In 2004 and 2007 the European Union admitted a total of 12 new member countries, of which 10 are former Soviet bloc countries from Central and Eastern Europe and two are Mediterranean island states. As part of the entry requirements to the EU, all new EU members have the obligation to join the EMU, subject to each one of them fulfilling the Maastricht convergence criteria.

The EMU had 11 members at its inception in 1999 and Greece joined in 2001. By August 2008 four of the countries that acceded to the EU in 2004 have joined or were set to join the EMU in: Slovenia in 2007, Malta and Cyprus in 2008, and Slovakia in 2009. This leaves a group of eight countries from Central and Eastern Europe yet to join the EMU. This group will be labelled the NEU8 hereinafter and consists of Estonia, Latvia, Lithuania, Poland, the Czech Republic, Hungary, Romania and Bulgaria. Future enlargements of the EU will add countries to the group having an obligation to join the EMU.[2]

The new EU members from Central and Eastern Europe entered the EU with relatively low levels of income, but have since been experiencing fast growth and, consequently, the convergence of income levels towards the EU average. The real convergence process has important implications for the ability of these countries to meet the different Maastricht criteria.

Their high trend growth makes it easier for the new EU countries to fulfil the fiscal criteria, the traditional Achilles heel for countries seeking EMU membership. Out of the NEU8 countries, only Hungary had a fiscal deficit exceeding the 3 percent ceiling in 2007 (Eurostat, 2008a). Moreover, Staehr (2008) shows that during the period 1995–2005 the fiscal balance (as percentage of GDP) exhibited *less* inertia in the group of the new EU members from Central and Eastern Europe than in the group of Western European EMU countries. This suggests that fiscal deficits may be of relatively short duration and, hence, represent no major hindrance to the fulfilment of the Maastricht fiscal criteria.

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[2]A group of "old" EU countries stands outside the EMU either de jure or de facto; United Kingdom and Denmark have formal opt-outs, while Sweden has failed to take preparatory steps since 2003 when the Swedes voted against the euro in a referendum.

The new EU countries from Central and Eastern Europe do, however, face substantial challenges in satisfying the inflation criterion, as the process of real convergence is accompanied by a parallel process of price level convergence. The result is upward pressure on the inflation rate in the new EU countries, especially in those with fixed parities towards the euro. Since attaining membership of the EU in 2004 or 2007, all of the eight countries have breached the inflation criterion for extended periods of time.[3] Inflation data from Eurostat for June 2008 showed that they all breached the inflation criterion during that month (Eurostat, 2008b).

This paper takes a closer look at the Maastricht inflation criterion and the challenges it poses for the fast-growing new EU members from Central and Eastern Europe. The discussion is is particularly pertinent since the criterion was originally intended for an EU with 15 member countries at relatively similar stating points in terms of the economic structure and income level. Three main questions are addressed:

- How does the Maastricht inflation criterion affect the prospect of the new EU countries from Central and Eastern Europe joining the EMU in short and medium term?

- Does the inflation criterion serve its intended purpose or is it unduly delaying the adoption of the euro in Central and Eastern Europe with a risk of excessive exchange rate fluctuations and economic instability?

- Given the present formulation of the inflation criterion, which strategies may be adopted by the new EU countries with an obligation to join the EMU? In particular, what are the main advantages and disadvantage of different strategies — and the risks involved?

A large number of studies have analysed the Maastricht inflation criterion and its implications for the new EU countries.[4] This paper benefits from being able to draw on some new research results as well as the Convergence Reports from the spring of 2008, which concluded that Slovakia satisfied all the Maastricht criteria, including the inflation criterion.

The rest of the paper is organised as follows. Section 2 spells out the Maastricht inflation criterion and highlights some peculiarities. Section 3 considers

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[3]In an aptly labelled article "Faces at the Window", The Economist (2008a) sums up the inflation problem of the new EU countries during the first months of 2008 as follows: "All but Poland miss the test for low inflation by a mile". As a matter of fact, in June 2008 Poland did not satisfy the inflation criterion either.

[4]See for instance Szapary (2001), Kenen and Meade (2003), Ozkan et al. (2004), Buiter (2005), Buiter and Sibert (2006), Dobrinsky (2006), Jonas (2006), Calmfors et al. (2007), De Grauwe (2007: Sec.7.5), Lewis (2007) and Darvas and Szapary (2008).

different rationales for the criterion. Section 4 discusses factors that make it challenging for the new EU countries to abide by the inflation criterion. Section 5 assesses different strategies the new EU countries can employ concerning the fulfilment of the Maastricht inflation criterion. Section 6 summarises the paper.

2. The Maastricht inflation criterion

The proverb "the devil is in the detail" applies fully in the case of the Maastricht inflation criteria. A detailed account of the criterion and its implementation is useful background information for the analysis of the prospects of the new EU countries from Central and Eastern Europe joining the Eurozone, but also for the discussion of different euro adoption strategies for these countries. Buiter and Sibert (2006), likewise, provide a detailed account of the criterion.

The inflation criterion is specified in Article 1 of the Protocol on Convergence Criteria of the Maastricht Treaty (Eurotreaties, 2008b:29–30):

> *[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 $1\frac{1}{2}$ percentage points that of, at most, the three best performing Member States in terms of price stability.*

The inflation criterion entails two rather disparate requirements. The sustainability component asserts that a country seeking to join the Eurozone must have sustainable inflation performance. The temporal component asserts that annual inflation must be below or equal to a reference value calculated as the average inflation in the three best performing EU countries plus 1.5 percentage points.

The applicable inflation measure is the *annual HICP inflation* computed at a monthly frequency. For a given month, the annual HICP inflation is found as the percentage change of the 12-month average of the HICP inflation index relative to the same 12-month average index one year earlier.[5] Due to the computation method the annual HICP inflation is changing less swiftly than the standard measure of year-over-year inflation.

The Maastricht Treaty states that the reference group used in the temporal component of the inflation criterion shall consist of "at most" the three best

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[5]The annual HICP inflation for each country is rounded to one decimal point in accordance with the publication standards of Eurostat. Likewise, the inflation reference value is rounded to one decimal point (EC, 2006:37).

performing members. In the practice of the EC and the ECB (and earlier the European Monetary Institute, the predecessor to the ECB), the reference group has always comprised three countries.

The precise content of "best performing Member States in terms of price stability" does not follow directly from the Treaty or its Protocols. In practice, the Convergence Reports by the EC and ECB have taken this requirement to mean the countries with the *lowest non-negative* inflation rates, although, at least, the ECB has not committed to continuing this practice in future assessments (Lewis and Staehr, forthcoming).[6]

The "Member States" referred to in the Protocol are those of the European Union, not those of the Economic and Monetary Union. Thus, the enlargement of the EU in 2004 and 2007 implies that the three countries in the reference group are drawn from a larger set of countries. If withdrawals from the EU are ruled out, future assessments will be based on 27 or more member countries.

Turning now to the sustainability component of the inflation criterion, the Treaty does not contain any definitions of sustainable price performance. The practice in several Convergence Reports, however, provides some guidance. In the May 2006 Convergence Report of the ECB, the detailed assessment of the sustainability of the recent inflation performance comprises both a backward-looking and a forward-looking part (ECB, 2006:14). The backward-looking part compares the recent inflation performance with the preceding 10 years. The forward-looking part compares inflation forecasts for the immediate future with forecasts of the reference value (ECB, 2006:21, 36, 46).

The Maastricht convergence criteria and/or the application of the criteria have been widely debated and frequently criticised. It has been argued that the criteria were put together hastily and with little attention to the underlying objectives (Buiter and Sibert, 2006; Wyplosz, 2006). Some technical aspects of the formulation of the inflation criterion are discussed below, as they may affect the prospects of the new EU countries joining the EMU. The rationales of the inflation criterion are considered in more detail in Section 3.

First, the temporal component of the inflation criterion is "relative" in the sense that the reference value depends on the inflation rates in 27 EU countries. This sets the inflation criterion apart from the fiscal criteria, where absolute reference values are explicitly stated. The advantage of the inflation criterion being relative is that common shocks affecting inflation in all the EU countries

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[6]Interestingly, the two institutions have used different arguments for excluding countries with negative inflation from the reference group. The EC regards negative inflation to be incompatible with price stability. The ECB, on the other hand, assessed a previous case of negative inflation to be an "outlier" due to exceptional factors and therefore kept the country with negative inflation out of the reference group (Lewis and Staehr, forthcoming).

similarly do not substantially affect the likelihood of a country satisfying the criterion. The drawback is that there is no firm target to guide economic policymaking in countries seeking to fulfil the inflation criterion.[7] The calculation of the reference value is also relatively complex as it depends on inflation rates in all the 27 EU countries, cf. above.

Second, the temporal component of the inflation criterion has been criticised for not entailing convergence to the Eurozone inflation rate (Calmfors et al., 2007; Darvas and Szapary, 2008). The reference value is based on the inflation rate of the three best performing EU countries, while the Eurozone inflation is a weighted average of inflation rates in a subset of these countries. This suggests that it is to some extent misleading to label the inflation criterion a "convergence criterion". Kenen and Meade (2003:4) writes:

> *When EMU was not yet in being, it made sense to base the inflation-rate and interest-rate criteria on the track records of the three EU countries with the lowest inflation rates. Now that EMU is in being, it would make far more sense to base those criteria on the average inflation rate and average long-term interest rate in the whole euro area.*

All the EU countries — irrespective of the size of their economy — attain the same (potential) weight in the calculation of the reference value. As a matter of fact, since inflation in small countries is generally more variable than inflation in larger countries, the former would, *ceteris paribus*, be expected to be disproportionately represented in the reference group.

In practice, the arguments above appear to be particularly relevant after the EU enlargement. Figure 1 shows the monthly tally of annual HICP inflation in the Eurozone along with the inflation reference value from January 1999 to June 2008. For the early subsample 1999:01–2004:04, the correlation coefficient is 0.96, and the average difference between the two series amounts to 0.76 percentage points. For the later subsample 2004:05–2008:06 the correlation coefficient is 0.59 and the average difference between the two series is 0.45 percentage points.

Third, the annual HICP inflation is a headline inflation measure capturing the price changes of the entire consumption basket, including components with volatile prices like food and energy. Consumer price changes resulting from changes in value added and excise taxes also enter the HICP inflation tally. The latter is potentially important since reductions in value added or excise taxes

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[7]Lewis and Staehr (forthcoming) seek to estimate a likely distribution of the reference value based on the historical inflation performance in the different EU countries.
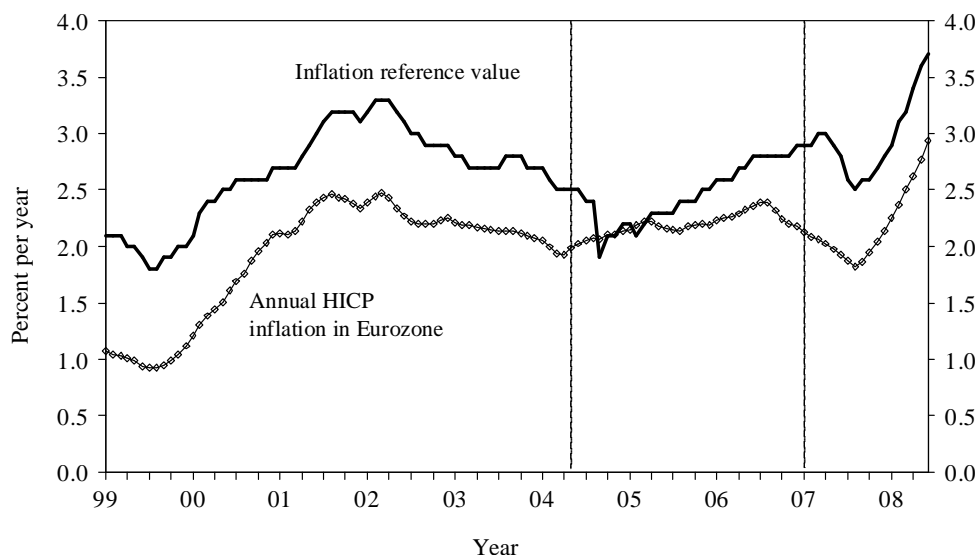
Figure 1: Annual HICP inflation in the Eurozone and the inflation reference value, monthly frequency, 1999:01–2008:06

Note: The annual HICP inflation in the Eurozone is based on the composition of the EMU at any given month within the sample period. The inflation reference value is based on the composition of the EU at any given month within the sample period.
Source: Eurostat (2008b), own calculations.

may cause a country to enter the reference group of countries with the best inflation performance, which again is likely to lower the inflation reference value. This scenario, indeed, was played out in 2004–2006, when Finland reduced its excise taxes on alcohol and tobacco prior to the 2004 round of EU enlargement. The excise reductions took place in March 2004 and from that month and until February 2008 Finland was among the three EU countries with the lowest non-negative inflation.

Fourth, a peculiarity stemming from the formulation of the temporal component of the inflation criterion entails that it is *theoretically* possible that a country is among the three best performing EU countries in terms of price stability and thus enters the reference group, while not being able to fulfil the criterion.[8]

Fifth, the sustainability component of the inflation criterion is relatively vaguely defined. It is noticeable that the sustainability component and the temporal component of the criterion are not explicitly linked in the text. If taken literally, a country with long-term annual HICP inflation equal to 10

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[8]This would be the case if, for instance, the country considered has inflation equal to 2.4 percent, two countries have zero inflation and the rest of the EU countries all have inflation rates equal to or above 2.5 percent.

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percent, which one month experiences a sudden drop in inflation to below the reference value could be said to satisfy both the sustainability and the temporal component. The Convergence Reports demonstrate a different practice, requiring as a minimum that the forecasted annual HICP inflation for the coming 12 months does not exceed the forecasted reference value for the same period. This forward-looking assessment leaves substantial discretion to the authorities producing the Convergence Reports as forecasts of the inflation performance of every EU country enter the computations (De Grauwe, 2007: Ch.7).

The fact that the temporal component of the inflation criterion is defined in more precise terms than the sustainability component may have contributed to policymakers and the public paying most attention to the temporal component. This changed, however, when Lithuania was assessed in the Convergence Reports by the EC and ECB in the spring of 2006 (EC, 2006; ECB, 2006). Although inflation in Lithuania marginally exceeded the reference value, the main argument for concluding that Lithuania breached the inflation criterion was the projection that the relative low inflation observed from 2000 until the spring of 2006 would not last in the near future. This projection was later proven to be correct.

Finally, the inflation criterion is closely interwoven with the other economic criteria, in particular the exchange rate stability criterion. The exchange rate criterion limits the scope of monetary policy and, hence, the possibility of a country to use independent monetary policy measures to ensure that the inflation performance is sustainable and the annual HICP inflation does not exceed the reference value. The connection between the inflation and exchange rate criteria is discussed in more detail in Sections 4 and 5.

3.   The rationale(s) for the inflation criterion

This section considers possible rationales for the Maastricht inflation criterion. The aim is to bring up factors of importance for the discussion of the inflation criterion, its applicability after the EU enlargements in 2004 and 2007 and for the choice of euro adoption strategy by the new EU countries.[9] Three different rationales are identified, *viz.* a preference revelation rationale, a policy externality rationale and a competitiveness rationale. The latter two rationales are particularly relevant if the sustainability part of the Maastricht inflation criterion is taken into account.

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[9]Wyplosz (2006) discusses the background for the establishment of the EMU and the political negotiations leading to the Maastricht Treaty and the convergence criteria.

The inflation criterion has, along with the other four Maastricht criteria, only a peripheral relation to the classical Optimal Currency Area (OCA) criteria (De Grauwe, 2007: Ch.7). The OCA criteria are conditions under which the relinquishment of independent monetary policy entails only limited costs in terms of output and employment variability. Among the classical OCA criteria are wage flexibility, mobility of labour and counter-cyclical fiscal policies (De Grauwe, 2007: Ch.1). In a currency union, a country that does not satisfy the OCA criteria may experience excessive output fluctuations due to asymmetric (country-specific) shocks. If countries are exposed to asymmetric shocks, tensions concerning the direction of monetary policy within the union may develop. The strain could induce national policymakers to pull out and may thus jeopardise the long-term survival of the currency union.

The marked differences between the Maastricht criteria and the OCA criteria are perhaps not so surprising given the different scope of the two sets of criteria. The Maastricht criteria are essentially designed to protect the interests of the EMU member countries and are criteria an applicant country is required to fulfil. The OCA criteria are conditions an applicant country in its own interest should ensure are satisfied before entry.

De Grauwe (2007: Sec.7.2) argues that the Maastricht inflation criterion most easily can be understood as *a preference revelation mechanism*. A country seeking to join the EMU has to take steps ensuring that its inflation rate does not exceed the inflation reference value. Such steps show that the country is willing to accept short-term pain (or to give up short-term gains) in order to reap longer-term benefits. In the words of the president of the EMI, countries participating in the EMU must display a "culture of stability" (Lamfalussy, 1997). The ultimate goal was to reduce the risk that participating countries would favour expansionary monetary policies in the EMU or decide to leave the union if exposed to adverse shocks.[10] Wyplosz (2006) and De Grauwe (2007: Sec.7.2) assert that the criterion mainly was designed to ensure that the Southern European countries, that traditionally have endured relatively high inflation, were committed to maintaining low inflation.[11]

The *policy externality argument* is based on the fact that the ECB's monetary policy targets the (weighted) average inflation in the Eurozone. The admission of countries with high inflation will raise the average Eurozone in-

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[10]Feldstein (2000) raises the possibility that asymmetric developments within the EMU could lead to political conflict between the EMU member countries.

[11]There is not necessarily a conflict between the underlying rationales for the traditional OCA criteria and the Maastricht inflation criterion when the inflation criterion is interpreted as a preference revelation mechanism. In this case both sets of criteria can be seen to ensure that a country enters a monetary union only if it is willing to remain in the union also in case of unfavourable shocks.

flation and might thus lead to tighter monetary policy with possible short-term costs for the other Eurozone members.

This argument is only valid to the extent that the inflation rate in a country before its accession to the EMU is a reliable indicator of the inflation rate after the accession. One argument in favour of this would be that inflation frequently exhibits substantial inertia. It is noticeable, however, that a country's entry into the EMU may cause a fundamental shift in its economic policy parameters. Before entering the EMU, a country can, at least in principle, pursue independent monetary policy with the aim of containing inflation, while after the entry the monetary policy will be determined by the ECB. Thus, even if inflation is low and the inflation process exhibits substantial inertia *before* the country's entry to the EMU, it does not necessarily imply that inflation will remain at a low level.

Figure 2 uses dark fields to indicate the months for which the annual HICP inflation exceeded the inflation reference value after the country entered the EMU (and for Greece and Slovenia also before they entered). It is noticeable that only Germany and Austria would have abided by the Maastricht inflation criterion for the entire period since the start of the EMU. Countries like Ireland, Greece, Spain and Portugal have had inflation in excess of the reference value for more than half of the months since 1999:01. Thus, that a country satisfies the inflation criterion prior to EMU entry is no guarantee that it will also satisfy the criterion after entry. It is noticeable that the EMU countries, which have had inflation in excess of the reference value for an extended period of time, all are situated in the geographical periphery of Europe and (with the exception of Portugal) have experienced relatively rapid economic growth since the inception of the EMU.

Another problem with the policy externality argument is that most of the new EU countries from Central and Eastern Europe are small economies. The impact of inflation of the NEU8 countries on the aggregate Eurozone inflation rate would therefore be very small (with the possible exception of Poland). Thus, for most of the new EU countries the policy externality argument *per se* cannot carry much weight.[12]

Maintenance of competitiveness may comprise a third rationale for the inflation criterion (Szapary, 2001; De Grauwe, 2007:149). A country with high inflation risks loosing competitiveness when it enters a monetary union and relinquishes the possibility of currency devaluation.[13] The result may be pressure for the monetary union to pursue expansionary monetary policies and

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[12]It could be argued, however, that if the policy externality argument rationalises the inflation criterion in the case of large economies, then an "equal treatment" argument would suggest that the criterion should also apply to small economies.

[13]Eastern Germany experienced a protracted period of eroded competitiveness and, con-

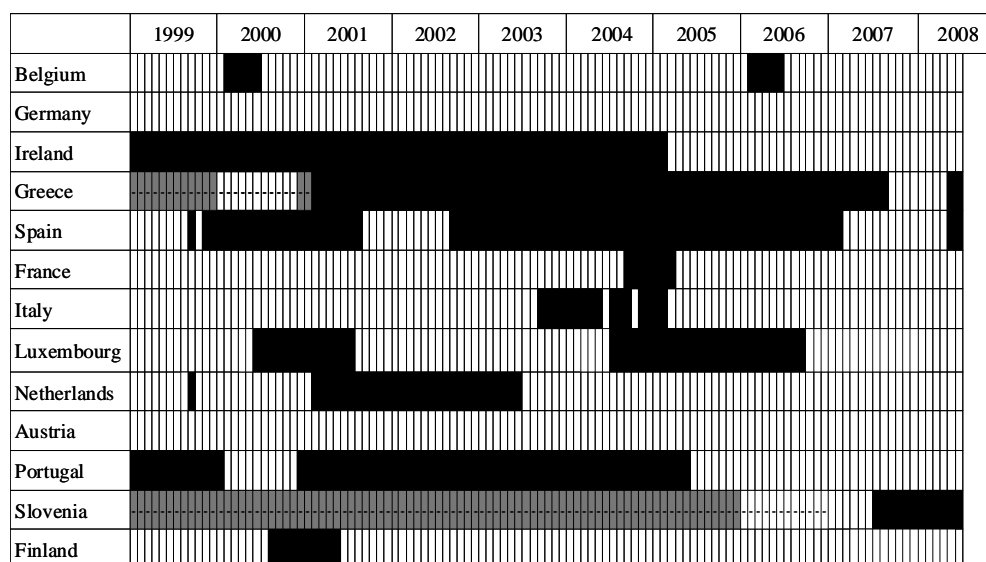|	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium										
Germany										
Ireland										
Greece										
Spain										
France										
Italy										
Luxembourg										
Netherlands										
Austria										
Portugal										
Slovenia										
Finland										

Figure 2: Annual HICP inflation in 13 EMU countries and the inflation reference value, monthly frequency, 1999:01–2008:06

Note: White areas indicate inflation below or equal to the reference value. Black fields indicate inflation above the reference value. Grey fields also indicate inflation above the reference value, but for periods before the country joined the EMU.
Source: Eurostat (2008b), own calculations.

possibly also the disintegration of the monetary union. The experience of Portugal after the formation of the EMU is a case in point. Portugal entered with relatively high trend inflation, which partly resulted from a credit boom, and the outcome was weakened international competitiveness and several years of slow growth (Blanchard, 2007).

Evidently, the validity of the competitiveness argument depends on the underlying reasons for inflation in the country considered being above the average level in the monetary union. The relatively high inflation may be due to the Balassa-Samuelson effect where high productivity growth in the tradable sector drives up wages and leads to high domestic inflation (Egert et al., 2003). The high domestic inflation might then be an equilibrium phenomenon as the country's international competitiveness is unaffected and, thus, of relatively little concern. If, on the other hand, high inflation is the result of inertia or exaggerated expectations regarding the future, membership of a monetary union may harm output performance and employment for some time.

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sequently, high unemployment and slow growth after the monetary unification with Western Germany. One may speculate whether a requirement of some form of nominal convergence prior to monetary unification would have reduced the costs of monetary unification in Germany.

4. Satisfying the inflation criterion

4.1. Exchange rate policies

In order to qualify for membership of the EMU, a country must be a member of the European Union and satisfy all five Maastricht criteria. The fulfilment of the inflation criterion is narrowly circumscribed by the exchange rate criterion (Dobrinsky, 2006; Lewis, 2007). The exchange rate criterion stipulates that a country must participate in the ERM II for at least two years, which again implies that the exchange rate of the country cannot fluctuate more than $\pm$ 15 percent from a fixed central parity towards the euro. In particular, no devaluations are allowed within this time frame.

Among the NEU8 countries, Estonia and Lithuania entered the ERM II in June 2004 and Latvia in May 2005. The rest of the countries had still not entered the ERM II by mid-2008. Thus, among the NEU8 countries only the Baltic countries satisfy the exchange rate criterion. Bulgaria has a currency board with a fixed parity of the *lev* towards the euro, but the country has not formally entered the ERM II. The other countries in the sample, Poland, the Czech Republic, Hungary and Romania, have all adopted formal inflation targeting regimes. Figures 3 and 4 show the development of the exchange rate against the euro in each of the NEU8 countries.
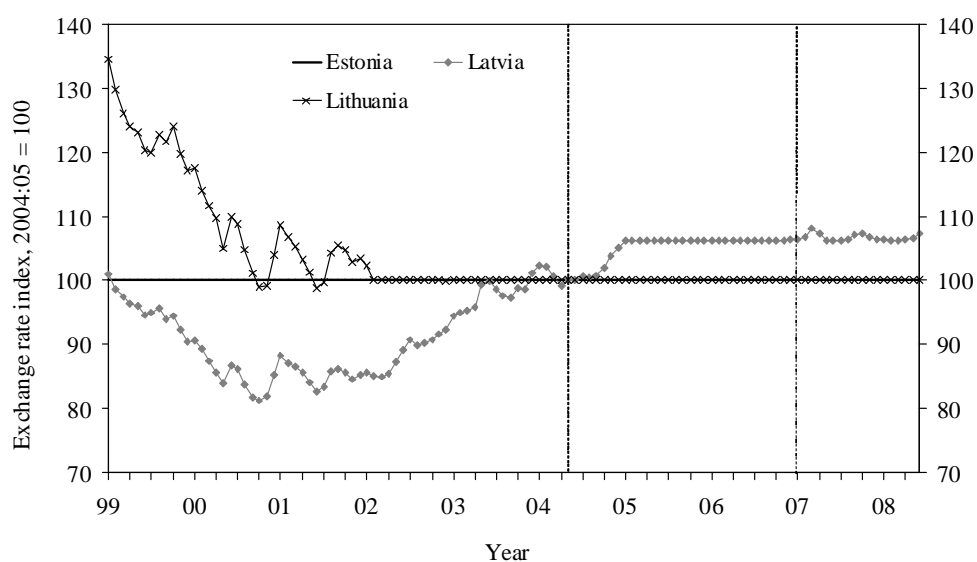
Figure 3: Exchange rates vis-à-vis the euro in the Baltic countries, monthly frequency, index, 2004:05=100

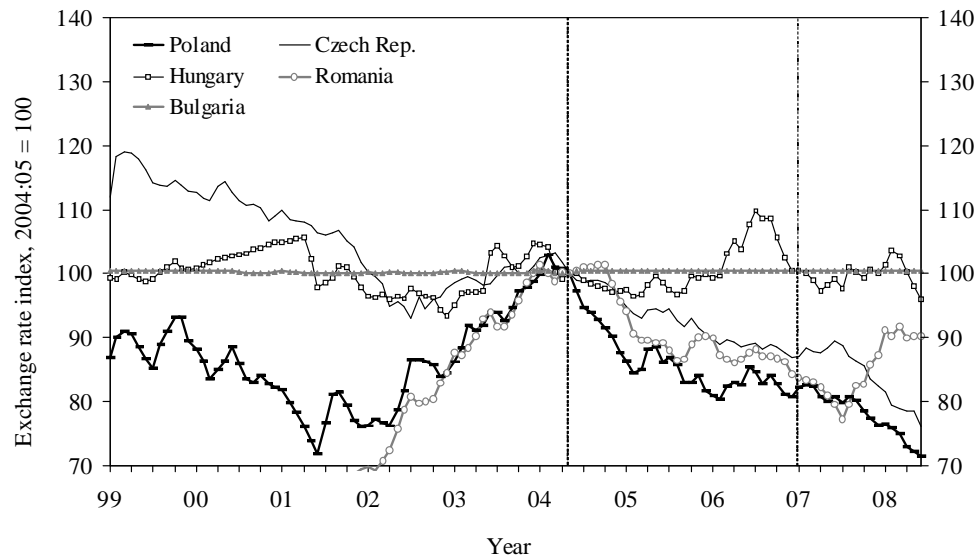Source: Eurostat (2008c), own calculations.

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Figure 4: Exchange rates vis-à-vis the euro in selected NEU8 countries, monthly frequency, index, 2004:05=100

Source: Eurostat (2008c), own calculations.

The Baltic countries have all had very stable exchange rates towards the euro since joining the ERM II, simply reflecting the fixed exchange rate policies pursued by these countries. The Bulgarian currency board also asserts itself in the form of a fixed euro parity. Hungary has experienced some exchange rate volatility since joining the EU, but the exchange rate has not exhibited any particular trend. The other three inflation targeting countries — in particular Poland and the Czech Republic — have seen marked appreciations of their currencies.

4.2. Inflation in NEU8 and the Maastricht inflation criterion

Figures 5 and 6 display, at monthly frequencies and for the period 1999:01–2008:06, the annual HICP inflation in the NEU8 countries together with the inflation reference value. Appendix shows summary statistics for the annual HICP inflation in all the 27 EU countries for different time samples.

A number of points arise from Figures 5 and 6. First, all the NEU8 countries have experienced rapidly increasing inflation since the beginning of 2007. This applies in particular to the Baltic countries and Bulgaria which have fixed exchange rates against the euro. The inflation targeting countries have been more successful in containing inflationary pressures amid increasing energy
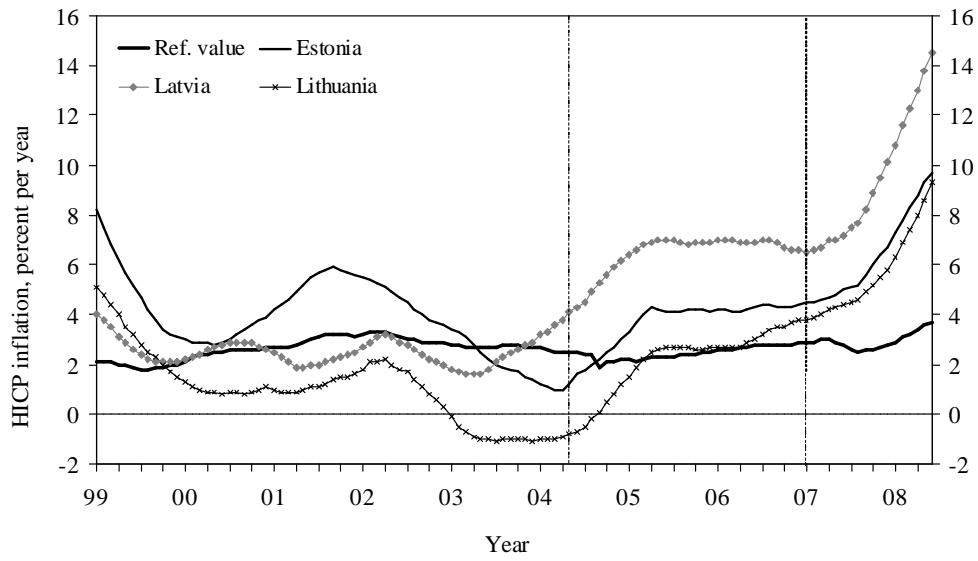
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Figure 5: Annual HICP inflation in the Baltic countries, monthly frequency, 1999:01–2008:060
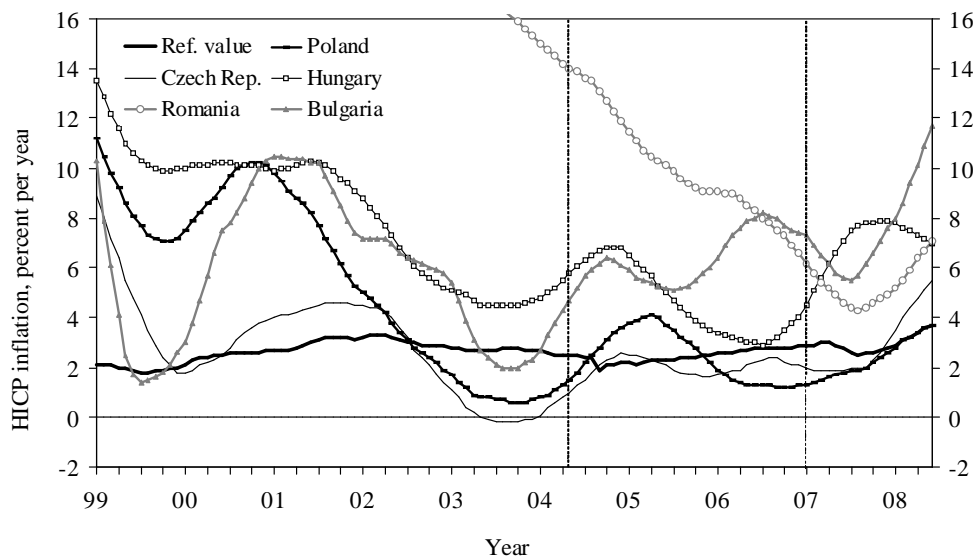
Source: Eurostat (2008b), own calculations.

Figure 6: Annual HICP inflation in selected NEU8 countries, monthly frequency, 1999:01–2008:06

Source: Eurostat (2008b), own calculations.

and food prices, although inflation has increased markedly in these countries as well. Seven of the eight countries had inflation in excess of the reference value (and hence breached the temporal component of the inflation criterion) during all of the first six months of 2008, while Poland had inflation in excess of the reference value in June 2008.

Second, the annual HICP inflation in most of the NEU8 countries has been relatively high and substantially above the inflation reference value over the entire period from 1999 to 2008. For Romania, the annual HICP inflation remained above 15 percent until 2004. Third, inflation is highly volatile in most of the countries. For two of the countries, Lithuania and the Czech Republic, inflation turned negative in 2003–2004.

Figures 5 and 6 encapsulate the problems faced by the NEU8 countries in meeting the inflation criterion. The volatile inflation implies for most NEU8 countries that there are periods when the inflation tally is below the reference value and other periods when it is above it. This suggests that the exact time period in which a country is assessed is important for the result concerning the temporal component of the inflation criterion and possibly also for the sustainability component. The relatively high trend inflation may constitute a problem concerning both the temporal and the sustainability component of the inflation criterion.

4.3.   What drives inflation in the new EU countries?

The discussion above suggests that it is important to identify the factors that drive inflation in the NEU8 countries. A natural starting point is the observation that there is a close correlation between the income and price level across countries. Figure 7 illustrates this point in the case of the EU comparing GDP per capita (converted to euros using market exchange rates) and the GDP price deflator.[14] A linear relationship between the per capita income level and the price level emerges. The NEU8 countries, which all have comparatively low levels of income, closely follow this relationship.[15]

The NEU8 countries have exhibited relatively high trend growth since the mid- or late 1990s, which — given the countries' initial low levels of income — signifies a process of income convergence. This real convergence process has coincided with relatively high inflation. The process of nominal convergence is likely to exert itself as long as the NEU8 countries experience high

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[14]A qualitatively similar picture emerges if purchasing power adjusted GDP levels are used.

[15]Broda (2006) finds that countries with fixed exchange rate systems generally have higher price levels than countries with flexible exchange rates. Figure 7 does not support this finding in the case of the NEU8 countries.
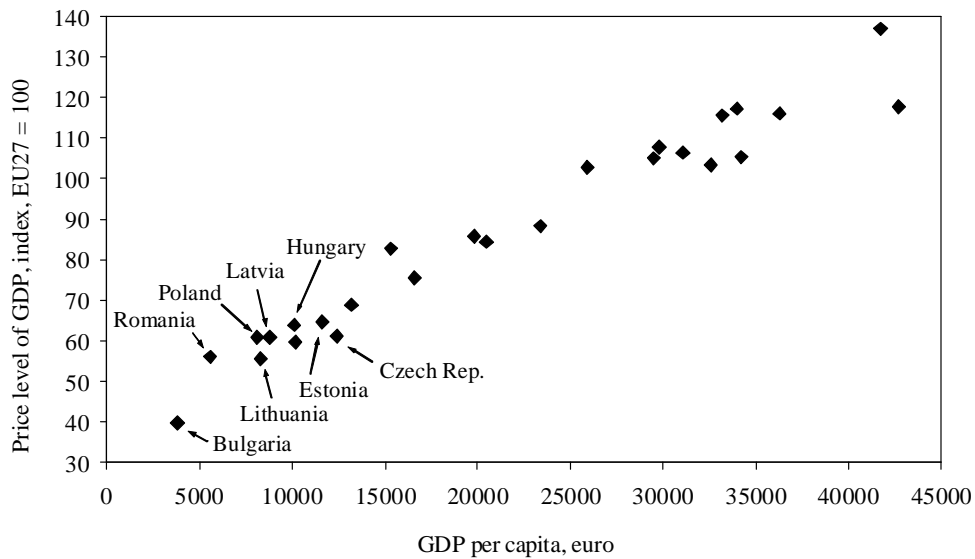
Figure 7: GDP per capita and relative price levels in the EU countries in 2007

Note: Luxembourg is not included.
Source: Eurostat (2008d), Eurostat (2008e), own calculations.

rates of economic growth. A number of theories link real and nominal convergence.[16]

The most celebrated theoretical explanation is the Balassa-Samuelson effect already mentioned in Section 3 (Egert et al., 2003). The main assumption underlying the Balassa-Samuelson effect is that productivity growth is higher in the tradable than in the non-tradable sector. The higher productivity growth in the tradable sector drives up wage growth in that sector, which again spills over into higher wage growth in the non-tradable sector. Since productivity growth in the non-tradable sector is assumed to be relatively low, the result is higher inflation in the non-tradable sector than in the tradable sector.

Bhagwati (1984) has proposed another (related) theory, which can link real convergence and non-traded inflation. The starting point is also here that the price of traded goods is determined from abroad. Low-income countries are endowed with relatively little capital, which holds down the marginal product of labour and, hence, the wage in the traded sector. Equalisation of wages across sectors implies that the price in the non-traded sector is low. If real convergence is associated with capital deepening, the marginal product of labour will increase along with wages in both the traded and non-traded sectors, and

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[16]See also the comprehensive survey by Egert (2007) for a slightly different list of explanations.

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the latter effect will then be higher non-traded inflation and a real appreciation.

Both the Balassa-Samuelson and the Bhagwati models link income convergence and real appreciation; the resulting impact on overall (tradable and non-tradable) inflation will depend on the exchange rate regime. If the exchange rate is fixed, a real appreciation is likely to lead to higher overall inflation. If, however, real appreciation is followed by a corresponding nominal exchange rate appreciation, the inflationary impact will be less pronounced.

The real convergence process is in many cases accompanied by deeper cross-border integration. Sectors that see little trade may gradually open to foreign competition, and if prices were initially below the international level, the result may be higher prices. For instance; a sudden inflow of tourists may lead to deeper international integration of businesses like accommodation establishments and restaurants. A related explanation is the integration of factor markets where, for instance, emigration might lead to upward pressure on wages, spilling over into higher inflation.

A number of explanations can link real convergence and inflation in both non-tradable and tradable goods. Higher income in a country might make demand for many products less price elastic. To the extent sellers of traded and non-traded products have market power and can "price to market", higher income would lead to increasing margins and consequently upward pressure on prices.

Structural changes concomitant with higher income may also affect trend inflation. Higher income may lead demand to a switch towards higher-quality goods and services. Statistics authorities occasionally make adjustments to the price index to account for changes in quality, but such changes are generally rudimentary and applied only to a limited range of products (Wynne and Rodriguez-Palenzuela, 2004). The result of a gradual switch to higher-quality products may then be higher *measured* inflation.

Richer economies tend to have larger governments relative to GDP ("Wagner's law"). Real convergence might thus lead to inflationary pressures to the extent that increased government spending is financed through higher taxes. This applies most directly to indirect taxes like value added and excise taxes, but possibly also to other types of taxes depending on, *inter alia*, the economic incidence of different taxes.

Besides the structural factors, inflation is also affected by different shocks. As in other economies, changes in import, energy and food prices will affect inflation via first a direct effect and subsequently a derived effect when changes in input prices spill over into changes in output prices. Other price shocks emerge from changes in the rates or the coverage of indirect taxes like value added and excise taxes. Likewise, changes in controlled prices (incl.

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the prices of government produced goods and services) may also affect overall inflation.

Cyclical factors may also play a role in inflation formation in the new EU countries as traditionally captured by the Phillips curve. Moreover, inflationary dynamics depend on the propagation of inflationary impulses in the economy, which again depends on the structure of the economy, institutions (like exchange rate systems and indexation schemes) and, finally, the formation of expectations. In combination these factors help determine the degree of inertia and self-reinforcing factors in the inflationary process.

The discussion above brought up a large number of theories that may explain inflation performance in the new EU countries from Central and Eastern Europe. Some of these are linked to the real convergence process; some are related to the accession to the EU; others are likely to be present in any market-based economy. A large number of empirical studies have examined the effect of one or a few of the explanatory factors on inflation in the new EU countries, but relatively few general results have emerged. The lack of general results likely reflects that the *relative importance* of different factors is likely to vary from country to country — and across different time periods, but it may also reflect that only few studies have sought to assess the relative importance of a large number of different factors — with Egert (2007) as a prime exception.

Considering initially individual factors, the overall picture is that the Balassa-Samuelson effect can explain at most a small part of the real appreciation of the domestic currency against the euro observed in all new EU countries since the mid-1990s. This is partly because both the traded and non-traded sectors have seen rapid productivity growth, but also because non-traded products have tended to constitute a relatively small share of private consumption in the new EU countries (Egert, 2002; Egert et al., 2003; Egert and Podpiera, 2008).

It emerges that also the price inflation of tradable products is higher in the new EU countries than in the Eurozone (Egert et al., 2003). Fabrizio et al. (2007) show that the quality of export products — and presumably also of domestically consumed products — has increased substantially in the new EU countries since the mid-1990s. It is, therefore, likely that a substantial part of tradable inflation results from insufficient adjustment of the price index to improved product quality (Cincibuch and Podpiera, 2006; Egert et al., 2006; Egert and Podpiera, 2008).

Another explanation for tradable inflation being higher in the new EU countries than in the Eurozone relates to the fact that traded products in almost all cases "contain" a substantial non-traded component. For instance, the price of an imported TV-set paid by the consumer includes the cost of domestic transportation, warehousing, marketing, sale, packaging, warranty etc. Most of the

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additional components are essentially non-traded and their cost might be affected by the Balassa-Samuelson effect, the Bhagwati effect or other structural factors.

There is empirical support in favour of also non-structural factors affecting inflation in the new EU countries from Central and Eastern Europe. Studies estimating Phillips curve relationships for various new EU countries have frequently found that the measures of capacity utilisation in goods or labour markets affect inflation in a statistically and economically significant way (e.g. Arratibel et al., 2002; Masso and Staehr, 2005).

Changes in regulated prices, of *inter alia* social housing and public transportation, have increased inflation in many new EU countries. Shocks in import, energy and food prices have also substantially affected inflation in the new EU countries, which is consistent with their economies being open and energy-dependent, and private consumption containing a relatively large share of food.[17] As part of their EU membership obligations, most new EU countries have had to increase excise taxes on alcohol, tobacco and energy, which again have contributed to inflation pressures. The specification of inertia and expectations varies markedly across different studies (Arratibel et al., 2002; Masso and Staehr, 2005).

Only few studies have sought to identify the *relative importance* of different structural and non-structural factors. Egert (2007) seek to explain inflation in both an accounting framework and panel data regressions, while including a large number of explanatory variables. The Balassa-Samuelson effect has little impact on inflation, while composition effects (switch to higher quality goods) and possibility other structural factors are of importance. Exchange rate developments along with the degree of inflation persistence, cyclical factors and changes in regulated prices appear to be important drives of inflation in the new EU countries.

De Grauwe and Schnabl (2004) is another study including a large number of variables in panel data estimations of inflation in the new EU countries. The main result is that money supply growth, the monetary regime and de facto exchange rate variability are important inflation determinants, while very few other variables enter significantly. The likely explanation is that the money growth variable is highly correlated with other potentially important explanatory variables.

Overall the empirical literature explaining inflation in the new EU countries suggest that the Balassa-Samuelson effect is unlikely to drive inflation to a large extent, while other structural explanations like the Bhagwati effect,

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[17]Some new EU countries experienced substantial food price increases as they acceded to the EU and adopted the Common Agricultural Policy.

quality upgrading and composition effects are more probable candidates, but their relative importance is unclear. The dynamic adjustment of inflation to shocks and capacity constraints is also little analysed. More research seeking to pin down the *relative importance* of different factors on inflation in the new EU countries is warranted.

Returning to Figures 5 and 6 of annual HICP inflation in the NEU8 countries, it is clear that many factors affect the inflation developments. The rather high-trend inflation may be attributable to the Balassa-Samuelson effect, capital deepening, quality improvements and other structural factors. As can be seen, inflation varies markedly, partly since the inflation processes are susceptible to shocks and cyclical movements. The marked inflationary upswing in 2007–2008 in the Baltic countries and Bulgaria and to a lesser extent in the inflation targeting countries is likely due to food and energy price jumps and increased capacity utilisation in labour and goods markets.

4.4. Enlargement of the EU

The enlargement of the EU from 15 to 27 member countries has resulted in a lower expected inflation reference value. The straightforward argument is that an extra EU member will lower the reference value if its inflation is low enough for the country to fall into the reference group, whereas the extra EU member will have no effect on the reference value if its inflation rate is so high that the country does not fall into the reference group. A lower expected reference value amounts to a tightening of (at least) the temporal component of the inflation criterion.

Lewis and Staehr (forthcoming) seek to quantify the "enlargement effect", i.e. the effect on the inflation reference value stemming from the enlargement of the EU from 15 to 27 member countries. Their first exercise is a historical counterfactual experiment comparing the inflation reference values with 15 and with 27 EU member countries, respectively. Figure 8 shows the reference values as well as the difference for each month from January 1990 to June 2008.

It is noticeable that the enlargement of the EU from 15 to 27 member countries would have implied a substantial tightening of the temporal component of the inflation criterion during most of the period from the middle of 2002 until the end of 2004. A corresponding reduction of the reference value amounting to 0.2–0.5 percentage points is apparent in the period from the middle of 2007 until the middle of 2008.

Lewis and Staehr (forthcoming) proceed with a number of Monte Carlo simulations. Inflation rates in the 27 EU countries are assumed to follow
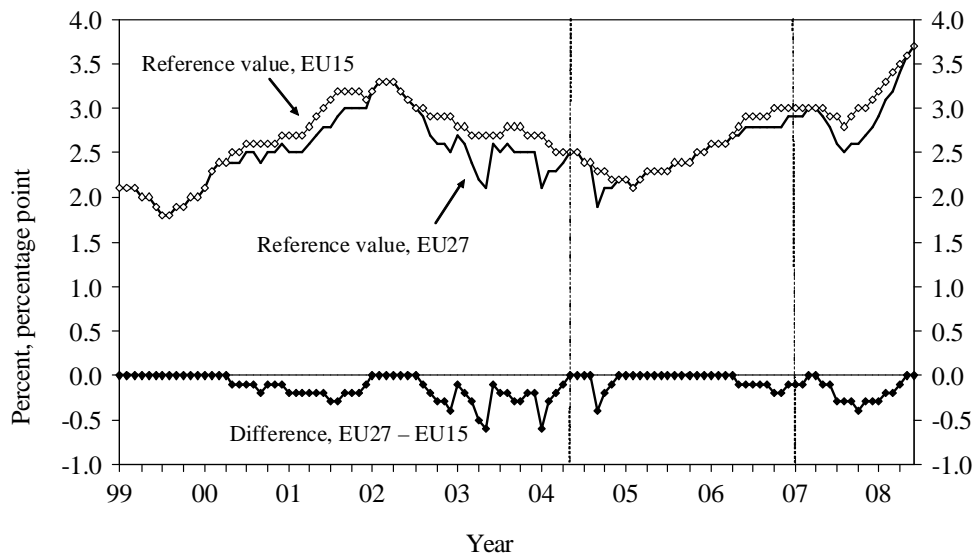
Figure 8: Inflation reference values for EU15 and EU27, respectively, percent per year. Difference of inflation reference values between EU27 and EU15, percentage points

Note: Countries with inflation below 0 are excluded from the reference group of the three best performing countries.
Source: Lewis ans Staehr (forthcoming), Eurostat (2008b), own calculations.

a specific distribution, while the means, variances and co-variances are estimated based on historical data. Figure 9 shows the simulated distributions of the inflation reference value with, 15 and 27 EU member countries, respectively.

The distribution of the inflation reference value shifts left when the number of EU countries increases. The expected reference value is around 2.64 with 15 EU members and 2.49 with 27 EU members, amounting to a 0.15 percentage point reduction in the expected reference value. Numerous robustness checks produce rather similar results, producing a reduction in the expected reference value by 0.15–0.2 percentage point in almost all cases.

4.5. Should the Maastricht inflation criterion be modified?

The inflation criterion has been widely debated and numerous proposals for modifying the criterion and the way it is implemented have been made. In this context it is worth recalling that different parties might have different objectives and viewpoints. The objective of a new EU country might be to be able to enter the Eurozone undertaking as few adjustment steps as possible. The objectives of the existing Eurozone members might be entirely different.
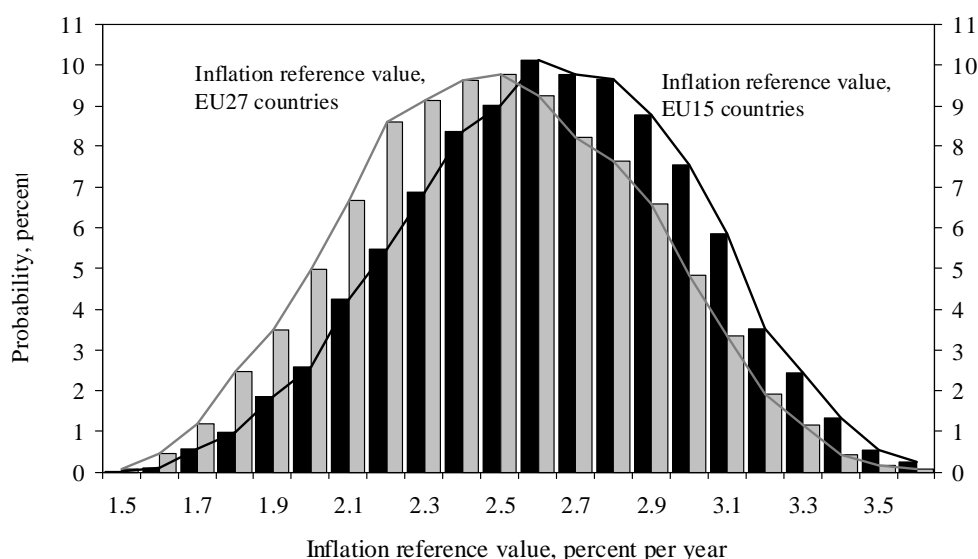
Figure 9: Probability distributions of inflation reference value for EU15 and EU27, respectively

Source: Lewis and Staehr (forthcoming).

The starting point for most analyses has been the "principle of equal treatment" adhered to by the EU. It is argued that a strict implementation of the current inflation criterion is inconsistent with the "principle of equal treatment" because the institutional and economic environment having changed markedly since the inflation criterion was penned. Kenen and Meade (2003) state that "equal treatment" should not be interpreted as "identical treatment", but rather as "equivalent treatment", implying that the criterion and its implementation are modified to take into account the different institutional and economic environment facing the new EU countries from Central and Eastern Europe.

As discussed in Section 2, the current formulation of the inflation criterion does not necessarily ensure convergence to the Eurozone inflation level. The existence of a Eurozone inflation rate since the formation of the EMU would make it natural to state the criterion as a function of the Eurozone inflation (Kenen and Meade, 2003; Darvas and Szapary, 2008). This argument is strengthened by the finding that the correlation between the inflation reference value and the Eurozone inflation has dropped markedly since 2004 (Sec.2). Another argument pointing in the same direction is the finding that the current formulation of the inflation criterion implies that enlargement of the EU has lowered the average reference value somewhat (Lewis and Staehr, forthcoming).

Another criticism is that the inflation criterion does not take into account

the specific factors driving inflation in the new EU members from Central and Eastern Europe seeking to join the EMU. In particular, the process of real convergence is likely to lead to higher trend inflation, while the accession to the EU has led to higher food prices and increased excise taxes. These factors imply, it is argued that it will be excessively difficult for the new EU countries to satisfy the inflation criterion, in particular if they seek to maintain a stable exchange rate (Wyplosz, 2002; Buiter and Sibert, 2006; Calmfors et al., 2007).

As mentioned above, the inflationary pressure is likely most pronounced in countries with a fixed exchange rate against the euro, since countries with less rigid exchange rate systems can counteract inflationary pressures by letting the currency appreciate. It may seem paradoxical that the countries that maintain a fixed exchange rate against the euro — and thus in many respects already are integrated in the EMU — are the countries that are the farthest away from joining the EMU.

It is noticeable that the other aspects of the institutional setup of the EMU have undergone marked changes. In particular, the government deficit and debt ceilings imposed by the "Stability and Growth Pact" were altered already few years after the launch of the EMU (Wyplosz, 2006; Fischer et al., 2006).

The arguments in favour of modifying the inflation criterion have much merit. There are, however, also arguments against changing the provisions of the Maastricht Treaty. Some of these are economic, some political. It is likely the real convergence process has resulted in inflationary pressures in the new EU member countries, but this does not *per se* constitute an argument for amending the inflation criterion. The main question is whether the criterion serves its intended purpose(s) or whether it unduly delays the adoption of the euro in the new EU member countries.

Possible rationales for the inflation criterion were discussed in Section 3. The preference revelation or suffering argument associated with De Grauwe would not unequivocally suggest that a revision of the inflation criterion is warranted, since it posits that the underlying purpose of the inflation criterion is to screen countries based on their willingness to undertake potentially costly policy measures. The same result emerges in relation to the policy externality argument as the underlying reason for the high inflation is essentially irrelevant for the EMU countries being exposed to tighter monetary policy.[18] Finally, the competitiveness maintenance rationale would not stand in the way of an upward adjustment of the inflation reference value as the relatively high inflation in NEU8 countries in some respects reflects the favourable developments in the countries' international competitiveness.

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[18]As argued in Section 3, however, the policy externality argument may not carry much weight for most of the NEU8 countries given their small economies.

Since the Maastricht inflation criterion is part of the EU Treaty, amending the criterion would mean all the 27 countries should unanimously agree on the new text and this would undoubtedly be a lengthy process. Moreover, it should not be taken for granted that the end-result would be a more appropriate inflation criterion or that it would be more favourable for the new EU countries from Central and Eastern Europe. It is also noticeable in this context that none of these countries raised the issue when the EU Constitution and, subsequently, the Lisbon Treaty were negotiated.

5. Strategies of the new EU countries

By joining the European Union, each of the NEU8 countries has committed to join the EMU contingent on it satisfying the Maastricht Criteria. The previous section made clear that it will be challenging for the new EU countries from Central and Eastern Europe to satisfy the inflation criterion in the short and possibly also in the medium term. The countries undergo a rapid catch-up process which exerts upward pressures on inflation, while the inflation reference value is likely to have been lowered after the enlargement of the EU. It is not realistic to assume that the inflation criterion will be modified in the foreseeable future. Against this background, the countries must map out their strategic policy choices. Three different strategies can be identified, all of which have been applied since 2004.

A) Wait and see. The majority of the NEU8 have adopted a wait and see position since they have still not entered the ERM II, and EMU membership is thus two years or more away. This group consists of Poland, the Czech Republic, Hungary, Bulgaria and Romania. By abstaining from membership of ERM II, preparations for EMU membership can be postponed. There are at least two reasons for this choice of strategy. Some countries see little support among key policymakers for EMU membership and the replacement of the local currency by the euro. Other countries have experienced problems satisfying not only the inflation criterion but also other Maastricht criteria.

B) Preparation with additional disinflationary measures. A country may aim to satisfy the inflation criterion by taking specific measures to lower inflation. These measures can be made prior to the country joining the ERM II and/or afterwards. The measures may take different forms. Increases in excise taxes or controlled prices may be brought forward or postponed, depending on the preferred inflation path. Monetary policy steps like interest rate increases or currency revaluation may also be taken to restrain inflation.[19] A lowering of the value added tax could in principle also be used to disinflation the economy,

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[19]Dobrinsky (2006) and Lewis (2007) undertake simulations of the inflation in an EMU

provided other means of making up for the financing shortfall can be found. Other possibilities include broader policy measures, such as a tightening of fiscal policy or different forms of income policies.

It may be useful to distinguish between measures of temporary nature and measures with permanent or longer-lasting effects. Some of the disinflationary measures, like the postponement of excise tax increases, are temporary and will, *ceteris paribus*, reduce inflation in the short term only to have inflation increase subsequently. This is what Szapary (2001) labels the "weighing-in syndrome" in reference to boxers slimming down to satisfy the weight limit before a fight only to see the weight go up shortly afterwards.

C) Preparation without additional disinflationary measures. The Baltic countries joined the ERM II shortly after acceding to the EU and stated their intention to join the EMU as soon as possible. These countries, however, undertook few measures to restrain inflation beyond retaining the fixed exchange systems. The decision to refrain from extraordinary disinflation policies was possibly also motivated by the low inflation observed in these countries during the years preceding EU membership. In the end, all the three countries failed to satisfy the inflation criterion.

To assess the different strategic choices, it is useful to consider the experiences of different assessments. Box 1 describes briefly the assessments of Lithuania in 2006 and Slovakia in 2008. Lithuania was deemed not to satisfy the sustainability component of the inflation criterion, while Slovakia received the opposite message (albeit both the EC and the ECB expressed concerns).

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Box 1:Assessments of inflation performance in Lithuania and Slovakia

Lithuania joined the ERM II in June 2004, shortly after becoming a member of the European Union. Lithuania had maintained a currency board since 1994, but changed the peg of the *litas* from the dollar to the euro in 2002. The switch took place at a time when the dollar was very strong, and shortly afterwards the started appreciating towards the dollar. The result was that the Lithuanian litas experienced two episodes of real appreciation, and the inflation rate remained negative for several years (see Figure 3 in the main text). The annual HICP inflation was still negative when Lithuania joined the ERM II, but rose to 3–4 percent within the next two years.

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applicant country based on assumptions concerning the inflationary effects of real convergence and the disinflationary effects of exchange rate appreciations. They both show that an EMU applicant country exploiting the revaluation possibilities within the ±15 percent band has a high probability of satisfying the temporal component of the inflation criterion.

Lithuania was assessed in the Convergence Reports produced in spring 2006, i.e. approximately two years after joining the ERM II (EC, 2006; ECB, 2006). The Lithuanian authorities took only few steps specifically aimed at keeping down the annual HICP inflation tally, partly reflecting that the currency board ruled out monetary policy changes. Some excise tax increases were, however, pushed back to postpone their immediate inflationary impact. The Convergence Reports from both the EC and the ECB concluded that Lithuania did not fulfil the inflation criterion. In March 2006, the annual HICP inflation exceeded the reference value by 0.1 percentage points (see Figure 3), but the main emphasis was put on the sustainability component of the inflation criterion. It was concluded that planned increases in excise taxes and controlled prices as well as increasing inflationary pressure would lead the Lithuanian annual HICP inflation to exceed the reference value substantially in the coming year.

Slovakia has pursued a number of different monetary and exchange rate policies after the adoption of the Slovak *koruna* in 1993. Slovakia joined the ERM II in November 2005, but had already at the beginning of 2005 introduced a formal inflation targeting regime. In March 2007, the central parity between the koruna and the euro was revalued by 8.5 percent. This step surprised many market participants despite it partly reflecting the preceding developments in the exchange markets. The revaluation stayed within the ± 15 percent band dictated by the exchange rate criterion.

Slovakia was assessed in the Convergence Reports produced in spring 2008 (EC, 2008; ECB, 2008). The Slovak authorities had brought most of the required hikes in excise taxes and controlled prices forward to 2004. Annual HICP inflation was almost 10 percent in 2004, but inflation fell markedly afterwards to reach 2.2 percent in March 2008. This was significantly below the reference value and Slovakia thus satisfied the temporal component of the inflation criterion. The Convergence Reports also concluded that the sustainability component was fulfilled in spite of inflationary pressures stemming from, *inter alia*, a low initial price level and a booming economy. The ECB Convergence Report states (ECB, 2008:52): "To sum up, [...] there are considerable concerns regarding the sustainability of inflation convergence." Still, the projected annual HICP inflation of March 2009 (one year ahead) was lower than the projected reference value.

As if to dispel any doubt that the inflation rate in Slovakia would remain below the reference value for some time, the Slovak authorities revalued the koruna again at the end of May 2008. This time the central parity was revalued by

15 percent, bringing the central parity into line with the exchange rate in the market at the time.[20] In June 2008, the Council of Finance Ministers decided to admit Slovakia to the EMU effective from January 2009 and let the conversion rate be the central parity adopted in May 2008.

The different assessments of the expected sustainability performance of the two countries are noteworthy. In particular, the long term performances after adoption of the euro are unlikely to differ much across the two countries; any real appreciation would in that case take place in the form of an increasing price level, i.e. inflation. The different assessments must therefore be based on a narrow assessment of the inflation performance within one year after the last month for which data is available for the assessment — which was March for both Lithuania and Slovakia.

If a country is assessed based on data ending in March, then the decision will be made by the Council of Ministers some months later. In case of a positive outcome, the country will join the EMU in January the following year (in part to make time for the practical arrangements). This would then imply that the sustainability component of the inflation criterion amounts to an assessment of the inflation performance from April the year before EMU entry until March three months after. Given the computation method of the annual HICP inflation index, the three months after the potential EMU entry will have very little importance for the projected inflation performance. In other words, the forward-looking sustainability component of the inflation criterion essentially deals with the period immediately before the possible EMU entry.

The different assessments of Lithuania and Slovakia must be considered in light of this reasoning. Lithuania was committed to keeping its currency board until EMU entry, and inflation in the period before entry could therefore not be contained with the help of tight monetary policy. Slovakia retained the use of an independent monetary policy up until membership of the EMU and could therefore better contain the inflationary pressures.

The Slovakian case shows that active use of monetary policy is accepted by the EC and the ECB as a means of keeping inflation down to a level where both the temporal and the sustainability components of the inflation criterion are satisfied. Thus, countries for which the weakened competitiveness of an appreciating currency is of little importance have a "shortcut" available to satisfy the inflation criterion. A policy of revaluations is a means to satisfy the

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[20]The revaluation of the central parity in May 2008 was not uncontroversial as it might have been leaked to market participants beforehand (The Economist, 2008b).

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inflation criterion as also proposed by *inter alia* Darvas and Szapary (2008).

A revaluation of the national currency, ceteris paribus, worsens international competitiveness by making import products less expensive and by exerting downward pressure on export prices. The result is a temporary lowering of the inflation rate. An essentially similar result could be obtained by reducing the value added tax and covering the revenue shortfall by increasing the employers' social security contributions. The net effect of such a tax policy shift would also be weakened competitiveness — as well as downward pressure on inflation in the short term. The tax policy switch or "hidden revaluation" is a possible option for a country seeking to restrain short-term inflationary pressures without giving up its fixed exchange rate system.[21] Overall, it is difficult to assess the different euro adoption strategies outlined above. A country must decide whether to pursue membership of the EMU in the near term (strategies B and C) or not (strategy A). In the former case, the country must also decide whether to undertake active disinflationary policies (strategy B) or not (option C). Each of the strategies has its costs and benefits (De Grauwe, 2007: Part I).

Strategy A gives the policymakers the most scope for independent policy-making allowing them to pursue other policy objectives than EMU membership. However, such an approach pushes back the possible positive effects from EMU participation and leaves the question of membership unresolved. The uncertainty generated by the inaction strategy may potentially be a problem, especially if the country is exposed to financial or exchange rate shocks.

Strategy B has as its main objective to expedite EMU entry. If successful, the country applying the strategy can reap potential gains from membership at an early stage, and the policymakers can focus their attention on other issues. Strategy B also has possible costs. The postponement of hikes in regulated prices or taxes may lead to a social suboptimal allocation of resources and tie up policy instruments for non-standard uses. A policy of exchange rate appreciation may hamper competitiveness and worsen output performance. For countries that have pursued fixed exchange rate policies, a sudden revaluation might cause disorganisation and harm the confidence of the general public in monetary policy.

Strategy C avoids the possible costs associated with strategy B, but induces additional uncertainty as concerns the adoption of the euro. One point in favour of option C is the fact that the country is assessed every second year in the regular Convergence Reports and can ask to be assessed at other times as well. This means that even if a country is deemed not to satisfy the inflation criterion in one assessment round, the country gets another chance relatively

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[21]This policy option is in effect the reverse of the so-called "hidden devaluation" undertaken, *inter alia*, in Germany in 2007 (Puchala and Lankowski, 2008).

shortly afterwards.

The size of the costs and benefits of the different strategies will depend on the initial conditions of the country, the functioning of the economy and the priorities of the policymakers. For instance, membership of the ERM II is unlikely to constitute any significant costs to the Baltic countries (Lattemae and Randveer, 2004). They are very small and open economies with a high degree of integration in regional financial markets. They have maintained fixed ex-change rates for a long time and would likely maintain fixed exchange rates against the Eurozone irrespective of the existence of the ERM II.

Countries with larger and less open economies may, on the other hand, find that the costs of giving up their independent monetary policy are rather high and a lengthy period of ERM II membership may seem unappealing to the policymakers in these countries. This would in particular be the case if the exchange rate is highly volatile and difficult to keep within the ±15 percent band allowed. If one of these countries satisfies all the Maastricht criteria except the inflation criterion, the strategy pursued by Slovakia may seem attractive. They would start by entering the ERM II and depending on the early inflation experience revalue their currency in order to bring the inflation below the reference value (within the ±15 percent band).

Other countries again may see EMU membership only as a longer-term prospect and pursuit of membership might distract policymakers from other objectives. This would in particular be the case in lower-income countries where the main short-term objective is likely to be rapid economic and social development.

The discussion above has made clear that the costs and benefits of different euro adoption strategies are likely to vary across countries. The upshot is that different countries are best served choosing different strategies, depending on the initial conditions of the country, the functioning of the economy and the priorities of the policymakers. In this respect there is no one-size-fits-all policy available for the NEU8 countries.

6.   Summary

The new EU countries from Central and Eastern Europe face one major stumbling block in their way towards the Economic and Monetary Union: the Maastricht inflation criterion. This paper has discussed the criterion, its implications for the new EU members and the set of strategies for euro adoption available to these countries.

The Maastricht inflation criterion comprises two rather distinct parts. The

temporal component imposes conditions on the current inflation of a country and is detailed and relatively concise. The sustainability component is broader and it has been evaluated based on inflation forecasts. The formulation of the inflation criterion in the Maastricht Treaty and its Protocols leaves substantial discretion to the institutions undertaking the assessments and the policymakers making the final decision.

It is a matter of debate whether the continued use of the original inflation criterion is consistent with the "principle of equal treatment" within the European Union. First, increases in excise taxes and controlled prices in connection with the EU accession contribute to higher inflation. Second, the parallel real and nominal convergence processes imply upward pressures on the inflation rate in these countries, in particular in countries with fixed parities towards the euro. Third, the enlargement of the European Union from 15 to 27 member countries has lowered the expected inflation reference value.

It was argued that a review of the inflation criterion must consider the underlying rationales for the criterion. The analysis showed that while there are arguments for altering the inflation criterion, there are also arguments in favour of retaining it in an unaltered form. Moreover, the outcome of the complex political process of changing the criterion is highly uncertain.

This paper argued that the special circumstances concerning the Central and Eastern European EU countries suggest that the process of admitting new countries to the EMU should be pragmatic and adaptive — exactly as it was the case when the first 12 countries from Western Europe were admitted to the EMU.[22] The assessments of Slovakia in the Convergence Reports produced in spring 2008 and the subsequent admission of Slovakia to the EMU suggest that this view has support also in the policymaking bodies of the European Union.

In light of the inflationary pressures stemming from the real convergence process, the new EU members from Central and Eastern Europe essentially have three possibilities when mapping out their euro adoption strategies. A country may A) postpone EMU preparations, B) enter the ERM II while pursuing extraordinary disinflationary policies, or C) enter the ERM II without extraordinary disinflationary policies. The best strategy choice is likely to depend on the initial conditions of the country, the functioning of the economy and the preferences of the policymakers. Some countries may push back EMU membership preparations in pursuit of other goals; some countries may replicate the Slovak strategy and undertake revaluations to bring down inflation; while some countries may prefer to join the ERM II and only enter the EMU

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[22]Wyplosz (2006) describes different aspects of the process of assessments and admission of countries to the EMU in 1998 and 2000.

when inflationary pressures abate. The paper brought up the possibility of a country maintaining a fixed exchange rate against the euro, while using tax policies as a "hidden revaluation" in order to contain the inflationary pressure. Clearly, there is no one-size-fits-all euro adoption policy available for the eight new EU countries from Central and Eastern Europe.

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Appendix.

Table A.1: Summary statistics for annual HICP inflation in 27 EU countries at monthly frequency, different sample periods (percent)

	1999:01-2008:06		2001:01-2008:06		2004:05-2008:06	
	Mean	**S.D.**	**Mean**	**S.D.**	**Mean**	**S.D.**
Belgium	1.96	0.61	2.11	0.52	2.18	0.38
Bulgaria	6.24	2.51	6.47	2.26	6.78	1.52
Czech Republic	2.65	1.70	2.35	1.46	2.34	0.92
Denmark	1.93	0.54	1.90	0.52	1.58	0.43
Germany	1.53	0.55	1.72	0.42	1.93	0.33
Estonia	4.22	1.75	4.23	1.80	4.62	1.84
Ireland	3.34	1.00	3.39	0.98	2.58	0.28
Greece	3.28	0.52	3.41	0.30	3.25	0.22
Spain	3.06	0.54	3.24	0.36	3.23	0.39
France	1.74	0.54	1.97	0.25	1.99	0.32
Italy	2.30	0.32	2.39	0.25	2.24	0.19
Cyprus	2.57	0.92	2.61	0.76	2.21	0.40
Latvia	4.71	2.91	5.24	3.05	7.49	2.24
Lithuania	2.07	2.19	2.08	2.36	3.38	2.26
Luxembourg	2.63	0.94	2.90	0.68	3.15	0.60
Hungary	7.07	2.62	6.15	2.08	5.52	1.71
Malta	2.41	0.66	2.30	0.65	2.19	0.80
Netherlands	2.38	1.13	2.49	1.25	1.56	0.13
Austria	1.71	0.58	1.91	0.37	1.98	0.35
Poland	4.21	3.15	2.98	2.22	2.41	0.95
Portugal	2.92	0.71	3.08	0.70	2.55	0.29
Romania	23.05	16.19	16.66	11.60	8.37	2.90
Slovenia	5.57	2.33	5.16	2.40	3.26	0.86
Slovakia	6.46	3.28	5.39	2.39	4.29	2.08
Finland	1.56	0.83	1.53	0.86	1.03	0.64
Sweden	1.50	0.68	1.71	0.59	1.35	0.42
United Kingdom	1.57	0.52	1.66	0.53	2.01	0.44
Average EU15	**2.23**	**0.67**	**2.36**	**0.57**	**2.17**	**0.36**
Average NEU8	**5.42**	**3.30**	**4.62**	**2.68**	**4.09**	**1.43**
Average EU27	**3.88**	**1.86**	**3.59**	**1.54**	**3.17**	**0.88**

Note: S.D. denotes Standard Deviation. Averages are unweighted country averages.
Source: Eurostat (2008b), own calculations.

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