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Working Paper

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ZEI Working Paper, No. B 01-2005 [rev.]

Provided in Cooperation with:
ZEI - Center for European Integration Studies, University of Bonn

Suggested Citation: von Hagen, Jürgen; Traistaru, Iulia (2004) : Macroeconomic adjustment in the new EU member states, ZEI Working Paper, No. B 01-2005 [rev.], Rheinische Friedrich-Wilhelms-Universität Bonn, Zentrum für Europäische Integrationsforschung (ZEI), Bonn

This Version is available at:
https://hdl.handle.net/10419/39573

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B 01
2005

ISSN 1436-6053

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Macroeconomic Adjustment in the New EU Member States

by

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Revised, November 2004

This paper was prepared for the Third ECB Central Banking Conference
Frankfurt, 22 October 2004

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We thank Peter Backé, Carsten Detken, Reiner Martin, and Francesco Mongelli for valuable comments on an earlier draft.

1. Introduction

In the years to come, macro economic policies in the new EU member states will face two principal challenges. The first is to manage the continued and probably rapid process of further real economic convergence, which will come with high real GDP and productivity growth rates and large capital inflows. The second is to achieve the degree of nominal convergence required to enter into (the Third Stage of) European Monetary Union (EMU). These two challenges are not unrelated, as rapid growth and large capital inflows can make it harder to achieve nominal convergence, although, as we argue below, there are good reasons to think that real convergence would be easier to manage for some of the countries at least, if they were allowed to adopt the euro immediately. Both challenges relate mainly to fiscal policy: managing capital inflows, because fiscal policy can absorb part of their demand effects, nominal convergence, because the sustainability of public finances is part of the requirement for entering EMU. Once in EMU, the new member states will have to cope with asymmetric macro economic developments without recourse to monetary and exchange rate policy. This will pose new demands for fiscal and wage policies in particular.

The new member states have achieved considerable macro economic stabilization over the past decade. The Central and East European (CEE) countries among them went through the transition from central planning to market economies, which began with severe recessions, high inflation, and financial instability. Today, inflation rates are well below 10 percent and nominal interest rates have declined, too. Public debt has been stabilized, though high and persistent deficits and the need for further fiscal adjustments are still critical issues in several cases.

Today, the ten new members are members with “derogations” from adopting the euro. Like Sweden, and unlike Denmark and the UK, they cannot formally opt out of the euro indefinitely, i.e., they are expected to become full members of the EMU sooner or later. Several of them have already announced target dates for this to happen. Table 1 suggests that there are two, perhaps three, groups of countries emerging: fast entrants and slow entrants. Estonia, Lithuania, and Slovenia have signaled their intentions of a fast entry into EMU by entering the ERM-2, the exchange rate arrangement succeeding the former ERM.[1] Given the requirement of a minimum membership in the ERM-2 of two years before the convergence

[1] For the performance of the original ERM see Fratianni and von Hagen (1992).

examination to enter EMU, these countries could adopt the euro in the second half of 2006 at the earliest.[2] Although Lithuania has not set an official target date, we count it as a fast entrant weighting its ERM-2 commitment more than words. Cyprus has declared its intention to join the EMU in 2007, but has not yet backed it up by ERM-2 participation. A second group, Hungary, Latvia, Malta, and the Slovak Republic, seems to aim at EMU entry around 2010. Finally, the Czech Republic has set a conditional target date at 2010 and Poland no target date at all. These two countries may be adopting a "wait-and-see" strategy, which makes sense, since they are probably the only two economies large enough to successfully conduct an autonomous monetary policy aiming at price stability. For the other, much smaller and more open economies, in contrast, the value of an independent monetary policy seems very limited.

Table 1 about here

In this paper, we discuss the challenges for macro economic adjustment ahead. We begin, in section 2, by taking stock of the degree of nominal and real convergence that has already been achieved. In section 3, we turn to the development of public finance in the new member states. In section 4, we discuss the problems arising from the perspective of continued, large capital inflows. Section 5 considers the role of the ERM-2 and the problems connected with convergence towards the adoption of the euro. Section 6 looks at the task of macro economic adjustment under EMU. Section 7 concludes.

2. Where We Stand: Real and Nominal Convergence in the New Member States

2.1. Basic Economic Indicators and Real Convergence

Table 2 reports a number of basic economic indicators for the 10 new member states. Together, they account for 16.1 percent of the EU's total population, but only 8.4 percent of the EU's combined GDP in purchasing power standards. Only Cyprus, Slovenia, and the Czech Republic have per-capita GDPs substantially larger than half of the EU's per-capita GDP. The shares of agriculture in GDP range between 2.8

[2] Note, however, that Italy did not spend a full two years in the ERM before its convergence assessment was made. Thus, there is some flexibility in this criterion.

percent in Malta and 7.1 percent in Lithuania; the shares of agriculture in employment range from 2.2 percent in Malta to 19.6 percent in Poland. All new member states are small open economies, Poland being the exception with a relatively low degree of openness. Table 2 shows that gross capital formation ranged from 18.8 percent of GDP in Cyprus to 28.5 percent in Estonia. This is large compared to an average rate of 19.5 percent in the EU-15.

Table 2 about here

Table 3 reports the growth performance of the ten new members since 1996. As a group, they experienced much stronger growth than the EU-15 or the euro area. Poland, Latvia, and Estonia had the highest growth rates in the second half of the 1990s, while Latvia, Lithuania, and Estonia had the strongest growth rates since 2000. Significantly, economic growth in the group remained vigorous even while the economies of the EU-15 and the euro area slowed down in 2001-2003. This indicates that the growth trend of this group does not depend entirely on growth in the incumbent member states. Similar observations hold for real per-capita GDP.

Table 3 about here

Figure 1 plots the average real GDP per-capita growth rates during 1996-2003 together with the initial level of per-capita GDP in 1996. The figure is in line with the standard “convergence hypothesis” that, with free international trade and capital flows, poor countries should grow faster than richer countries. From this perspective, the Baltic countries and Poland, which have the lowest per-capita incomes in the group, should continue to enjoy the strongest growth rates among the new member states over the foreseeable future.

Figure 1 about here.

Table 4 reports labor-productivity growth rates in the new member states and compares them to the incumbent EU. Productivity is defined as real GDP per employed person. During the second half of the 1990s, annual productivity growth rates were about three times larger than in the incumbent EU for the group as a

whole. As in the incumbent countries, productivity growth slowed down in 2001, but it picked up rapidly again in 2002 and 2003, while remaining low in the incumbent countries. This, again, indicates that the new member states as a group have embarked on a growth path that is robust against economic slowdown in the incumbent EU. Again, the highest growth rates can be found in the three Baltic countries and Poland. Figure 2 shows that there is a tendency of convergence of productivity, as countries with low initial levels enjoyed higher growth rates that those with higher initial levels. However, the convergence in productivity is not as strong as it is in terms of per-capita GDP.

Table 4 about here

Figure 2 about here

The economic transition from socialist to market economies in eight of the new member states, and the rapid economic growth accompanying it, have caused deep structural changes in their economies. Figure 3 looks at changes in the sector structures. We consider four broad sectors of the economy, agriculture, industry, construction, and services. The *dissimilarity index* plotted in the figure measures the differences in the sector structure of each new member state and the average of the euro area economy. It is defined as $DISSIM_{iE} = \sum|s_{ki} - s_{kE}|$, where s_{ki} is the share of sector k in country i's GDP and s_{kE} is the share of the same sector in euro area GDP. A larger value of DISSIM indicates a higher degree of structural dissimilarity, or less similarity. Figure 3 plots this index for 1994 against the index for 2002. Values close to the 45-degree line indicate little structural change. Values below the 45-degree line indicate growing structural similarity over the period.

Figure 3 about here

Based on the four-sector classification we observe that Cyprus, Malta, and Hungary experienced relatively little structural change over the period under consideration. For Hungary, this may be due to the fact that the country was already a relatively open and market oriented economy before its transition process began. In all other countries, we see indications of structural convergence, i.e., their sector structures have become more similar to that of the euro area.

2.2. Nominal Convergence

Adoption of the euro requires nominal convergence of the economies of the new member states to the euro economy. Nominal convergence will be assessed on the basis of the five *Maastricht criteria*, low inflation, low nominal interest rates, stable exchange rates against the euro, and the compliance with two reference values for general government debt and deficits relative to GDP[3]. Table 5 shows that the new member states have already achieved a substantial degree of nominal convergence.

Table 5 about here

The critical value for the inflation rate is the average of the three lowest inflation rates in the EU plus 1.5 percent. In 2003, this amounted to an annual rate of 2.7 percent. Table 5 shows that Cyprus, Hungary, the Slovak Republic, and Slovenia violated this criterion significantly in 2003. Taking the current inflation projections for 2004 (European Commission, 2004), the critical rate falls to 2.4 percent, which is met only by the inflation projections for Cyprus, Lithuania, and Poland. The decline in the critical rate is due to the very low inflation rates expected in Finland (0.4%), Sweden (1.2%), and Lithuania (0.4%) for 2004. The difference in the outcomes for 2003 and 2004 shows that, with 25 member states of the EU, the critical rate of inflation becomes quite volatile, because this rate is exposed to asymmetric shocks to the smallest EU economies. It is, therefore, not obvious that the average of the three lowest inflation rates in the EU provides a good yardstick for admitting countries into EMU. Since the EU-25 contains many more small open economies than the EU-15 in 1998, it is also clear that, in contrast to frequent declarations by the European Commission and the ECB, mechanically applying the same technical criterion to the new member states as to the first wave of EMU members in 1998 does not imply that the new members are treated in the same way as the incumbent members in 1997. Since countries joining EMU have to cope with the euro-area's inflation rate, the most sensible thing to do would be to change the inflation criterion to 1.5 percent above the euro-area rate of inflation. This would raise the critical rate to 3.3 percent in 2004, and allow Cyprus, the Czech Republic, Estonia, Lithuania, Malta and Poland to pass.

[3] In addition, the adoption of the euro is conditioned on the compatibility of national legislation in the Member States with a derogation with the Treaty and the ESCB Statute. In order to achieve this legal convergence, the legislation in all new EU Member States requires adaptation (European Central Bank, 2004).

Figure 4 reveals different inflation trends in the new member states in recent years. The last *Pre-Accession Economic Programs* (PEPs) suggest that, in most countries, inflation rates are still strongly affected by changes in indirect taxes and administrative prices. Adjustment of relative prices to EU prices causes further price movements during 2004. The resulting fluctuations in the annual inflation rates should be properly interpreted as price level adjustments rather than inflation. They might have been avoided by a tighter monetary policy, but the potential macro economic costs of cutting aggregate demand to achieve that could have been unreasonably large. The experience illustrates that it can be difficult to achieve nominal convergence in terms of annual inflation rates as long as large adjustments in indirect taxes and administered prices are still needed. For the fast entrants, this suggests that any further changes in tax policies they might plan should be postponed until after the adoption of the euro. In contrast, those aiming at a later entry should do the necessary fiscal reforms soon to clear the way for a smooth path of nominal convergence.

Figure 4 about here

In 2003, nominal convergence in terms of long-term interest rates was achieved by all new member states except Hungary (Table 5). This shows that the current inflation trends are perceived as credible by the financial markets. It also implies that, in contrast to many of the incumbent member states of the euro area, the new members cannot expect large fiscal gains from falling interest rates as the adoption of the euro approaches. Most of the credibility gains from adopting the euro have apparently been reigned in already in the process of EU accession.

To assess the requirement of exchange rate stability, we report in Table 5 the largest differences of the exchange rates between the national currencies and the euro from the average exchange rate during 2002-2003 the new member states experienced. The table reveals that only Estonia, Lithuania, and Cyprus, experienced exchange rate movements within fictitious bands of +/- 2.25 percent. The larger swings experienced by the other countries suggest that an ERM-2 with relatively wide bands would have been appropriate. Another way to look at this issue is to consider the trends in inflation, nominal and real exchange rates over the past several years. We do this in Table 6 for the years 2000-2004. Here, we use the European

Commission's inflation projections for 2004 and exchange rates against the euro up to the second quarter of 2004. Nominal exchange rate trends were stable over this period in Cyprus, Estonia, Malta, and, to a lesser extent, Hungary. The other countries experienced rather pronounced exchange rate trends. For the Czech and the Slovak Republic and Lithuania, they resulted in nominal appreciations of their currencies, while the currencies of the other countries depreciated on average over these five years. Real exchange rate trends, calculated as the difference between the average changes in the nominal exchange rate and average HICP inflation, in contrast, were stable only in Malta and Slovenia. Poland and Latvia experienced sizeable real depreciations during this period, while the remaining countries underwent sizeable real appreciations of their currencies.

Table 6 about here

Some of these real appreciations can be attributed to the *Balassa -Samuelson effect* of relatively high productivity growth in the tradable sector. However, estimates of the magnitude of this effect indicate that its contribution is moderate at best.[4] The bulk of the real appreciations are probably due to the large capital inflows of recent years, a theme to which we return below.

Most of the new member states comply with the 60 percent threshold for the public debt ratio, the exceptions being Cyprus and Malta. However, only the Baltic states and Slovenia comply with the 3 percent threshold for the deficit ratio. More than half of the huge deficit in the Czech Republic resulted from payments to the Czech consolidation agency and an imputed state guarantee, but even accounting for these one-time effects the deficit is too large. Similarly, most of the high deficit in Malta can be attributed to extraordinary developments related to project financing. We turn to a more detailed analysis of the public finances next.

[4] See Schadler et al. (2004). For estimates of the Balassa - Samuelson effect see e.g. Kovacs (2004) and Mihaljek and Klau (2004). Since the Balassa - Samuelson effect has already received a lot of attention in recent years, we do not pursue this theme further in this paper.

3. Public Finance: Size, Structure and Consolidation

3.1. Public Sector Restructuring

While the new member states must strive to meet the Maastricht criteria, the eight former socialist countries among them also have to adjust their public sectors to the new economic environments. Over the past decade, their public sectors have already undergone dramatic changes, as the average spending ratio dropped from almost 60 percent in 1989 to 43.5 percent, and the countries are much more similar in this regard now than before (Gleich and von Hagen, 2001).

The question of what is an adequate size of the public sector is not an easy one to answer. It requires a model explaining the size of government on the basis of economic characteristics. Rodrick (1998), Persson and Tabellini (1999), and Fatas and Rose (2001) suggest that the size of government can be explained on the basis of the degree of openness, represented by the share of foreign transactions (exports plus imports) in GDP. More open economies are more exposed to shocks originating outside the country such as terms-of-trade shocks or swings in the demand for exports than closed economies. A large government sector serves as a buffer against such shocks. Thus, more open economies should have a larger government than less open economies. Furthermore, the demand for many publicly provided goods such as education or infrastructure services can be expected to have a positive income elasticity. Thus, the size of government should increase with per capita GDP, a hypothesis which is empirically confirmed by Fatas and Rose (2001).

On this basis, we consider the following empirical model:

$$\frac{G}{Y} = a + b\frac{Trade}{Y} + cy + residual, \qquad (1)$$

where G is government spending, Y is GDP, “Trade” denotes the sum of exports and imports, and y per capita GDP measured in 1000 SDR. All data are taken from IFS statistics and IMF Government Finance Statistics for 1998 to assure data availability. We estimate this model using a panel of 22 OECD, 11 Latin American and 10 CEE countries.[5] Our estimated equation has a dummy variable for oil exporting countries in Latin America, which have relatively high trade shares, a dummy variable for the CEE countries, and a squared term for the trade variable. This gives the following regression result

[5] The Latin American countries are Argentina, Brazil, Bolivia, Chile, Colombia, Venezuela, Peru, Paraguay, Uruguay, Mexico and Ecuador.

$$\frac{G}{Y} = \underset{(2.55)}{13.1} - \underset{(2.69)}{12.1}\,oil + \underset{4.49}{14.5}\,CEEC + \underset{(2.48)}{35.1}\frac{X+\mathrm{Im}}{Y} - \underset{(2.20)}{18.6}\left(\frac{X+\mathrm{Im}}{Y}\right)^2 + \underset{(5.07)}{0.95}\,y \qquad (2)$$

R^2 = 0.68, number of observations=43, F(6,37)=15.6, t-ratios in parentheses.

As expected, openness enters with a positive coefficient.[6] Government size relative to GDP increases with per capita incomes, confirming that the income elasticity of the demand for public services is strongly positive. All parameters are highly significant and the fit seems reasonably good for a simple equation like this. Testing for parameter equality between the Latin American and the other countries or the CEE and the other countries yields no evidence for differences between these groups. The positive and statistically significant CEEC dummy indicates that, given the openness and per-capita income levels in Central and East Europe, the governments of these countries are still considerably oversized. Even the vigorous growth of real GDP since 1998 does not change that conclusion very much; the cumulative growth of per-capita incomes since 1998 has reduced the excess size of the governments by ratios between 0.3 percent (Estonia) and 1.3 percent (Slovenia.)[7]

This implies that we should expect these governments to become smaller relative to GDP over time and that governments will have to cut back or fade out existing policies instead of just increasing total spending and taxes as they take on new tasks and start providing new services in the process of adapting the public sector to a growing market economy and EU membership.[8]

Table 7 about here

Table 7 looks at the structure of public sector revenues in the new member states in 2003. For comparison, it also reports the (unweighted) average structure for medium-sized and small EU member countries. The group of medium-sized countries consists of Austria, Belgium, and the Netherlands; the group of small countries consists of Denmark, Finland, and Ireland. Medium-sized incumbent countries raise

[6] Note that the derivative with regard to openness turns negative at a trade share above 200 percent, which is impossible.

[7] Using data from the most recent Commission report on Public Finance in EMU, our model indicates that similar conclusions hold for Cyprus and Malta.

[8] Orban and Szapary (2004) point out several areas in which EU membership implies growing government expenditures for the new member states. Apart from their EU contributions, this includes cofinancing of investment projects and the increased administrative burden to implement EU legislation.

28 percent of their total current revenues from indirect taxes and 29 percent from direct taxes. Small EU countries, in contrast, rely much more on direct taxes, which account for more than 40 percent of their total current revenues. They also collect more of their revenues from indirect taxes. While medium-sized EU countries collect about 34 percent of their revenues from social security contributions, this type of revenue is much less important for small EU countries. Since direct taxes are more effective instruments for redistribution of income, these differences suggest a stronger focus on redistribution in the small EU states. Since direct taxes are also more effective in providing co-insurance against income shocks, this is consistent with the notion that small states have a stronger preference for insurance against external shocks. Since social security contributions have a direct impact on unit labor cost, they affect the real exchange rate more strongly than direct or indirect taxes. The lower share of social security contributions in the total revenues of small EU countries suggests that these countries are more concerned with their external competitiveness than medium-sized countries.

We take the medium-sized incumbent countries as the standard of comparison for the Czech Republic, Hungary, and Poland. Their shares of social security contributions in total revenues are similar to those of the medium-sized EU countries, but their shares of indirect taxes are considerably larger. Since indirect taxes tend to have undesirable distributional consequences, one may expect political pressures for a more equitable distribution of the tax burden leading to an increase in the share of direct taxes and a reduction in the share of indirect taxes in the future.

We compare the smaller new member countries with the average for Denmark, Finland, and Ireland. In the three Baltic states, the share of indirect taxes in total revenues is comparable to the average small EU country. In the Slovak Republic, in contrast, it is much lower, and in Slovenia much higher than in the small incumbent states. The share of direct taxes is very small and the share of social security contributions very large in the small new member states compared to the small incumbent states. This suggests that future reforms will reduce the share of social security contributions, especially as these states will tend to lower social security contribution rates to improve competitiveness in the EU markets. At the same time, direct taxation should become more important as considerations of distributional equity become politically more important.

In sum, these comparisons lead us to expect that future tax policies in the new member states will be guided by the wish for more distributional equity of the tax system, leading to more effective direct taxation. Furthermore, we expect a reduction of social security contributions in the smaller states.

Turning to the expenditure side, Table 8 shows that medium-sized incumbent EU members have lower shares of public salary payments and of transfers in total expenditures than small incumbent states. Since public sector employment tends to be more stable than private sector employment, this, again, is compatible with the notion that small open economies demand more insurance against economic shocks from their public sectors. Small incumbent states also have lower shares of subsidies paid to the private sector and higher shares of capital spending.

Table 8 about here

Among the new member states, Hungary and Poland allocate similar shares of total expenditures to salaries and transfers as the reference group. In contrast, the Czech Republic has a relatively low share of wage expenditures and transfers. Among the smaller countries, the Baltic states spend similar shares of their total expenditures on employee compensation as the reference group, and Estonia and Lithuania have very similar shares of transfers compared to that group. In contrast, transfers are still relatively low in Latvia, the Slovak Republic, and Slovenia. All new member states spend larger shares of their expenditures on public sector investment. Interestingly, with the exception of the Czech Republic the new member states do not spend more of their total government outlays on subsidies than the incumbent member states.

3.2. Sustainability

Membership in the EU comes with the unconditional obligation to maintain sustainable public finances. Sustainability is not a very precise concept in practice.[9] In terms of technical economic analysis, it is the requirement that the government operates within its intertemporal budget constraint, i.e., that the discounted sum of all future expected expenditures, including debt repayment, does not exceed the

[9] See Perotti et al. (1998) for a detailed discussion.

discounted sum of all future expected revenues.[10] The Excessive Deficit Procedure (EDP) and the Stability and Growth Pact (SGP) are – albeit imperfect - attempts to make sustainability operational. The EDP combines the unconditional obligation on the part of the member states to avoid "excessive deficits" with a procedure providing a regular assessment of fiscal policies in EMU and, if necessary, penalties for profligate behavior (Article 104, Treaty of European Union). The European Commission monitors budgetary developments and the stock of public sector debt of the member states, checking in particular their compliance with two *reference values* for the ratio of the deficit to GDP and the ratio of public debt to GDP. These are set at three and 60 percent, respectively (Protocol on the EDP).[11] The criteria do not themselves define what an excessive deficit is, nor does breaching them imply any sanctions *per se*. The decision whether a deficit is excessive and should be penalized is taken by the ECOFIN Council.[12]

Figure 5 about here

Figure 5 shows the debt-GDP ratios of new member states in 1995, 2001, and 2004.[13] Cyprus and Malta clearly exceed the 60 percent reference value, with an increasing tendency. Hungary and Poland both did so in the mid-1990s, but managed to bring the debt ratios down considerably due to strong economic growth and the real appreciations of their currencies.

A recent European Commission (2003b) paper studies the compatibility of some of the new member countries' fiscal policies with the debt criterion over the longer run. It estimates the debt-GDP ratio in 2005 and 2015 implied by four different scenarios: Compliance with the deficit targets expressed in the most recent PEPs, a balanced-budget policy from 2005 on, a small-deficit policy (1 percent from 2005 on), and maintaining the 2002 fiscal positions. All scenarios assume the real GDP growth rates suggested by the countries' PEPs. For 2005, Hungary comes quite close to the 60 percent ratio in all scenarios and breaches it in the scenario maintaining its 2002

[10] See e.g. Sargent and Wallace (1981).
[11] These values are obviously arbitrary. They were derived from the EU average debt ratio in 1991. Note that the IMF finds that in most cases of emerging market economies defaulting on their public debt, the debt ratio was below 60 percent, in 35 percent of the cases it was below 40 percent. (Jonas, 2004).
[12] For a detailed description of the EDP and the SGP, see Fatas et al (2003).
[13] Note that the 1995 values refer to national data reported in Gleich and von Hagen (2001), while the 2001 data are from European Commission (2003a) and comply with EU accounting rules, and 2004 data are from the 2004 Spring Economic Forecasts..

fiscal position. All other new member states have comfortable cushions in this regard, suggesting that public debt is not a serious impediment for an early entry into EMU. The Czech Republic is the only country coming close to the 60 percent ratio with its PEP target in 2015. With the large deficit realized in 2003, its position is now probably even more precarious, Hungary and the Slovak Republic would breach the 60 percent ratio in 2015 by maintaining their current fiscal stances. For these three countries, the study illustrates that, for countries with relatively weak fiscal discipline coming from benign starting positions, the debt criterion creates an incentive to seek an early EMU entry. To check the robustness of the results, the study also takes the average growth rate from 1999 to 2004 as the relevant one from 2005 onwards. The results remain qualitatively similar.

Since there is nothing special about a debt burden of 60 percent, the study also asks what fiscal adjustments would be necessary to maintain the current debt ratios stable. Table 9 gives the results for different assumptions regarding real GDP growth and real interest rates. A combination of low growth and high real interest rates would pose considerable challenges for the Czech and Slovak Republics, Hungary and Latvia. More benign scenarios reduce that pressure, but still leave a need for fiscal tightening in the same countries. Only Estonia and Slovenia have room for lasting fiscal expansions if they wish to maintain their current debt burdens. Orban and Szapary (2004) present a similar exercise asking for the primary-balance adjustment necessary in each country to reach a debt-GDP ratio of 40 percent by 2013. They find that Cyprus, the Czech Republic, Hungary and Malta need significant improvements in their deficits from their current fiscal positions.

Figure 6 about here

Turning to annual fiscal deficits reveals a less rosy picture. Figure 6 plots the deficit-GDP ratios of the new member states from 1997 on. In the CEE countries, deficits sharply increased in the wake of the Asian and Russian currency crises, 1998-1999. But the figure reveals important differences in their fiscal management thereafter. The Baltic states and Slovenia quickly managed to bring their deficits close to balance, reaching levels well below three percent in 2002. For these countries, the flow constraint does not pose a threat to an early EMU membership.

In contrast, the deficit developments seem rather unstable in the Czech and Slovak Republics and in Hungary. The big increase in the Hungarian deficit in 2002 points to the importance of electoral cycle effects on fiscal policy.[14] The sustained, positive trends in the deficit ratios in the Slovak Republic, Hungary and, to a lesser extent, Poland and the high level of that ratio in the Czech Republic cast doubts on the commitment of the governments to their medium-term fiscal frameworks. More serious efforts are required to meet the three-percent limit. This is also true for Cyprus and Malta.

Actual deficits are affected by both policy choices and endogenous responses of tax revenues and expenditures to changes in GDP. It is useful to separate these two in order to get a better picture of the policy choices. To do that, we apply a simplified version of the growth-accounting approach proposed by von Hagen et al. (2001, 2002). Let d_t be the deficit ratio in year t, i.e., the difference between general government spending and current revenues over GDP, and let Y_t be real GDP. We define the contribution of real GDP growth to the change in the budget deficit as

$$d_t^g = -d_{t-1}\frac{\Delta Y_t}{Y_{t-1}}. \qquad (3)$$

This is the change in the deficit that would have resulted with no change in the spending and revenue ratios between the two years. Using (3), we define the fiscal impulse in period t as

$$\Lambda_t = \Delta d_t + d_t^g. \qquad (4)$$

Thus, an active fiscal policy is one that results in a change in the deficit ratio which is not due to real GDP growth. A positive number indicates an expansionary fiscal impulse, while a negative number indicates a fiscal contraction.[15]

Figure 7 about here

Figure 7 plots the annual fiscal impulses for the 10 new member states from 1998 to 2004.[16] In 1998-99, fiscal impulses were expansionary in all CEE countries except Poland, indicating a discretionary, counter-cyclical response to the economic

[14] See Hallerberg and Vinhas de Souza (2002) for a study of political business cycles in CEE countries.

[15] Note that the acceding states have completed at most one business cycle since the beginning of the transition period. This means that reliable estimates of cyclical elasticities of budgetary aggregates are not yet available.

[16] For the Czech Republic, we take reduce governments spending by expenses connected to an implicit government guarantee that amounted to 6.3 percent of GDP.

weakening resulting from the Russian and Asian crises. When growth revived in 2000, the Baltic states quickly switched to contractionary fiscal impulses. Lithuania kept this fiscal stance in 2002, while Estonia and Latvia relaxed their fiscal policies slightly in that year. On average over the years 2000 to 2004, fiscal policy in the Baltics was slightly contractionary. Slovenia's fiscal stance was very similar, resulting in a neutral average stance over the past five years.

In contrast, the Czech Republic had positive fiscal impulses in 2000 and 2001 and then turned to a neutral fiscal policy. Hungary's large fiscal impulse in 2002 probably reflects a political business-cycle effect that was sharply corrected in the following year. Poland's fiscal policy was expansionary in 2002-2004, though its fiscal impulses were smaller. The Slovak Republic stands out for a huge fiscal expansion in 2000 followed immediately by a sharp and large contraction in 2001. Cyprus had strong fiscal expansions in 2001 and 2002, while 2003 saw a strong, negative fiscal impulse. Malta's fiscal stance was expansionary in all years since 2000. Malta and Poland are the only two countries that consistently had an expansionary fiscal stance over this period; their average impulses reach 0.9 percent of GDP.

In sum, the deficit and fiscal impulse data paint a more critical picture of fiscal performance in the new member states than the debt ratios. Except in the Baltic states and, perhaps, Slovenia, there is a need for more effective fiscal management to control annual deficits.

3.3. Quality of Fiscal Adjustments

Successful consolidation of the government budget depends importantly on the quality of the budgetary adjustments undertaken, with "quality" referring to the relative contribution of different budgetary items to the adjustment effort. "Good" fiscal adjustments are marked by a strong emphasis on expenditure cuts rather than increased revenues, and on tackling those expenditures that are politically most sensitive like transfers, subsidies, and wage expenditures (Perotti et al., 1998). A consolidation effort is regarded as a successful one, if the reduction in the budget deficit lasts for a number of years. Recent research in this area (Perotti et al. 1998, von Hagen and Strauch, 2001; von Hagen, Strauch, and Hughes Hallett, 2002) shows that successful consolidations are good consolidations. Perotti et al. (1998) find that spending cuts contribute at least 70 percent to successful fiscal

consolidations in EU countries. Countries that rely predominantly on raising more taxes to consolidate their budgets only achieve short-lived deficit reductions.

Table 10 about here

In Table 10, we report the adjustment patterns in large fiscal expansions and large fiscal contractions in the new member states from 1999 to 2004. We define large expansions and contractions as years in which the general government budget deficit increased or fell by at least one percent of GDP, respectively.[17] If there are two subsequent years in which the deficit increased by more than one percent, as in the Slovak Republic in 1999-2000 and in Hungary 2001-2002, we count both years together as one large fiscal expansion and report the average annual increase in the deficit ratio. Similarly, if a country's deficit ratio fell by more than one percent of GDP in each of two subsequent years, as in Malta 1999-2000 and Latvia 2000-2001, and Hungary 2003-2004, we count both years as one large fiscal consolidation and report the average annual decline in the deficit ratio. We compute the contribution of spending to the expansion by dividing the change in the ratio of general government spending to GDP by the change in the deficit ratio and multiplying the result by 100. A number larger than 100 indicates that spending increased or fell by more than the deficit. A negative number indicates that the spending and the deficit changed in opposite directions. We call a change in the deficit expenditure-dominated, if the contribution of spending is at least 50 percent. There are 16 large fiscal expansions and 14 large consolidations in our data.

The table shows that the average large fiscal expansion resulted in an increase in the deficit ratio by 2.7 percent of GDP. Increasing expenditure ratios contributed on average 103.1 percent to large fiscal expansions; this average is statistically significantly different from zero. 13 out of the 16 large fiscal expansions were expenditure dominated. In 10 cases, the change in the spending ratio accounted for more than 75 percent, in seven cases for more than 90 percent of the increase in the deficit ratio. Thus, like in the EU countries analyzed in Perotti et al (1998), large fiscal expansions are mainly the consequence of a lack of control over government spending rather than declining fiscal revenues. Only the fiscal expansion

[17] This is larger than the 0.5 percent of GDP criterion applied in studies of fiscal policy for the OECD. We use a larger cut-off to account for the greater volatility of deficit ratios in the countries considered.

in the Slovak Republic (1999-2000) was characterized by a fall in the spending ratio combined with an increasing deficit ratio, i.e. strongly falling revenues.

The average large fiscal consolidation was almost exactly of the same size as the average large fiscal expansion, an observation Perotti et al. (1998) also report for the incumbent EU countries. On average, 77.8 percent of large consolidations were due to cuts in government spending; again, this average is statistically significantly different from zero and it is very close to the 70 percent reported by Perotti et al. (1998) for the incumbent EU countries. There are nine “good quality” fiscal consolidations in this data. The consolidations in Hungary (2000), the Slovak Republic (2003) and Malta (2004) are noteworthy for combining a rising spending ratio with a fall in the deficit ratio, i.e. a strong increase in the tax burden.

We can check the “success” of the consolidations occurring between 1999 and 2002. A consolidation is defined as successful, if the deficit ratio in the second year after the consolidation does not exceed the deficit ratio in the year of the consolidation by more than one percent. This is true for the consolidations in Malta (1999-2000), Estonia (2000), Latvia (2000-2001), Lithuania (2000), and Slovakia (2001). In contrast, the consolidations in the Czech Republic (1999), Cyprus (2000), Hungary (2000), and Estonia (2002) were not successful according to this criterion. Even though this evidence is limited, we can use a Chi-square test to check the hypothesis that “good” fiscal consolidations are more likely to be successful than “bad” ones. Putting the data into a 2-by-2 contingency table yields a test statistic Q=5.63, which is larger than the Chi-square with one degree of freedom for a probability limit of 5 percent (3.8). Thus, scant as it is, the data support the hypothesis that consolidations based on expenditure cuts rather than increasing revenues are more likely to produce lasting reductions in the deficit ratio.

In sum, the evidence indicates that weak fiscal discipline in the new member states is primarily connected with weak control over government spending, and that efforts to reign in deficits must concentrate on cutting government spending. This is consistent with our earlier observation that the public sectors in the new member states tend to be too large.

3.4. The Role of Budgeting Institutions

A growing body of theoretical and empirical research shows the importance of the design of the government budget process for solving this externality problem and achieving lasting fiscal discipline.[18] The budget process consists of the formal and informal rules governing budgetary decisions within the executive and the legislative branches of government, including the rules relating to the formulation of a budget by the executive, to its passage through the legislature, and to its implementation by the executive. The budget process can serve its purpose effectively only if all conflicts between competing claims on public finances are indeed resolved within its scope. Four deviations from this principle undermine its functioning: the use of off-budget funds, which allow policy makers to circumvent the constraints of the budget process and remove decisions altogether from being challenged by conflicting distributional interests, "non-decisions," which occur, when expenditures included in the budget are determined by developments exogenous to the budget process., e.g., by the indexation of spending programs,[19] "mandatory spending laws", i.e., non-financial laws that make certain government expenditures compulsory and the budget a mere summary of spending mandates created by simple legislation, and contingent liabilities such as guarantees for liabilities of public or non-public entities. The 2002 PEPs indicate that these deviations are still important in most new member states. [20]

Political economy suggests that the proper design of the budget process depends strongly on the form of government (Hallerberg and von Hagen, 1999). For multi-party coalition governments, which are the norm in the CEE countries, the appropriate institutional design of the budget process conforms to the "contract model" (Hallerberg and von Hagen, 1999), which focuses on binding fiscal targets for total spending and the main spending aggregates fixed early in the budget process by a joint agreement among all members of the cabinet. These fiscal targets should be anchored on medium-term fiscal programs laid down in the coalition agreements. Their implementation should be safeguarded by a strong supervisory role of the finance ministry in the execution of the budget, clear and effective rules for

[18] See von Hagen (2003) for a review of the literature.
[19] Setting the relevant parameters of entitlement programs is part of the annual budget process in several countries. Another approach, used in Denmark, is to set cash limits on welfare appropriations and require the relevant minister to propose spending adjustments and changes in the relevant non-financial laws if these limits are overrun (von Hagen and Harden, 1994.)
[20] See also European Commission (2003c)

expenditure management and rules for dealing with revenue windfalls and unexpected shortfalls.

Figure 8 about here

Figure 9 about here

Gleich (2002) studies the budget processes of 10 CEE countries and develops an index of institutional quality ranging from zero to 10, where a higher number indicates a better quality. Figure 8 shows the values of this index for the 10 CEE countries in the mid-1990s and in 2001. Estonia, Latvia, and Slovenia, had the best institutions, Hungary the weakest ones. Figure 9 plots the institutional index against the debt-GDP ratio and shows that countries with good institutions managed to maintain low debt ratios. The regression fitted through the data shows a significant negative correlation between the quality of budgeting institutions and debt ratios. The rank correlation coefficient between the institutional index and the debt ratio in 2003 is r=(-0.83), which is statistically significant from zero at the 5-percent significance level. Gleich (2002) also uses regression analysis controlling for economic developments and political characteristics to confirm that better institutions are conducive to lower deficit ratios in the same countries.

Another way to look at the interaction of fiscal performance and the design of the budget process is to consider the correlation between the average fiscal impulses in the years 2000-2004, shown in figure 7 above, and the institutional index. The rank correlation coefficient between these two is r=(-0.69), indicating that countries with better institutions had significantly less expansionary fiscal impulses during these years. The correlation is statistically significant at the 5-percent level.

These results suggest that countries can improve their fiscal performance through institutional reforms of the budget process. While Poland has made considerable progress in this regard in the late 1990s, and some reforms are currently under way in the Slovak Republic (see the 2002 PEPs), more efforts seem necessary especially in Hungary. Importantly, the new member states will have the opportunity to use the framework of the SGP to improve their budget processes. Like the contract approach, this framework focuses on annual fiscal targets embedded in medium-term fiscal plans. The SGP, therefore, gives an external reinforcement to domestic budget institutions in countries, where the contract approach is appropriate.

Empirical research for the incumbent EU members shows that states that conform to this model have indeed consistently improved their domestic budget processes in recent years by tying them closely into the framework of the SGP (Hallerberg, Strauch, von Hagen 2001). They have also consistently met their fiscal targets, reduced their debt ratios and stayed within the limits of the EDP. In contrast, Germany, France, and Italy, which have now breached the limits of the EDP for several years, do not conform to the contract model of the budget process. Based on this experience, one can expect that fiscal discipline in the new CEE member countries will be strengthened by the SGP. Similar reasoning applies to Malta but not to Cyprus, which is a presidential democracy.

The move to EMU will add further disciplinary pressure on fiscal policy. Gosh et al (1998) and Fatas and Rose (2001) in a large cross-section study, argue that countries adopting currency boards or multilateral currency unions have significantly larger budget surpluses than countries with less restrictive monetary regimes. A likely explanation is that currency boards force governments to live without recourse to central bank financing and to avoid excessive fiscal risks. Thus, giving up monetary policy autonomy induces more fiscal discipline at least in small open economies, which dominate the currency-board and monetary-union sample in their study. In an empirical study of fiscal policy in the CEE countries, Grigonyte (2004a) finds a similar result. Countries that adopted currency boards had significantly higher budget surpluses during the 1990s and early 2000s. Her result is particularly interesting for our context, because it holds up after controlling for the quality of the budget process.

4. Coping With Large Capital Inflows

As expected from rapidly growing, small open economies with high investment rates, the new member states have experienced large current account deficits in recent years. Table 11 reports the average deficits in relation to GDP in the years 2000-2003. Estonia and Latvia stand out with deficits exceeding eight percent of GDP, Lithuania and Hungary follow with deficits of 5.6 percent of GDP and the Czech Republic with 5.1 percent. The picture in Malta is different, because its relatively large current account deficit of 6.2 percent of GDP is accompanied neither by similar growth rates nor investment rates as in these four countries. While the Czech current account deficit has not been supported by high growth rates in recent years, either, it does come with a high investment rate. Only Slovenia has kept its current account

close to balance on average in recent years. As most new member states have experienced sizeable real appreciations of their currencies in recent years, their large current account deficits are not an indication of weak currencies; instead, they reflect the large capital inflows these countries have attracted in recent years.

Table 11 about here

The table also reports the capital inflows experienced by the new member states over the period from 2000 to 2003 and the type of financing. All countries in this group have experienced sizable net capital inflows during this period. To put the size of the capital flows into perspective, we compare them with the experience of some incumbent member states with large capital inflows in the past 20 years, see Table 12. The experience of Greece, Ireland, Portugal and Spain is interesting, because these were countries that were catching up with the older EU members at the time. It is clear that the average capital inflows experienced by the Baltic countries, Hungary, Poland, and Malta are "large" compared to the experience of these countries.

Table 12 about here

The sustainability of persistent, large current account deficits depends in part on the type of capital inflows to finance these deficits, as portfolio investment is commonly thought to be more fickle than direct investment.[21] A high share of direct investment, therefore, results in less exposure to sudden reversals of capital flows which might occur due to changing expectations and investor confidence in the international capital market.[22] Table 11 shows that there are some striking differences in the type of financing among the new member states. In the Czech Republic, Poland, the Slovak Republic, and Slovenia net foreign direct investment exceeded the current account deficits substantially. In Malta, net foreign investment inflows almost match the current account deficits. The other states, in contrast, took recourse to portfolio and other investment to a much larger extent. It is interesting to

[21] As Buiter and Grafe (2002) point out, even foreign direct investment can be quickly reversed if there are well developed markets for equity and corporate securities.
[22] Note, however, that even foreign direct investment inflows could be reversed quickly, if foreign investors can sell their assets in liquid domestic securities or equities markets. (Buiter and Grafe, 2003).

note that Estonia and Lithuania, the two countries operating currency boards in this group, have relatively low shares of foreign direct investment in financing their current account deficits. This suggests that the credibility of a hard peg is not the principal factor in determining the financing conditions.

Table 11 also reports the gross foreign debt positions of the same countries at the end of 2001, measured in terms of GDP. Malta and Cyprus stand out for relatively large foreign debts, while foreign debt ratios remain well below 50 percent in the other countries. But relating foreign debt to the annual volume of exports shows that Latvia also has a relatively large foreign debt burden.

The prospect of further, large capital inflows will be an important factor shaping the macro economic policies of the new member states in the years to come. As Lipschitz et al (2002) and Lipschitz (2004) note, the CEE countries in particular are rich in well-trained labor and poor in capital compared to their main trading partners, implying that the marginal product of capital is relatively high in the new member states. Table 13 reports some estimates of the marginal product of capital relative to Germany in the new member states. Following Lipschitz et al. (2002), these calculations are based on the assumption of Cobb-Douglas production functions with a capital elasticity of 1/3 and equal total factor productivities in all countries.[23] In 1996, the largest relative marginal products of capital estimated in this way prevailed in the Baltic countries, followed by Poland. In Hungary, and the Czech Republic, marginal products of capital were about 4-5 times larger than in Germany, in Slovenia and Cyprus about three times. Since the mid-1990s, these ratios have declined dramatically, reflecting the rapid productivity growth.

Table 13 about here

EU membership and the adoption of the *acquis communautaire* represents a dramatic improvement in the institutional framework of these economies, which, in macro economic terms, can be interpreted as a rise in total factor productivity adding

[23] Let $y_i = A_i (k_i)^{\alpha}$ be output per employed worker in country i, with k_i the capital labor ratio, A_i total factor productivity, and $\alpha = 1/3$ the capital elasticity. The marginal product of capital is $MPC_i = \alpha A_i (k_i)^{-(1-\alpha)}$. The capital labor ratios are computed using output in PPP dollars from the World Economic Outlook 2004 data base and labor force and unemployment data from the World Bank's World Development Indicators.

to the gap in the marginal product of capital in favor of the new member states.[24] Furthermore, EU membership implies a higher degree of legal certainty for investors, which induces a reduction in country-risk premia. Note that the last two arguments also apply to Cyprus and Malta. Based on these considerations, Lipschitz estimates the cumulated potential future capital inflows between 65 percent (Slovenia) and 596 percent of GDP (Lithuania.)[25] Obviously, these estimates must be taken cautiously given model uncertainty and potential limits of supply.[26] Furthermore, the inflows will be distributed over time. The main point, however, is that capital inflows are likely to remain large in the foreseeable future. Other factors contribute to this tendency (Begg et al., 2003). One is the relatively low level of financial development of the former socialist economies, which limits the extent to which capital investments are financed from domestic sources. Another one is the likely increase in the demand for money as inflation expectations continue to fall. Given the limited size of domestic securities markets, much of that increase will likely be accommodated by an inflow of foreign reserves at the central bank.

Large capital inflows are, of course, desirable in principle for relatively low-income countries, because they induce an efficient international allocation of capital and they push the receiving countries' consumption and investment frontier outside, allowing for more investment and higher consumption levels at the same time, and speeding up the growth and real convergence process. However, they also pose potential risks from two sides: overheating and volatility.

The first risk is that of the (in)famous *convergence play,* a combination of real appreciation and declining long-term interest rates due to falling inflation expectations and country-risk premia, which makes the economies even more attractive for short-term capital inflows and portfolio investment. If the demand financed by capital inflows fell entirely on tradables, it would simply be absorbed by large trade deficits. In practice, as witnessed by the experiences of Italy, Spain, and Portugal in the late 1980s and early 1990s, *convergence play* fuels domestic demand for non-tradables, too, where domestic supply is limited, and this leads to a severe overheating of the

[24] IMF (2003) presents empirical evidence showing that institutional quality affects economic growth. Studying growth patterns in transition economies, Grogan and Moers (2001) find that institutional improvements lead to higher growth and stronger foreign direct investment. Alfaro et al (2003) find that, in a sample of 50 countries, institutional weakness is an important hindrance against capital inflows to poor countries.

[25] Lipschitz does not give estimates for Cyprus and Malta.

[26] Jonas (2004) notes that global capital flows to emerging market economies have surged in 2003, but predicts that they will be reduced in the coming years.

economy with new inflationary pressures. With a fixed exchange rate, the increase in the price level leads to a real appreciation of the domestic currency. With a floating rate, the central bank can do more to suppress inflationary pressures and let the nominal exchange rate appreciate.

These conventional demand effects may be augmented by financial market or balance sheet effects (see Calvo 2002, 2003, Calvo et al. 1999, 2004). Calvo and Reinhart (1999) call this the *Fisherian* channel of the transmission of capital inflows. The real appreciation of the home currency induces a rise in the relative price of non-tradables, the more so, the more the central bank tries to stabilize the nominal exchange rate. As a result, producers of non-tradables face a lower ex-post real interest rate and rising cash-flows that raise the value of their assets that can be collateralized against bank loans. Large capital inflows are, therefore, often connected to asset and real estate price bubbles fuelling credit booms. To the extent that they are absorbed by an expansion of international reserves at the central bank, the ensuing monetary expansion contributes to this development. We can assess this risk by looking at recent growth rates of broad money and credit in the new member states, see table 14.

Table 14 about here

The table reports the average growth rates of broad real money and real domestic credit between 1999 and 2003. To put them in perspective, we subtract the average growth rates of real GDP over the same period. There are two groups emerging in this table: Cyprus, the Czech Republic, Malta, Poland, and the Slovak Republic, which had growth rates of real money exceeding real GDP growth by 6-8 percent, and Estonia, Hungary, Latvia, Lithuania, and Slovenia, where this difference exceeded 10 percent. Falling rates of interest and inflation expectations may have caused a decline in the equilibrium velocity of money. If the income elasticity of the demand for money exceeds one, strong real GDP growth adds another explanation. Thus, real money growth rates of 6-8 percent annually may not be excessive. However, the strong monetary expansions in the second group raise a warning flag. Turning to credit growth, the ongoing process of financial market development leads one to expect that credit is growing fast in the new member states. Nevertheless, the table indicates four countries with clear signs of a strong credit boom, Estonia, Latvia,

Lithuania, and Slovenia. Taking money and credit growth rates together, they seem to be the critical cases in the group. This is interesting because, in the past, these four countries also put the largest weight on stabilizing the exchange rate among the countries in this group (von Hagen and Zhou, 2004; Thimann et al. 2004).

Table 15 about here

The second risk connected with large capital inflows is their volatility. To date already, capital inflows to the new member states have been quite volatile. Table 15 reports the standard deviation of annual capital inflows relative to GDP between 1994 and 2003. This ratio varied between 2.6 percent of GDP for Poland and 5.0 percent of GDP for Hungary. Volatility is large compared to the average inflows reported in Table 11. The table also shows that several countries in this group experienced large reversals of capital inflows, *Sudden Stops* in the terminology of Calvo and Reinhart (1999). Between 1999 and 2000, capital inflows slowed down in seven of the ten countries, the exceptions being the Czech Republic, Estonia, and Slovenia. Between 1994 and 2003, eight of the ten countries experienced at least one year in which capital inflows declined by more than five percent of GDP, four experienced a decline of (almost) 10 percent or more. This confirms Calvo and Reinhart's (1999) observation that large capital inflows are often been followed by sudden stops and reversals. Except for Poland and the Slovak Republic, the reversals reported in Table 15 easily qualify as *large* compared to the evidence reported by Calvo and Reinhart. Obviously, they have affected countries with very different exchange rate regimes, supporting Calvo's (2003) argument that exchange rate policies are of secondary importance to the incidence of *sudden stops.* Note also, that the largest reversals occurred around the year 2000, which confirms the observation in Calvo and Reinhart (1999) and Calvo et al. (2004) that sudden stops are bunched in time and across countries.

Sudden stops create macro economic problems through the same channels discussed above in reverse (Calvo and Reinhart, 1999). A *sudden stop* requires a contraction of the current account deficit or the money supply or both, leading to a contraction in aggregate demand. The ensuing real depreciation of the currency entails a drop in the relative price of non-tradables. Producers of non-tradables now face higher ex-post real interest rates and lower values of their assets than anticipated, including those assets they can use as collateral for borrowing from

banks. Banks react to the resulting deterioration in the quality of their loans by cutting back lending. The resulting credit crunch makes the recession more pronounced and longer lasting. In principle, this financial effect could be avoided by a large nominal depreciation of the currency. This, however, would increase the burden of foreign currency debt on the government and the private sector.

Coping with large capital inflows is a difficult task for macro economic policy. Since the underlying reason is real, there is not much monetary policy can do. The obvious response would be to tighten monetary policy to prevent aggregate demand from overheating. With a fixed exchange rate, capital inflows then lead to a rapid increase in international reserves. The central bank may try to sterilize their impact on the money supply, but in practice this is costly and ultimately of limited success. Inflationary pressures then result in a real appreciation, a loss in international competitiveness, and a widening current account deficit. With a flexible exchange rate, the central bank may be more successful to keep inflation low, but at the cost of a nominal appreciation of the currency, with the same effect on competitiveness and the current account.

At the same time, episodes of large capital inflows into small open economies generate a preference for low exchange rate variability, even if the official exchange rate regime allows for a high degree of flexibility. This has been dubbed the *fear of floating* by recent literature. The reason is that, since emerging-market countries typically cannot borrow internationally in their own currency, large capital inflows lead to a mounting stock of foreign debt denominated in foreign currency. Exchange rate variations then expose the government and the private sector to fluctuations in their balance sheets. Hausmann et al. (2001) show that *fear of floating* is strongly associated with a country's borrowing in foreign currency and the degree of exchange rate volatility it allows.[27] If this is true for the new EU member states, they will show a tendency for strongly managing their exchange rates as the capital inflows continue to persist. They may even decide to enter the ERM-2 for that reason, hoping that it offers more credibility of their commitment to exchange rate targets. Yet, the comfort offered by an exchange rate peg in this situation can be quite betraying. As the risk of exchange rate variability seems to be low, private borrowers and the government are more inclined to borrow in foreign currencies than they would be otherwise, which increases the exposure to *sudden stops* and exchange

[27] A recent paper by Detken and Gaspar (2004) shows that fear of floating could also stem from the combination of inflation targeting and a specific monetary-policy rule in a new-Keynesian model.

rate crises. As long as the capital inflows continue to be large, the exchange rate peg causes a monetary and credit expansion that aggravates the tendency for overheating. Once the capital flows dry out, the peg may come under speculative attacks, which, unless they can be successfully defended, are costly and more disruptive than the adjustment under a floating rate.

The ERM-2 may offer some relief and credibility in such a situation due to the financial support for interventions it provides, but the history of the early 1990s suggests that its usefulness is limited at best. The experience teaches that European exchange rates tend to become objects of politics, especially in situations of market tensions. The countries exposed to *convergence play* failed to adjust their exchange rates timely in the late 1980s and early 1990s, which contributed to the size of the later devaluations and currency crises. When Germany asked for a revaluation of the DM to absorb the post-unification capital inflows, other governments and central banks were unwilling to grant the adjustment. It is not clear a priori, that the new member states would not see similar resistance against repeated devaluations of the euro against their currencies, which might be required to counteract inflationary tendencies if capital inflows continue during their ERM-2 membership. Thus, the multilateral nature of the ERM-2 does not obviously add to its economic rationality. It is equally uncertain that the multilateral political negotiations required for devaluations can be completed fast enough in the case of a *sudden stop*. The multilateral political framework may, in contrast, create ambiguities and rumors in the markets, which could undermine the credibility of the pegs.

Since a *sudden stop* of capital inflows is equivalent to a cut in international credit to the home economy, the appropriate response by the central bank would be to expand credit to the private sector. This could be done through open market operations or loans to the banking system under a flexible exchange rate and entail a nominal depreciation of the currency. The latter also reduces the need for the relative price of non-tradables to fall, but increases the domestic value of the foreign debt burden on the government and the private sector to the extent that foreign debt is denominated in foreign currency. Maintaining an exchange rate peg, in contrast, avoids the valuation effect, but the loss of international reserves at the central bank leads to a monetary contraction that makes the credit crunch more severe. Thus, *sudden stops* create a monetary policy dilemma. As recent literature has noted,

euroization offers a partial way out of this dilemma.[28] First, it eliminates the valuation effect on the affected country's debt denominated in euros. Second, the supply of bank credit would not be limited by the domestic central bank's supply of bank reserves but by the ESCB's supply of bank reserves. This would make any the credit contraction less severe, as monetary policy would not add to it. As a result, countries facing large (and volatile) capital inflows should have a preference for either floating exchange rates or euroization, but avoid soft pegs, especially if, as in the case of the ERM-2, they are unprotected by capital controls.

Fiscal policy is the more appropriate policy instrument for dealing with capital flows. In the face of large inflows, tightening the fiscal stance helps reduce the risk of an overheating economy. Here, again, the quality of the fiscal adjustment matters. If tightening is achieved by raising tax rates, the result would be buoyant tax revenues and, therefore, a strong temptation to expand fiscal spending. At the same time, initiatives to cut spending in the face of a strong economy will not be very popular. Furthermore, Calvo (2003) points out that, by raising distortionary taxes, the government may reduce the economy's growth potential and this could precipitate a *sudden stop*. Again, it is important to achieve tightening by cutting government expenditures rather than raising taxes. This makes the role of good budgeting institutions especially important. Effective spending controls and medium-term fiscal targets well anchored in the planning and implementation procedures will be important to achieve a sufficient degree of fiscal discipline and use fiscal policy to manage capital inflows.[29]

As most of the new member states need to tighten their fiscal policies to meet the requirements of EMU, managing capital inflows and meeting these requirements are complementary goals for them. However, the countries with the tightest fiscal stance in recent years are also the countries with the strongest credit expansions. For them, as for the others in the future, further tightening to fend off the macro economic effects of large capital inflows may be asking too much of fiscal policy (Jonas, 2004).

There is also a task here for prudential supervision and banking regulation involved in managing large capital inflows. Recent empirical studies show that large credit booms and strong real appreciations are among the best indicators of the risk

[28] See Begg et al. (2003) and the literature discussed there.
[29] Kopits (2000) also notes the usefulness of credible medium-term fiscal plans (*rules* in his terminology) to avert currency crises in emerging-market economies.

of currency and banking crises.[30] Banking regulation can help to prevent capital inflows from spilling over into domestic credit booms (Begg et al., 2003.) Strict rules against overlending and overexposure to individual borrowers are one important element. As lending booms are often triggered by bubbles in real estate prices, limits on the use of real estate as collateral can serve as another element of protecting the banking system against adverse developments. Furthermore, currency mismatch in the aggregate balance sheet of the banking sector has been an important part in the link between banking problems and currency crises in recent years. Systemic risk arising from large exposure to international interest rate shocks or sudden capital outflows may not be visible in individual bank balance sheets even when it is in the aggregate balance sheet. Monitoring the entire banking sector's financial position is, therefore, an important part of banking supervision in the new member states.

5. Convergence to the Euro and the ERM-2

Entry into EMU requires participation in the ERM-2 for at least 2 years. The ERM-2 features a central parity against the euro, standard fluctuation bands of +/- 15 percent around this parity, compulsory interventions at the margins, the availability of very short-term financing for interventions, and the absence of any capital controls to protect the mechanism against speculative attacks.[31] The ECB has the right to suspend interventions in support of weak currencies, if its goal of price stability is jeopardized otherwise. Since there is no formal definition of what this means, markets will never be fully assured of the ECB's commitment to defend the exchange rate bands. Participating countries may choose narrower bands than the standard ones as unilateral commitments, i.e., with no obligation to defend them for the ECB. In particular, the currency boards against the euro would continue to be considered as unilateral commitments. The ERM-2 allows for changes in the central parities and the width of the bands of fluctuations in a cooperative procedure involving the ECB, the national central banks, the finance ministers, and the Commission. All parties to the mutual agreement have the right to initiate the procedure to change central rates.

[30] For banking crises see Borio et al. (2004) and Ho and von Hagen (2004). For currency crises see Kaminsky and Reinhardt (1999).
[31] The latter is part of the Single Market framework and applies to all EU member states independently of the ERM-2. The Treaty allows for temporary limitations under specific, exceptional circumstances.

5.1. The ERM-2: Boot Camp or Purgatory?

The experience of the original ERM in the early 1990s and of the numerous currency crises in the 1980s and 1990s teaches that soft pegs with no protection from capital controls like the ERM-2 are inherently unstable, as changes in the markets' perception of the credibility of the peg can trigger large and swift capital outflows. In one sense, this is good, because it subjects monetary and fiscal policy to the scrutiny of international investors and the risk of a currency crisis caused by flawed domestic policies exerts heavy disciplinary pressure on the governments. Empirical research into the causes of currency crises suggests they are indeed linked to weak macro economic fundamentals like high inflation, excessive credit growth, large budget deficits and external deficits, as well variables that may have a role in self-fulfilling crises like unemployment or banking-system fragility (e.g. Eichengreen, Rose and Wyplosz 1995, Goldfajn and Valdes 1997, Kaminsky and Reinhart 1999). Economists from the IMF (Schadler et al. 2004) and the ECB (Thimann et al. 2004) concur with ECB officials[32] and former EU Commissioner Solbes (2003) that the ERM-2 creates strong incentives for consistent macro economic policies. Hochreiter and Tavlas (2004b) and Papaspyrou (2004) stress the importance of consistent macro economic policies to build the credibility that facilitated Austria's and the Greece's entries into EMU via the ERM and the ERM-2. In this view, the ERM-2 is a policy-makers' *boot camp*, training them for sound domestic policies aiming at macro economic stability.

If this view were correct, one would expect that participants in ERM-type arrangements conduct better macro economic policies than countries with floating exchange rates. Unfortunately, empirical research has very little to offer to support that view. The literature of the early 1990s has shown extensively, that the original ERM did not contribute to better macro economic policies in the member states compared to countries maintaining floating exchange rates (Fratianni and von Hagen, 1990, 1992). Low-inflation discipline was weaker, disinflation took longer and, from the early 1980s onwards, unemployment rates were higher in the countries participating in the ERM except Germany. Perhaps, this was the case because undisciplined policies were still protected by capital controls. However, De Grauwe and Schnabl (2004) find no evidence that hard and intermediate pegs regimes lead to lower inflation among European transition economies. Fatas and Rose (2001) and

[32] see the quotes in Thimann et al. (2004)

Grigonyte (2004a) find no evidence that soft pegs lead to more fiscal discipline than floating exchange rates, although very hard pegs and unilateral monetary unions do.

The main problem with the boot-camp view of the ERM-2 is that it relies heavily on the assumption that financial markets always act rationally and based on sound assessments of every country's individual circumstances. There is ample evidence throwing doubts on that assumption. The relevance of non-rational behavior such as herding effects in foreign exchange markets and crisis contagion has been amply documented in the literature (e.g., Eichengreen, Rose and Wyplosz 1995). Grigonyte (2004b) finds that the risk premia contained in foreign-currency denominated debt issued by the Baltic states increased significantly during the Russian crisis in 1998, although their fiscal performance did not deteriorate dramatically. Similarly, Bernoth et al. (2004), Grigonyte (2004b), and Favero and Giavazzi (2004) find that default risk premia (for EU member states in the Bernoth et al. paper) are significantly affected by swings in the degree of risk aversion in the international capital market. This implies that interest rates may sharply increase and a currency peg may come under attack due to a sudden increase in risk aversion in the international debt market unrelated to domestic fundamentals. Calvo (2002) points to informational and institutional deficiencies of international capital markets that explain the contagion of *sudden stops* and currency crises. As noted above, s*udden stops* tend to be bunched in time, and they have affected countries with very different macro economic fundamentals. To the extent that currency crises and *sudden stops* arise in situations characterized by multiple equilibria, macro economic data will not provide clear warning signals (Calvo 2003). All this implies that sound domestic macro policies are not enough to rule out currency crises. The logical flaw of the boot-camp view of the ERM-2 therefore is that it mistakes a necessary for a sufficient condition for exchange rate stability. The alternative view is that the ERM-2 is a "purgatory" imposing the risk of unnecessary and potentially large damage on countries before they enter EMU (Buiter and Grafe, 2002). In this view, countries should be allowed to enter EMU as soon as they fulfill the inflation and fiscal sustainability requirements, i.e., the ERM-2 requirement should be scratched (Buiter, 2004)

Where one comes down between the *boot-camp* and the *purgatory* views of the ERM-2 is, ultimately, a matter of allocating macro economic risk. Neglecting the risk of financial market crises hitting small open economies with sound fundamentals

is easy for incumbent EU authorities, because the economic fall-outs of speculative attacks and financial crises would be borne by the new member states rather than themselves. They insist on the ERM-2 requirement because they do not wish to see the discipline and quality of EMU monetary policy diluted by potentially less stability-oriented members.[33] Neglecting the disciplinary potential of the *boot camp* is easy for policymakers in the new member states, who rightly fear the cost of financial crises and do not consider themselves as being less stability-oriented. In the end, therefore, the issue is a distributional one, i.e., it is about who carries more macro economic risk before the new member states enter EMU.

If immediate euro-adoption is not allowed, the best strategy for the new member states is to minimize the time spent in the ERM-2, i.e. to enter the system no sooner than two years before the planned convergence assessment. The question then is how soon that should be achieved. The answer depends mainly on each country's ability to achieve and maintain a large degree of monetary stability based on its own currency. For the larger countries, Poland and the Czech Republic, there is a plausible potential for monetary policy to be effective in that regard.[34] For the smaller countries, that potential is virtually non-existent. For them, keeping a national currency with a fixed exchange rate is a dangerous luxury (Buiter and Grafe, 2002; Buiter, 2004). They would do best entering the ERM-2 immediately, working hard to meet the entry requirements and adopting the euro in 2006. The two other countries could continue their regimes of inflation targeting without much regard to exchange rate management until they have achieved sufficient degrees of fiscal sustainability and low inflation rates.[35]

[33] This is a kind of replay of the policy debate among the current EMU member countries in the early and mid-1990s. See e.g., Alesina and Grilli (1993) and Fratianni and von Hagen (1992).
[34] Cf. Orlowksi (2000).
[35] While an official position of "benign neglect" of the exchange rate would contradict the rule of the European Treaty that EU member states regard their exchange rates as matters of common concern, the examples of Sweden and the UK suggest that de facto such a policy is acceptable in the EU.

5.2. Converging Towards the Euro

To analyze the macro economic issues involved in the passage to the euro, it is useful to consider the standard monetary model of the exchange rate. The fundamental relationship of this model holds that the exchange rate at any point in time, t, depends on a stochastic fundamental, x(t), and the expected change in the exchange rate,

$$s(t) = x(t) + \frac{1}{\alpha}\frac{E_t d(s(t))}{dt} = \frac{1}{\alpha}\int_t^{\infty} E_t[x(v)]e^{-(v-t)/\alpha}dv, \tag{5}$$

where $E_t(.)$ denotes the conditional expectation at time t, and $\alpha > 0$. Suppose that the monetary authorities announce the conversion of the currency into the euro at some future date T. Then the exchange rate path becomes

$$s(t) = e^{-(T-t)/\alpha}E_t c_T + \frac{1}{\alpha}\int_t^{T} E_t[x(v)]e^{-(v-t)/\alpha}dv, \tag{6}$$

where $E_t c_T$ is the expected conversion rate of the national currency into the euro applied at time T. The first term in equation (6) shows that the expected conversion rate anchors the exchange rate, while the second term represents the impact of the fundamentals until the time of conversion. Note that

$$e^{-(T-t)/\alpha} + \int_t^{T} e^{-(v-t)/\alpha}dv = 1. \tag{7}$$

Thus, the exchange rate is a convex combination of the expected conversion rate and the expected fundamentals. As the conversion date comes closer, forward-looking speculation drives the exchange rate towards the announced conversion rate until it converges to this rate at time T. Furthermore, assuming that the fundamental x(t) follows a Brownian motion without drift and conditional variance σ_x^2 , the instantaneous variance of the exchange rate along the path (6) is,

$$\sigma_e^2(t) = (1 - e^{-(T-t)/\alpha})\sigma_x^2 \leq \sigma_x^2, \tag{8}$$

which declines steadily as t approaches T. The inequality in (8) says that the announcement of a fully credible conversion rate c_T generates a volatility benefit in the sense that it stabilizes the exchange rate on the way to the conversion date. No central bank intervention is necessary to make that happen. As Wilfling and Maennig (2001) show in a similar model, uncertainty about the date of conversion adds to the exchange rate volatility during the run-up to the conversion date, although the volatility is never larger than in a free float.

This model has several policy implications. A first implication is that policy makers cannot "leave it to the market" to determine the appropriate conversion rate, a contention that was popular in the run-up to EMU (see Begg et al., 1997). Suppose, the monetary authorities simply announce that the conversion rate will be the market equilibrium rate at the time of conversion, T, i.e., $c_T = e(T)$. Letting t approach T, equation (6) then implies $\lim_{t\to T} s(t) = s(T)$, which is true for any level of the exchange rate. Hence, the exchange rate at the time of conversion is indeterminate. To avoid indeterminacy, a conversion rate must be announced.

A second implication is that any change in the expected conversion rate prior to conversion translates into changes in the exchange rate. Thus, public statements by the monetary authorities and the governments that change market expectations about the conversion rate will change the exchange rate in the run-up to conversion. Once the intention to join the euro has been declared, exchange rate movements reflect both fundamentals and the markets' perceptions of euro-adoption politics. Therefore, the actual market rate is no longer a reliable indicator of the fundamental appropriateness of any exchange rate, let alone an ERM-2 central parity.

A third implication arises, if the conversion rate is set conditional on the exchange rate prior to the conversion date. De Grauwe et al. consider linear rules of the type

$$c(t) = \lambda c + (1-\lambda)\int_{t_L}^{T} w(v)e(v)dv, \qquad (9)$$

where $0 \le \lambda \le 1$, w(v) is a weighting function, $t \le t_L < T$, and $c_T = \lim_{t\to T} c(t)$. According to equation (9), the conversion rate is the weighted average of a constant and an average of the realized exchange rate taken over a time period from t_L to T.[36] As De Grauwe et al (1999) show, this implies that shocks to the fundamentals x(t) affect the exchange rate in two ways: Once through the standard impact shown in the second term of equation (6) and once through the effect on the expected conversion rate. While the details depend on the specific averaging rule, w(t), the general conclusion is that such rules make the exchange rate more sensitive to such shocks than in the presence of a fixed conversion rate.

Fourth, the announcement of the conversion rate by the authorities at time t* causes a discrete jump of size J_{t^*} in the exchange rate. Suppose that markets

[36] The rule proposed by the first president of the European Monetary Institute, A. Lamfalussy for the original conversion of the national currencies into the euro is a special case of this; see Begg et al (1997).

expected this announcement to happen at time t* with a subjective probability γ. The size of the jump due to the announcement can be derived as

$$J_{t^*} = (1-\gamma)e^{-(T-t^*)/\alpha}[E_{t^*}c_T - x(t^*)]. \quad (10)$$

It depends on three elements. First, the more the announcement takes the markets by surprise, the larger will be the jump. Second, the larger the time-gap between the announcement date and the conversion date, the smaller will be the jump. Finally, the larger the gap between the expected conversion rate and the fundamental at the time of the announcement, the larger is the jump in the exchange rate. Note that the jump is smaller than indicated in (10) if the announced conversion date is not fully credible (Wilfling and Maennig, 2001).

Finally, since our model is derived from the standard monetary approach to the exchange rate, it embeds a solution for the price level during the time until the euro is adopted. Let P(t) be the log of the equilibrium price level that would prevail in the new member state under flexible exchange rates. We assume that the euro-area price level is exogenous relative to the price level in a new member state adopting the euro. Between the announcement of the conversion rate and date to the euro and the adoption of the euro, the equilibrium price level follows the following path:

$$p(t) = P(t) + \frac{1}{\alpha}\int_T^\infty E_t[c_T - x(v)]e^{-(v-t)/\alpha)}dv = P(t) + [E_t c_T - x(t)]e^{-(T-t)/\alpha}. \quad (11)$$

The second equation again makes use of the assumption that the fundamentals follow a Brownian motion. The second term in equation (11) shows that any gap between the conversion rate, $c_{T,}$ and the fundamental exchange rate at the time of adopting the euro leads to an adjustment in the price level of the new member states already before the adoption of the euro. The impact of this gap on the price level becomes larger, as the time of adopting the euro comes closer, i.e., the price level converges smoothly to the value compatible with equilibrium in the monetary union. In particular, the expectation of a too high conversion rate – which might seem desirable for the new member state to gain a competitive edge in the euro area – only leads to a higher inflation rate in the time before the euro is adopted. Since this might defeat the country's adoption of the euro through the inflation criterion, equation (11) implies that the incentive to go for a high conversion rate is limited. In fact, equation (11) indicates that countries might even have an incentive to choose a too low value of the conversion rate to fight domestic inflationary pressures in the

run-up to joining the euro.[37] Furthermore, the relationship between the exchange rate and the price level supports the call for an early announcement of the terms of the euro adoption, since it gives the economy more time to adjust prices. Popular fears that locking in the conversion rate too early would lead to a misalignment of the exchange rate and, therefore, the price level of the new member state after the adoption of the euro, overlook the simple fact that, while the fundamentals are real, nominal quantities will adjust to whatever level is necessary.[38]

This analysis has important implications for exchange rate management in the ERM-2. First, the idea that the ERM-2 could serve as a "testing phase for the central rate and the sustainability of convergence in general" (ECB 2003, p. 2) is ill-conceived. It relies on the presumption that, in the run-up to the adoption of the euro, a new member state's exchange rate with the euro reflects its fundamental economic performance relative to the euro area. Instead, the exchange rate will be tainted by markets expectations about the terms of the adoption of the euro, and the closer the critical date, the stronger its dependence on these expectations. The point is best revealed by the indeterminateness of the exchange rate when the authorities wish to leave the determination of the conversion rate to the market. As the date of conversion draws nearer, the exchange rate simply has no more information value regarding the fundamental exchange rate or the appropriateness of the central rate in the ERM-2.

Second, if uncertainty about the exchange rate fundamentals increases with the length of time over which they are predicted (as it does if the fundamentals follow a Brownian motion), the analysis indicates the trade-offs to be considered in announcing the terms of euro adoption. Early announcements are desirable, because they keep the effect of the announcement itself on the exchange rate small (equation (10)), and they allow countries to enjoy the announcement benefits in terms of low exchange rate variability (equation (8)) earlier. However, early announcements create a bigger risk that a gap develops between the announced conversion rate and the fundamentals at the time of adopting the euro. In view of this, early announcements may not be considered credible and may have to be changed if fundamentals

[37] This is consistent with the Greek experience in the late 1990s as described in Hochreiter and Tavlas (2004a). When entering the ERM-2 in 1998, Greece chose a central parity that had the Drachma undervalued relative to the euro, allowing for the exchange rate to appreciate in the subsequent months.

[38] One might argue that price level adjustments downwards have more significant economic costs than upwards adjustments due to the nature of nominal rigidities. If the period of adjustment is relatively short, this would suggest a preference for erring on the high side when choosing the conversion rate.

develop in an unexpected way, which generates new exchange rate volatility. Yet, given the possibility of choosing a conversion rate that differs from the fundamental rate, early announcements have the advantage of leaving the relevant nominal variables, the exchange rates, prices and wages, time to adjust smoothly. It is difficult to judge these trade-offs in a general way. In the specific situation of the new member states, the conclusion is that countries striving for a fast adoption of the euro should not postpone the announcement of the terms of conversion, while countries that have chosen a longer waiting period anyway should refrain from making any hints in this regard.

Third, our analysis implies that, once a new member state has announced its intention to adopt the euro in the near future, it is of paramount importance to anchor market expectations about the conversion rate and the date of adopting the euro firmly. As market uncertainty about the terms of euro adoption and changing expectations translate into possibly large swings in the exchange rate itself, improper information management could easily undermine the viability of the ERM-2. This, again, speaks for an early announcement of the terms of conversion. Leaving the relevant decisions until very late in the process will make the conversion rate the subject of political haggling over short-term economic benefits. This would create noise and volatility that could easily derail the smooth adoption of the euro.[39]

Furthermore, the ECB and the European Commission should give up their current position of keeping the terms of the euro adoption open as long as possible. Public statements that "countries that operate a euro-based currency board deemed to be sustainable *might not* be required to go through a double regime shift …" (emphasis added) rather than *will not* be required to first float "the currency within the ERM-2 only to repeg it to the euro at a later stage" (ECB 2003, p. 3), that their central parities remain open to negotiations, and that central parities within the ERM-2, even if set by mutual agreement of all relevant parties, "in no way prejudice the ultimate choice of the central rate" for conversion (ibid. p. 4) simply create exchange rate uncertainty which is completely unwarranted and can impose large economic costs on the new member states. Clearly, the countries currently operating currency boards with the euro have no other choice but announce their current parities as the future

[39] See Begg et al. (1997). The wish to avoid such political effects was, perhaps, one of the motivations that led the ECOFIN to announce the fixed-conversion rule at its Summit in Mondorf, 13-14 September 1997, i.e. more than seven months prior to the EU Summit in Brussels, 2-3 May 1998, where the members of EMU were decided. Although this was not made explicit, markets widely interpreted this decision as taking the existing central parities as the internal conversion rates to the euro.

conversion rates to the euro. Any deviation from that, and even the possibility of this happening perceived by the markets could easily destroy the currency board, with no obvious benefit for anybody. As a minimum contribution to the monetary stability of the new member states, the ECB should refrain from such general announcements.

Finally, our analysis shows that the announcement of a credible conversion rate and conversion date sets the exchange rate on a path smoothly converging to the final rate. In the absence of counterproductive policy announcements, the market forces of speculation hold the exchange rate close to this path, without any intervention from the central banks. From this perspective, the debate over the appropriate width of the bands in the ERM-2 seems largely irrelevant at first sight. Nevertheless, wide bands are clearly desirable for two reasons. First, an early announcement could come with a conversion rate that requires adjustment of the exchange rate of more that a narrow band might allow. In such a situation, the narrow band would render the early announcement impossible. However, the benefits from an early announcement in terms of exchange rate stability are likely to far outweigh the benefits of narrow bands around an adjustable central rate before the announcement of the terms of euro adoption.

Second, exchange rate bands invite markets to test the central banks' resolve to defend them, i.e., they create opportunities for one-sided bets against the central bank. The history of the 1990s teaches that such bets greatly increase the instability of exchange rate arrangements. In contrast, the original members of the ERM used the wide bands to let their currencies converge to the pre-announced conversion rates without central bank intervention. The new member states should simply replicate that experience and, unless they already operate currency board with the euro, refrain from any unilateral commitments to narrower bands.

6. Macroeconomic Adjustment Under EMU

With the adoption of the euro, the new member states will surrender their own monetary policy and participate in the common monetary policy of the ESCB, instead. Since EMU monetary policy cannot differentiate between different geographical parts of the euro area, member countries must use the remaining tools of economic policy to adjust to asymmetric shocks, i.e., shocks that hit them in different ways or shocks to which their economies react in different ways than the aggregate EMU. To evaluate a country's expected economic performance in a monetary union, literature in the tradition of Mundell's (1961) theory of *optimum currency areas* has, therefore,

asked two main questions: How likely will the country's cyclical stance differ from that of the aggregate EMU, and what is the country's ability to cope with asymmetric shocks. In this section, we focus on two aspects of these questions. First, we look at the symmetry or asymmetry of business cycles between the euro area and the new member states. Next, we consider the degree of labor market flexibility in several of the new member states, since labor market flexibility is commonly regarded an important mechanism for adjustment to asymmetric shocks.

6.1. Convergence of Business Cycles

A high degree of business-cycle synchronization is widely taken as an indication that the probability of asymmetric shocks is low and, therefore, the cost of monetary policy independence is limited (Frankel and Rose, 1998, Alesina, Barro and Tenreyro, 2002, Artis et al, 2003, Frankel, 2004). For the transition economies among the new member states, this is a difficult issue to assess, because their cyclical behavior was shaped predominantly by the large drop in economic output and employment following the opening of their economies in the 1990s, and the subsequent, strong recovery. Furthermore, the period for which macro economic data exist is still too short to contain much more than one cycle. Thus, the analysis of cyclical patterns for these countries must be interpreted with caution.

Nevertheless, several empirical studies exist. Backé et al (2004) note that average growth rates were higher in the new member states than in the euro area between 1996 and 2003, and so was the volatility of growth rates. The same authors compare the correlation between quarterly, detrended GDP growth rates in the new member states and the euro area with the correlation between detrended GDP growth in Sweden, Denmark, the UK (pre-ins), Portugal and the euro area. They find that all these correlations are substantially lower for the new member states except Hungary and Slovenia. Artis et al (2003) use a variety of filters to extract the cyclical components from real GDP and industrial production in the eight Central European new member states and estimate the correlations with the cyclical GDP and industrial production series in the euro area. They find a low correlation of business cycles with the euro area, but a high correlation of the business cycles with Germany. Backé et al (2004) also estimate correlations between HP-filtered industrial output in the new member states and the euro area. While the correlation between the industrial output series is generally stronger, only Hungary, Slovenia and the Slovak Republic have

correlation coefficients with the euro area close to those of the pre-ins, a result consistent with those in Darvas and Szapary (2003) and Süppel (2003).

Boone and Maurel (1999) argue that economic cycles in the CEE countries are similar to the business cycle in Germany. They estimate that between 55 and 86 percent of the fluctuation in unemployment in CEE countries can be explained by "German" shocks. Babetsky, Boone and Maurel (2002) confirm this conclusion. Fidrmuc and Korhonen (2003) use a structural VAR approach to decompose cyclical fluctuations of output and inflation into demand and supply shocks, and then estimate the correlation between these shocks in the new member states except Cyprus and Malta and the euro area. They, too, find generally low correlations except for Hungary, and that demand shocks in the new member states are less correlated with their counterparts in the euro area than supply shocks.

Table 16 about here

We estimate bilateral correlation coefficients of the business cycles in the Central European new member states (CE-EU-8) and the incumbent members of the euro area. We use a Baxter-King (1999) filter to extract the cyclical components from quarterly real GDP series from 1990:1 to 2003:3. The results are shown in Table 16. The table shows that correlations of business cycles among the current euro-area countries are higher than the correlations between them and the CE-EU-8 countries. Correlations of business cycles between the CE-EU-8 countries are lower. Among the euro area countries, Belgium, Austria and the Netherlands have the highest average correlations with the euro area countries (0.56, 0.55, 0.50) and Portugal, Greece and Germany the lowest (0.28, 0.33, 0.31). The Netherlands, Germany, Belgium and Austria have the highest correlations with the acceding countries (0.06, 0.06, 0.06, 0.06) while Greece, France and Italy the lowest (-0.00, 0.04, 0.04). Among the acceding countries Poland, Slovenia and Hungary are the most correlated with the euro-area countries (0.40, 0.32, 0.18) while Lithuania, Slovakia and the Czech Republic are the least correlated (-0.29, -0.26, -0.09). Hungary, Slovenia and Estonia are the most correlated with the other Central European countries (0.04, 0.03, 0.03) and the Czech Republic, Lithuania and Poland the least correlated (-0.04, -0.02, -0.01). These results are in line with the earlier results reported above.

Based on this evidence, it is clear that the new member states do not form part of an *optimal* currency area, as they will have to cope with relatively frequent, asymmetric shocks. The countries most exposed to such shocks are Lithuania, Latvia, Estonia, and the Czech and the Slovak Republics. Among these, the Baltic countries have not had an independent monetary policy in recent years anyway. For the Czech and Slovak Republics, maintaining flexibility of exchange rates and independence over the monetary policy may have some value in terms of macro economic stabilization.

At the same time, it is noteworthy that the cyclical correlation among the new member states is fairly low, too. This is good news for their EMU membership. It implies that the new members would not enter EMU with strongly coherent interests regarding the monetary stabilization policy of the ECB. They are, therefore, unlikely to frequently find themselves in a coalition voting for an adjustment of interest rates in their common favor, which might pose a problem for ECB decision making if the new members were a strongly coherent group.

The conclusion regarding the appropriateness of EMU membership must be put into perspective. First, as pointed out before, the value of having a national currency is not very large from the perspective of macro economic stabilization for the majority of the new member states. Second, the general conclusion of the empirical literature on EMU in the 1990s was that the current member states were far from forming an optimum currency area, too (Eichengreen, 1992; Bayoumi and Eichengreen, 1993 and 1997). Third, and related to that point, while the optimum-currency area literature treats business-cycle correlation patterns as exogenous to the monetary regime, there are good reasons to believe that they are not. Cyclical correlation patterns are shaped by structural characteristics such as the similarity of production structures and trade patterns (Clark and van Wincoop, 2001; Rose and Engel, 2002; Calderon, Chong and Stein, 2003, Frankel, 2004), which are likely to change due to increasing economic and monetary integration.

Figure 10 about here

To illustrate this point, figure 10 plots the degree of business- cycle correlations with the euro area against the index of structural dissimilarity defined above. Recall that a high value on this index means a low degree of similarity. The

figure reveals a strong, negative correlation between the two. That is, countries which exhibit more structural similarity also exhibit more strongly correlated business cycles. The regression shown in the figure indicates that this correlation is statistically significant.

While figure 10 is informative, the causality of the relationship between the similarity of sectoral structures and correlations of business cycles must be treated more formally (Traistaru, 2004). We do this by estimating a two-equation model for sectoral specialization and business-cycle correlation. The first step is to regress the dissimilarity index on a set of instruments:

$$(SPEC_{ij})_T = \underset{0.51***}{-3.90} - \underset{0.09***}{0.85} EURO_{ij} + \underset{0.004***}{0.009} \ln(POP_i * POP_j)_T + \underset{0.01***}{0.08} \ln(GDP_i * GDP_j)_{1996} + \underset{0.58}{0.09} \ln DIST_{ij} - \underset{0.11***}{0.28} BORDER_{ij} + \omega(i,i)_T. \quad (12)$$

$R^2 = 0.44$

Here, $(SPEC_{ij})_T$ is the index of bilateral dissimilarity of sectoral structures in countries i and j[40] and $\omega(i,j)_T$ is the error term. $EURO_{ij}$ is a dummy variable which is equal to one, if countries i and j are members of the euro area, and zero for the other country-pairs. $(POP_i)_T$ denotes the average population in country i during the period T. $DIST_{ij}$ is the distance between the capitals of countries i and j measured as the shortest road connection in km. $BORDER_{ij}$ is a dummy variable which is equal to one, if countries i and j share a common border, and zero otherwise. The numbers below the coefficients are standard errors; ** and *** indicate statistical significance at the five and one percent levels, respectively. The regression uses data from 1990 to 2003 and is based on all country-pairs in our sample, i.e., 153 observations.

Next, we use the estimated dissimilarity index from (12) to explain the bilateral correlation of business cycles.

$$CORR(Y_i^c, Y_j^c)_T = \underset{0.16***}{-0.68} - \underset{0.10***}{0.58} \ln(SPEC_{ij})_T + \varepsilon(i,j)_T. \quad (13)$$

$R^2 = 0.09$

$CORR(Y_i^c, Y_j^c)_T$ denotes the bilateral correlation of the cyclical components of real GDP in countries i and j. The regression analysis indicates that, after correcting

[40] $SPEC_{ij} = \sum_{k=1}^{6} \left| s_{ki} - s_{kj} \right|$. s_{ki} is the share of sector k in the GDP in country i calculated as average over the analyzed period. The index is calculated using data on gross value added in constant prices for six sectors according to the NACE-6 classification

for the reversed causality, more dissimilar sectoral structures cause a lower correlation of the business cycles between two countries. The obtained coefficients are statistically significant at the one-percent level of confidence. To the extent that the structural similarity between the new member states and the incumbent euro-area countries will continue to grow, this suggests that the correlation of business cycles between them and the euro area will increase.

Figure 11 about here

We perform a similar analysis with regard to the bilateral trade intensities between the new member states and the euro area countries. Figure 11 shows a clear, positive relationship between the trade intensity and business cycles correlations over the period 1990:1-2003:3. Again, this result is only a simple correlation. The causality of this relationship can be accounted for with a regression analysis (see Traistaru, 2004). As before, we first estimate an instrumental variables model for the bilateral trade intensities:

$$\ln(TRADE_{ij})_T = \underset{2.43^{**}}{-6.28} + \underset{0.28^{***}}{1.59}\, EURO_{ij} - \underset{0.009^{***}}{0.02} \ln(POP_i * POP_j)_T + \underset{0.06^{***}}{0.24} \ln(GDP_i * GDP_j)_{1996} - \underset{0.23^{***}}{0.71} \ln DIST_{ij} + \underset{0.38^{**}}{0.88}\, BORDER_{ij} + \upsilon(i,j)_T \quad (14)$$

$R^2 = 0.60$

Here, $(TRADE_{ij})_T$ is the bilateral trade intensity between countries i and j[41], the other variables have been explained above, and $\nu(i,j)_T$ is the error term. Next, we regress the bilateral correlation coefficients on the instrumented trade intensities, which yields the following estimated result for the bilateral correlations of cyclical components of economic activity (real GDP) in countries i and j over the period 1990:1-2003:2:

$$CORR(Y_i^c, Y_j^c) = \underset{0.11^{***}}{1.09} + \underset{0.02^{***}}{0.16} \ln(TRADE_{ij})_T + \psi(i,j)_T \quad (15)$$

$R^2 = 0.19$

[41] $(TRADE_{ij})_T = \frac{1}{T}\left(\sum_{t=1}^{T} \frac{X_{ijt} + M_{ijt}}{F_{it} + F_{jt}}\right)$. X_{ijt} : exports of country i to country j in year t;

M_{ij} : imports of country i from country j in year t; F_{it} : total trade flows of country i in year t

The obtained coefficients are statistically significant at the one-percent level of significance. The results indicate that countries with more intensive trade links exhibit more similar business cycle patterns. Again, this evidence suggests that cyclical patterns of the new member states will converge to those of the incumbent euro-area members as trade intensity grows. Since these above results might be sensitive to non-observed, country-specific characteristics, we estimated the same models excluding first Greece and Portugal, then Germany and then Poland. The results are qualitatively similar.[42]

6.2. Wage Flexibility

The Optimum Currency Area (OCA) literature underlines that flexible labor markets in the countries wishing to join a monetary union mitigate the cost of losing independence over monetary policy. As an adjustment mechanism to asymmetric shocks, labor market flexibility has gained increasing importance in the context of EMU (Pissarides, 1997, European Commission, 2004).

Existing empirical evidence indicates that mobility of labor across sectors and regions in the new EU countries is low, like in the incumbent countries (Fidrmuc, 2004; Huber, 2004). However, the new EU countries perform better in other areas of labor market flexibility such as employment protection legislation, unemployment benefit systems, minimum-wage policies wage-setting and wage flexibility (Backé et al , 2004; Ederveen and Thissen, 2004; Boeri, 2004).

Wage flexibility has been given increased attention in the context of the EMU (European Commission, 2004). An often-used measure of wage flexibility is the responsiveness of wages to the rate of unemployment, or real wage flexibility. If wages were responsive to unemployment, they help equilibrate demand and supply in labor markets. A particular case of real wage flexibility is the responsiveness of regional wages to local labor market conditions.

A growing empirical literature flowing from Blanchflower and Oswald (1994) has looked at the relationship between regional wages and local unemployment in the EU accession countries during the 1990s and uncovered a negative relationship between these two variables suggesting that regional wages adjusted to the local unemployment rates. For example, Kertesi and Köllo (1997, 1999) found unemployment elasticities of pay in Hungary in the range of (–0.09) to (–0.11) using

[42] The results are available from the authors on request.

micro data matched with data from 170 labor office districts. Duffy and Walsh (2001) used individual data from labor surveys and data for 49 regions for Poland and found that the unemployment elasticity of pay was in the range of –0.08 to-0.11. In the case of Eastern Germany, Elhorst et al (2002) obtained an unemployment elasticity of pay of -0.112 using individual data for 114 districts. Iara and Traistaru (2004) find that regional average wages adjusted contemporaneously to local market conditions in Bulgaria and Poland while in Hungary the adjustment of regional average pay to local unemployment took place with a 2-year delay. Kállai and Traistaru (1998) use aggregate regional data from 41 regions in Romania and find an unemployment elasticity of pay of –0.09. Blanchflower (2001) finds unemployment elasticities to pay ranging from 0.003 to (–0. 052) in regressions for nine EU accession countries and six successors of the former Soviet Union.

These results suggest that wages could act as an adjustment mechanism to region-specific shocks in the new EU countries. Furthermore, in comparison to the incumbent EU countries, the unemployment elasticities of pay in the new EU countries are found higher (see Büttner, 2003). Nevertheless, in some countries, this adjustment is likely to take place, with a certain delay, which implies that labor market disequilibria might persist.

Here, we bring further evidence about the responsiveness of regional wages to local unemployment rates using a panel of 41 *NUTS-2* regions in the ten new EU countries over the period 1993-2003[43]. We estimate the following model as suggested by Blanchflower and Oswald (1994):

$$\ln w_{r,t} = \alpha + \beta \ln U_{r,t} + \gamma X_{r,t}^{'} + \mu_r + \lambda_t + \varepsilon_{r,t} \qquad (16)$$

where $w_{r,t}$ is the regional compensation per employee in region r at time t, α is a constant, $U_{r,t}$ is the unemployment rate in region r at time t, $X_{r,t}^{'}$ is a vector of variables controlling for the regional economic structure (the shares of regional gross value added in agriculture, industry, market and non-market services in regional GDP), μ_r is a time invariant region-specific effect, λ_t is a region-invariant time specific effect and $\varepsilon_{r,t}$ is the stochastic error term.

Table 17 about here

[43] Data were taken from the European Regional Database, Cambridge Econometrics

Table 17 shows the country-specific unemployment elasticities of pay[44]. Our results indicate that regional wages are responsive to local unemployment rates in the Baltic countries and Slovakia. A doubling of the unemployment rate is associated with a 15 percent reduction in the average wage in the three Baltic countries and a reduction of 6 percent in Slovakia. In contrast, in Cyprus, Malta and Hungary, a rising in the local unemployment is associated with an increase in the regional wages suggesting a mechanism of "compensating differential" across regions. In these cases, a doubling of the unemployment rate results in an increase of the regional wage by 55 percent in the case of Cyprus and Malta and 15 percent in Hungary, respectively. Furthermore, we do not find evidence for the responsiveness of regional wages to local unemployment conditions in the cases of Poland and the Czech Republic. An additional measure of wage flexibility is the responsiveness of wages to changes in productivity. We look at the responsiveness of regional wages to changes in local productivity by estimating the following model:

$$\Delta \ln w_{r,t} = \alpha + \beta \Delta \ln W_{r,t-1} + \gamma X_{r,t}^{'} + \mu_r + \lambda_t + \varepsilon_{r,t} \qquad (17)$$

$\Delta \ln w_{r,t}$ is the change in the compensation per employee in region r at time t, α is a constant, $\Delta \ln W_{r,t-1}$ is the change in the productivity (gross value added per employee) in region r at time t-1, $X_{r,t}^{'}$ is a vector of variables controlling for the regional economic structure (the shares of regional gross added value in agriculture, industry, market and non-market services in regional GDP), μ_r is a time invariant region-specific effect, λ_t is a region-invariant time specific effect and $\varepsilon_{r,t}$ the error term. We use the same panel of 41 regions in the ten new EU countries over the period 1993-2003 which gives a total of 409 observations. The country-specific estimates[45] are shown in Table 17.

Our estimates indicate that, in the Baltic countries, Poland and the Czech and Slovak Republics regional wages are responsive to changes in local productivity. The magnitude of this wage adjustment is the highest in the Baltic countries where an one percent increase in the local productivity in the previous period translates into a rise by 2 percent of the regional compensation per employee. The respective wage

[44] The country specific unemployment elasticities of pay are the coefficients of an interacted variable obtained by interacting country-specific time dummies with the variables of interest. Given the small number of observations we pooled together Cyprus and Malta as well as the three Baltic countries

[45] Estimates obtained by interacting country-specific dummies with the variable of interest

increases are lower in the other three countries mentioned above, 1.3 percent in the Czech Republic, 1.5 percent in Poland and about 0.75 percent in the Slovak Republic. This evidence suggests that in these six countries changes in productivity have a positive impact on wage demands while in Cyprus, Malta, Slovenia and Hungary productivity changes do not seem to influence the outcome of wage negotiations. These findings suggest that in the new EU countries there is a fair degree of wage flexibility that can facilitate the adjustment to demand and supply shocks.

7. Conclusions

Over the past decade the ten new EU members have achieved a high degree of market integration and macroeconomic stabilization as part of their accession process. The main challenges ahead for these countries are to cope with large and potentially volatile capital inflows and to achieve the nominal convergence required for the adoption of the euro. These challenges must be tackled under constrained fiscal policies: there is little room for the public sectors to grow, and several governments must make efforts to reign in deficits.

Several conclusions emerge from our discussion of macro economic adjustment. First, macro fiscal policies will be at the forefront of macro economic policies in the years to come. They will have to focus on meeting the sustainability requirement for EMU, and help absorb the aggregate demand effects of large capital inflows. As long as capital inflows persist, these two requirements are complementary. Macro economic stability would best be promoted by more effective spending controls and improved budgeting procedures.

Second, large capital inflows create a risk of sudden stops leading to large economic and financial imbalances. Prudent banking and financial market supervision are necessary to avoid credit booms and asset price bubbles that make such scenarios more likely, but also to reduce the vulnerability of the financial sector and the exposure of the government to implicit liabilities that could result from a capital account crisis. Governments would be well advised to keep substantial safety markings both with regard to deficits and debt to assure that they can respond to a sudden stop with the necessary financial rescue of the banking system and a fiscal expansion to partly absorb the fall in aggregate demand without losing the prospect

of making it into EMU for a long time. This adds to the incentives to curtail the growth of the public sector.

Third, the best way to enter EMU would be to set monetary policy in accordance with the low-inflation and low-interest rate criterion and to enter EMU as soon as these and the sustainability criterion are met. We argue that Poland and the Czech Republic are the only two new member states for which a late entry makes sense, given that they have demonstrated the potential for an autonomous, stability-oriented monetary policy based on inflation targets. The advantage of the late entry for them then is to pursue further structural reforms as necessary in a less restrictive macro economic environment. For the remaining countries, the best strategy is to enter EMU as fast as possible.

Fourth, the decision to insist on the ERM-2 requirement or to let countries that meet the other nominal convergence criteria enter EMU immediately is essentially a decision about allocating macro economic risks. There is little reason to believe that ERM-2 membership leads to better policies. Nor is ERM-2 membership required for a smooth conversion of the national currencies to the euro. While the question of who carries more risk ultimately can only be settled by political agreement, one should note that the downside risk is by far greater for the new members, if they are forced to go through the ERM-2, since their influence on EMU monetary policy would be very limited even if they became full members immediately. One has to assume a very high degree of risk aversion of the incumbent relative to the new members, or that the new members would push EMU monetary policy towards much higher inflation rates to justify the ERM-2 requirement.

Finally, the new member states are obviously not part of an optimum currency area in the traditional sense, but this is no different from the first members of EMU. Yet, there are good reasons to believe that their business cycles will converge to the euro-area cycle as trade integration with the EU proceeds. At the same time, the new member states' labor markets are characterized by a fair degree of wage flexibility, which will facilitate macro economic adjustment to asymmetric shocks once they are in EMU. From this perspective, there is no reason to advocate a slow route to EMU.

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Appendix

Table 1: Intended EMU Membership Dates

Country	Reference time for the adoption of the euro	ERM-2 membership
Cyprus	2007	No
Czech Republic	2009-10 provided the Maastricht criteria are met and there is sufficient real convergence	No
Estonia	As soon as possible	Since 28 June 2004
Hungary	2010 (2009 if economic conditions better than expected)	No
Latvia	2008	No
Lithuania	No explicit reference	Since 28 June 2004
Malta	As soon as convergence criteria are met	No
Poland	No explicit reference	No
Slovak Republic	No later than 2008-09	No
Slovenia	2007	Since 28 June 2004

Source: Convergence Programmes, May 2004

Table 2: Basic Economic Data, 2002

Country	Population (% EU-25)	GDP in PPS (% EU-25)	GDP per cap. (% EU-25)	Share of Agriculture in GDP	Share of Agriculture in Employment	Openness	Gross Capital Formation (% of GDP)
Cyprus	0.16	0.13	76.0	4.3	5.3	110.8	18.8
Czech R.	2.24	1.52	62.0	3.7	4.9	125.2	25.9
Estonia	0.08	0.13	40.0	5.4	6.5	169.3	28.5
Hungary	2.23	1.30	53.0	4.3	6.0	133.0	23.0
Latvia	0.51	0.20	35.0	4.7	15.3	101.6	26.4
Lithuania	0.76	0.33	39.0	7.1	18.6	113.7	20.7
Malta	0.09	0.06	49.1	2.8	2.2	176.8	20.9
Poland	8.39	3.82	39.0	3.1	19.6	62.7	19.0
Slovak R.	1.18	0.61	47.0	4.5	6.6	150.7	27.4
Slovenia	0.44	0.33	74.0	3.3	9.7	114.4	22.6

Note: Openness = (Exports plus imports of goods and services)/GDP in percent.

Source: European Commission

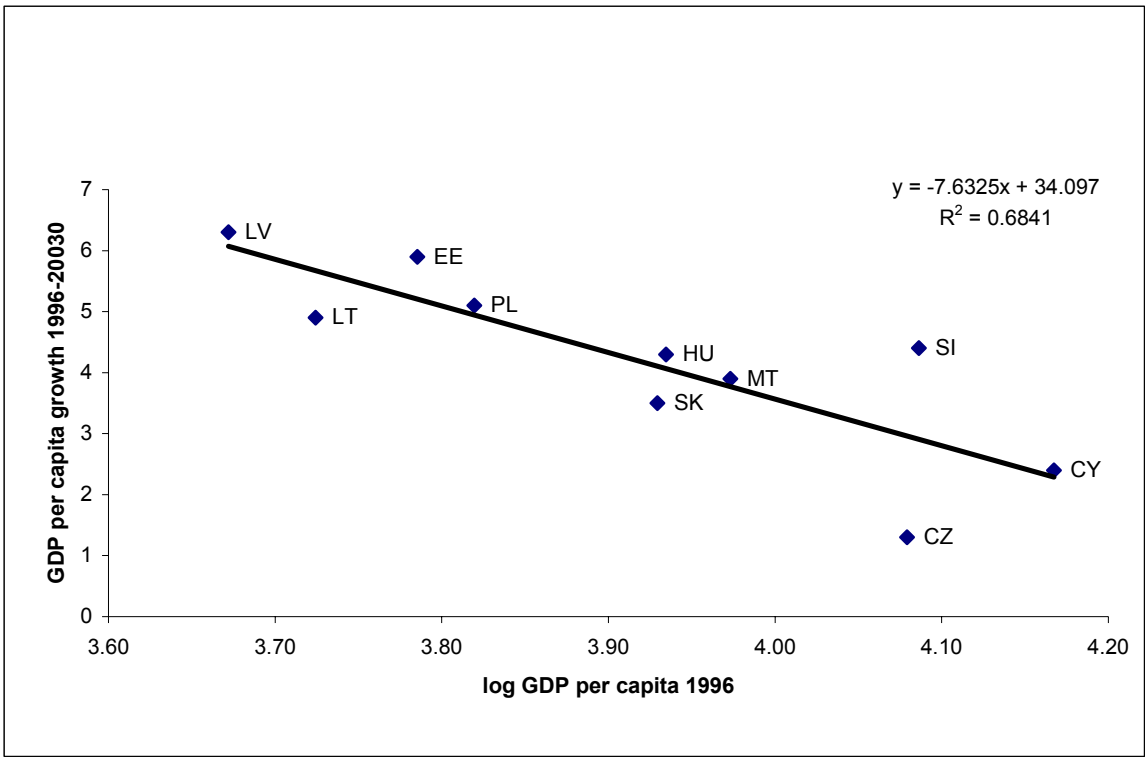
Table 3: Growth Performance, 1996-2003

Country	Real GDP (annual growth rate in %)				Real GDP per capita (annual growth rate in %)			
	1996-2000	2001	2002	2003*	1996-2000	2001	2002	2003*
Cyprus	3.7	4.0	2.0	2.0	2.4	2.9	0.7	1.4
Czech R.	1.2	3.1	2.0	2.9	1.3	3.6	2.2	3.0
Estonia	4.9	6.5	6.0	4.8	5.9	6.9	6.4	5.0
Hungary	4.0	3.8	3.5	2.9	4.3	4.1	3.8	3.4
Latvia	5.3	7.9	6.1	7.5	6.3	8.8	6.8	7.8
Lithuania	4.2	6.5	6.8	8.9	4.9	7.1	7.2	9.2
Malta	4.5	1.2	1.7	0.4	3.9	-2.0	1.0	-0.1
Poland	5.1	1.0	1.4	3.7	5.1	2.1	1.5	3.8
Slovak R.	3.7	3.8	4.4	4.2	3.5	3.7	4.9	4.2
Slovenia	4.4	2.9	2.9	2.3	4.4	2.7	2.8	2.2
New member states average	4.1	2.5	2.4	3.6	4.2	3.1	2.5	3.7
Euro Area	2.6	1.6	0.9	0.4	2.3	1.2	0.5	0.1
EU-15	2.7	1.7	1.1	0.8	2.4	1.2	0.6	0.4

Note: *Estimate.

Source: European Commission Spring 2004 Economic Forecasts

Figure 1: Convergence of GDP per capita in the New EU Countries



Source: Own calculations based on AMECO database

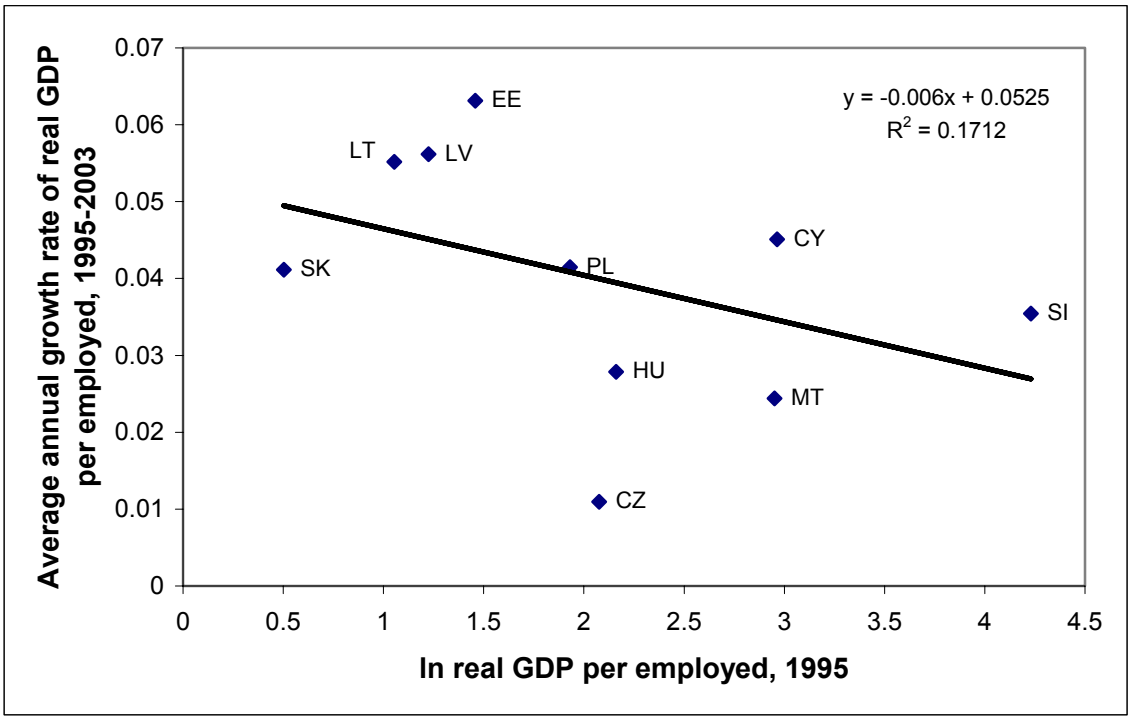
Table 4: Labor Productivity Growth

Country	1996-2000	2001	2002	2003*
Cyprus	6.6	2.1	0.6	1.5
Czech R.	0.5	1.6	1.2	3.7
Estonia	7.1	5.6	4.6	3.7
Hungary	2.9	3.4	2.8	2.4
Latvia	5.9	5.6	4.4	6.7
Lithuania	4.9	11.0	2.7	7.3
Malta	3.8	-2.9	2.1	1.9
Poland	4.7	1.7	3.7	4.9
Slovak R.	4.5	3.2	5.5	2.4
Slovenia	3.8	2.4	3.5	3.8
New member states average	3.8	2.5	3.1	4.0
Euro Area	1.1	0.3	0.3	0.4
EU-15	1.3	0.4	0.5	0.6

Notes: Annual growth rates of real GDP per employed person. * Estimate.

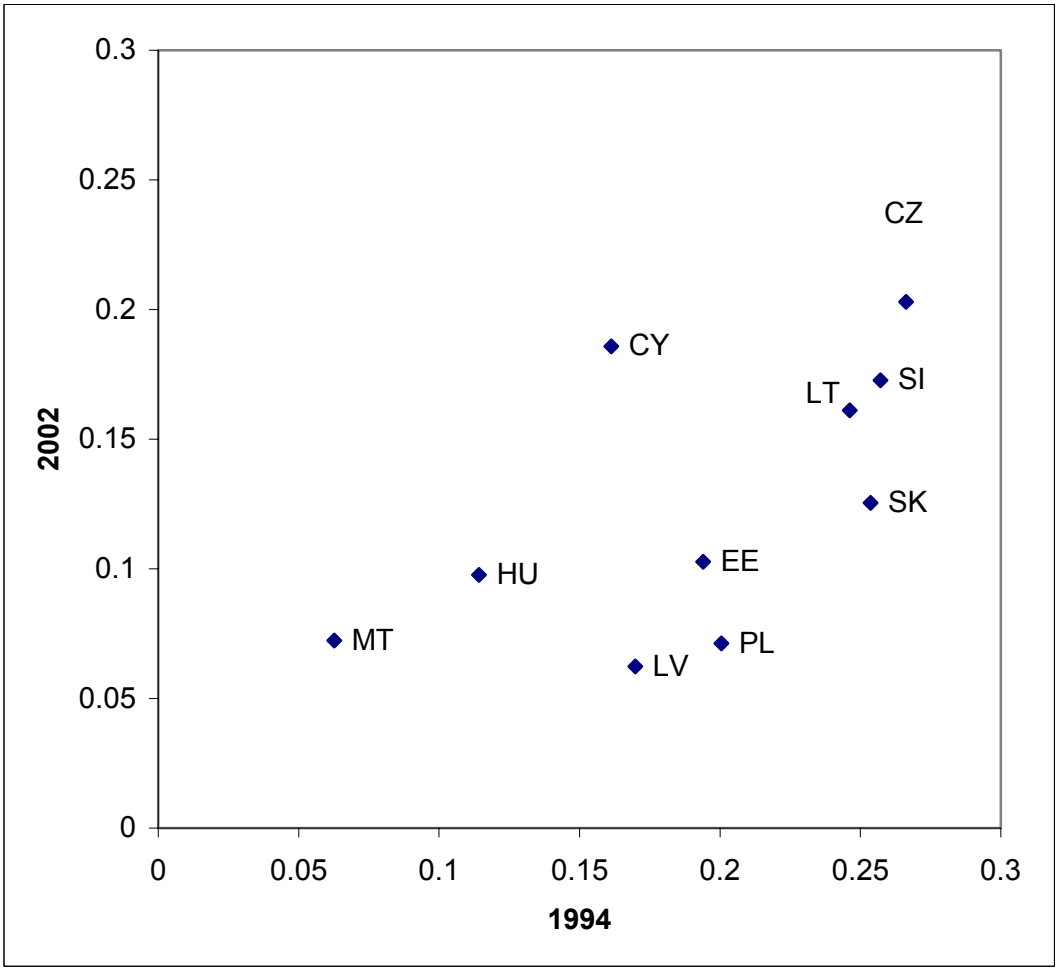
Source: AMECO data base

Figure 2: Productivity Convergence, 1995-2003



Source: Own calculations based on AMECO database

Figure 3: Similarity of Sectoral Structures with the Euro Area (4 Sectors)



Source: Own calculations based on AMECO Database

Table 5: Nominal Convergence Performance, 2003

	Inflation rates[a]	General government balance	General government gross debt[b]	Long-term interest rates	Exchange rate fluctuations[c]	
	%	% of GDP	% of GDP	%	(+)	(-)
Cyprus	4.0	-6.2	72.2	4.7	1.4	-1.5
Czech Republic	-0.1	-12.9	37.6	3.9	3.9	-7.3
Estonia	1.4	2.6	5.8	4.3	0.5	-0.2
Hungary	4.7	-5.9	59.0	6.6	7.0	-5.1
Latvia	2.9	-1.8	15.6	4.9	10.6	-10.0
Lithuania	-1.1	-1.7	21.9	5.3	1.5	-1.4
Malta	1.3	-9.6	72.0	5.0	3.4	-4.9
Poland	0.7	-4.0	45.4	5.6	13.6	-13.8
Slovak Republic	8.5	-3.6	42.8	5.0	6.3	-2.6
Slovenia	5.7	-1.8	27.1	5.5	4.1	-3.8
Memo: Euro area	2.1	-2.7	70.4	4.1		
Reference value	**2.7[d]**	**-3.0**	**60.0**	**6.2[e]**		

Notes: [a] Harmonized index of consumer prices (HICP), percentage change on preceding year. Malta: deflator of private consumption. Percentage change on preceding year.
[b] Government gross debt as defined in Council Regulation EC N° 365/93
[c] Maximum deviation of end-month exchange rates from average exchange rates over the two year period January 2002 – December 2003. Positive (negative) deviations indicate depreciation (appreciation) of national currencies
[d] Calculated as 1.5% above the simple average of the HICP in Germany, Austria and Finland
[e] Calculated as 2% above the simple average of the long-term interest rates in Germany, Austria and Finland

Source: AMECO Database, European Commission

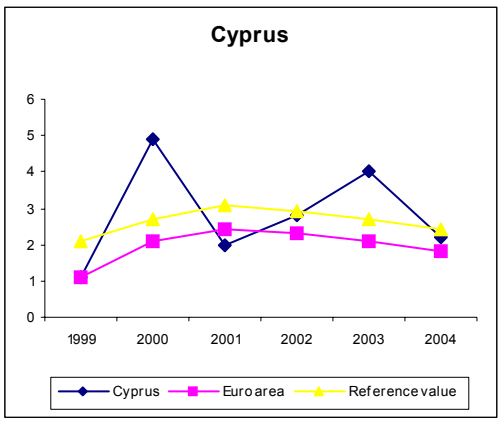
Table 6: Average Inflation and Exchange Rate Changes, 2000-2004

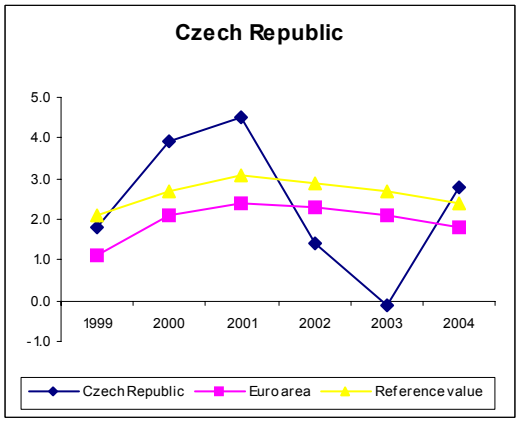
	Average change in nominal exchange rate, 2000-2004	Average inflation excess over Euro area Inflation, 2000-2004	Average change in real exchange rate 2000-2004
Cyprus	0.29	1.03	-0.74
Czech Republic	-2.14	0.35	-2.49
Estonia	0.00	1.31	-1.31
Hungary	0.49	4.81	-4.32
Latvia	1.97	0.66	1.31
Lithuania	-4.17	-1.62	-2.55
Malta	0.12	-0.22	0.34
Poland	3.86	2.27	1.58
Slovak Republic	-2.33	5.74	-8.07
Slovenia	4.56	4.70	-0.14

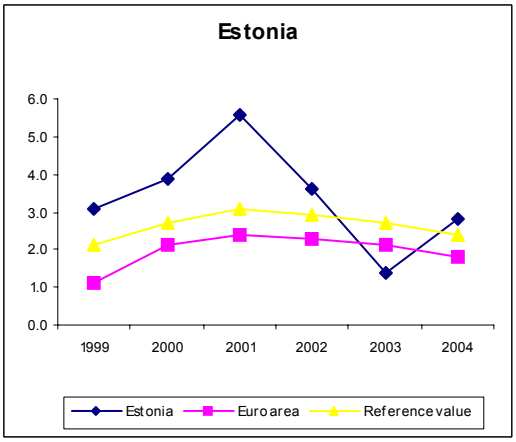
Note: All exchange rates are units of national currency per euro.

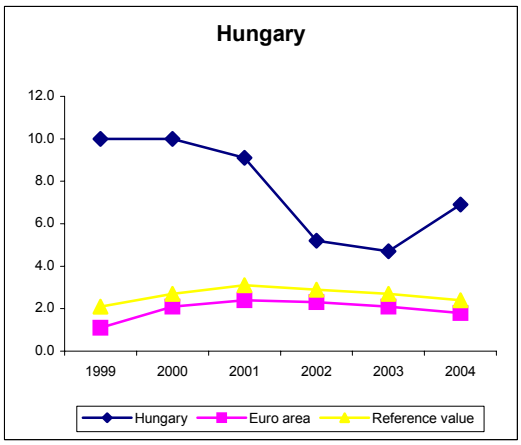
Source: Own calculations

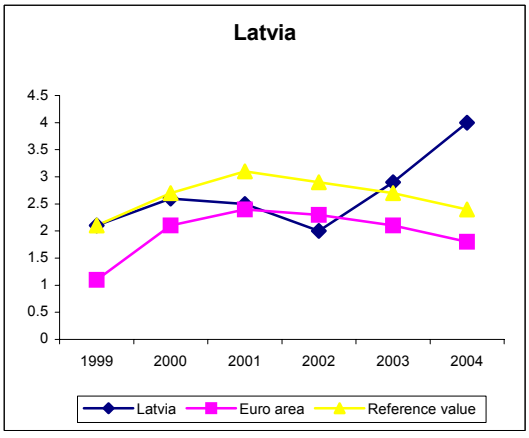
Figure 4: Inflation Performance in the New EU Member States, 1999-2004[a]

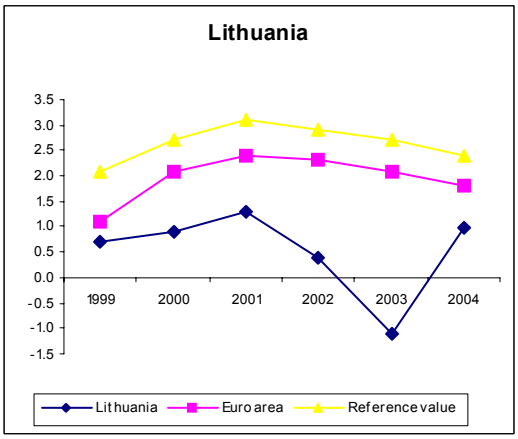






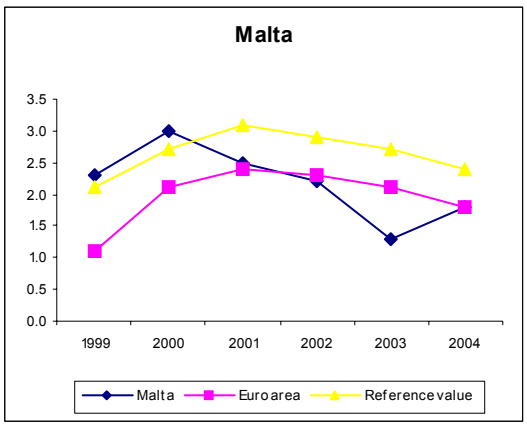


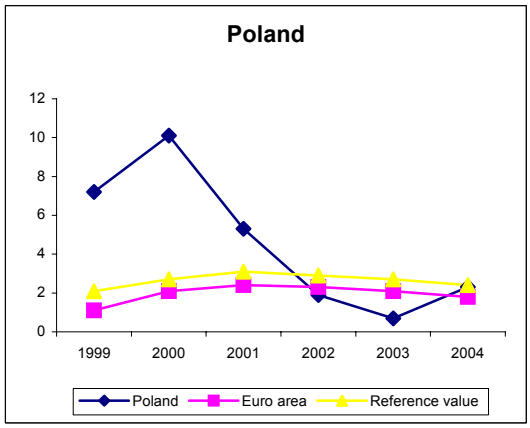


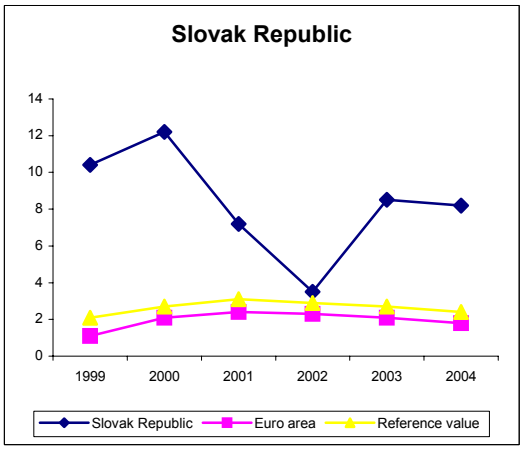


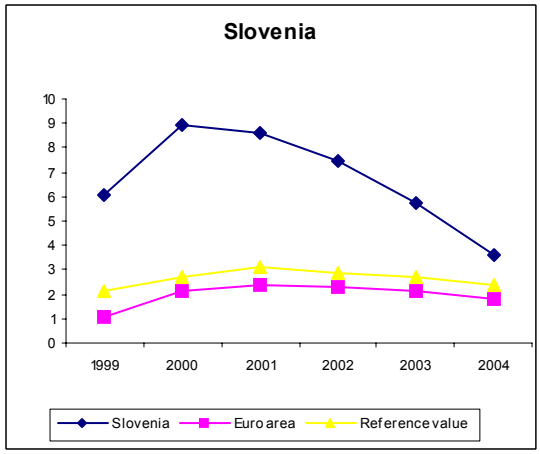
[a] Harmonized index of consumer prices.
Source: AMECO Database, European Commission

Figure 4: Inflation performance in the new EU Member States, 1999-2004[a] (cont.)









[a] Source: AMECO Database, European Commission

Table 7: Structure of Government Revenues (%), 2003

	Direct taxes in total revenues	Social security contributions in total revenues	Indirect taxes in total revenues
Medium-sized incumbents	*29.4*	*33.8*	*28.4*
Czech Republic	21.0	32.5	24.7
Hungary	22.9	30.0	33.6
Poland	16.9	35.9	36.9
Small incumbents	*42.3*	*15.6*	*32.8*
Cyprus	26.4	17.7	43.0
Estonia	22.3	27.4	29.6
Latvia	22.7	25.3	32.6
Lithuania	26.7	25.5	37.4
Malta	27.8	18.9	32.4
Slovak Republic	15.0	29.7	23.7
Slovenia	16.2	31.7	41.7

Note: Data for Slovenia are from the 2003 Pre-Accession Report and relate to the year 2000. Data for Cyprus and Malta are from national statistical offices.

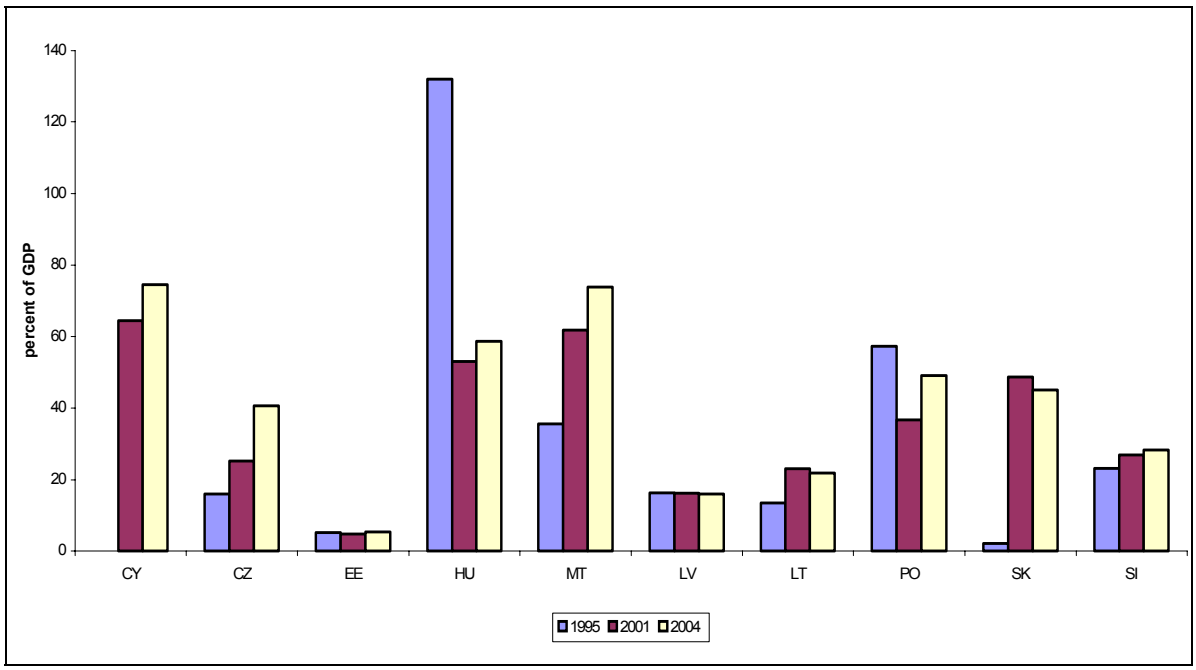
Table 8: Structure of Public Expenditure (%), 2003

	Compensation of employees	Transfers in total spending	Subsidies	Capital expenditures
Medium-sized incumbents	21.4	55.6	4.2	4.2
Czech Republic	13.8	39.9	5.0	7.3
Hungary	26.7	50.9	4.0	6.1
Poland	25.7	57.0	1.1	7.8
Small incumbents	28.0	61.3	2.8	6.6
Cyprus	32.4	41.7	2.6	8.1
Estonia	26.4	60.4	3.1	12.2
Latvia	23.3	49.0	1.8	5.5
Lithuania	32.9	62.4	3.1	8.1
Malta	28.6	n.a.	4.1	9.9
Slovak Republic	17.5	37.8	2.9	5.1
Slovenia	22.5	40.2	3.1	9.4

Note: Data for Slovenia are for 2000.

Source: Own calculations.

Figure 5: Public Dept Ratios



Source: Own calculations

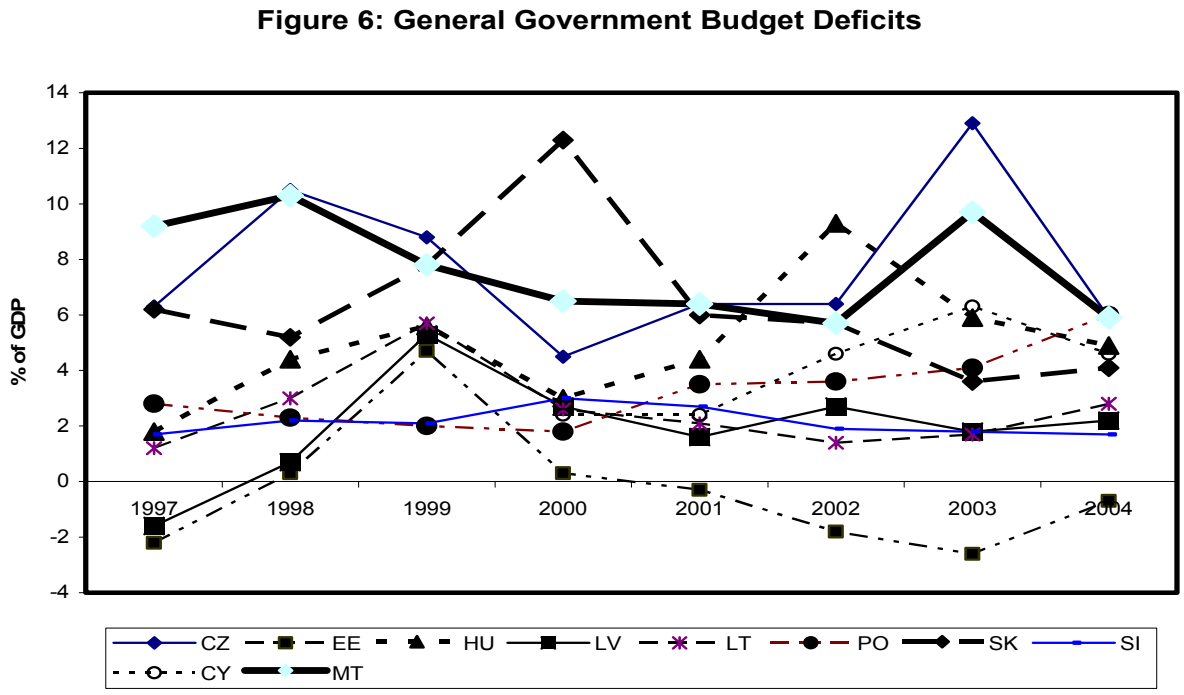
Table 9: Estimated Primary Gaps to Stabilize Current Debt Ratios

	Real Growth Rate 3%		Real Growth Rate 7%	
Real Interest Rate	2%	6%	2%	6%
CZ	2.4	3.5	1.5	2.5
EE	-1.6	-1.4	-1.8	-1.6
HU	4.9	3.0	3.0	5.3
LV	2.1	2.7	1.5	2.1
LT	0.2	1.1	-0.5	0.4
PO	0.7	2.4	-0.7	1.0
SK	2.9	4.6	1.4	3.1
SI	-0.1	1.0	-1.0	0.1

Note: Primary gaps indicate the adjustment relative to 2002 fiscal positions in percent of GDP.

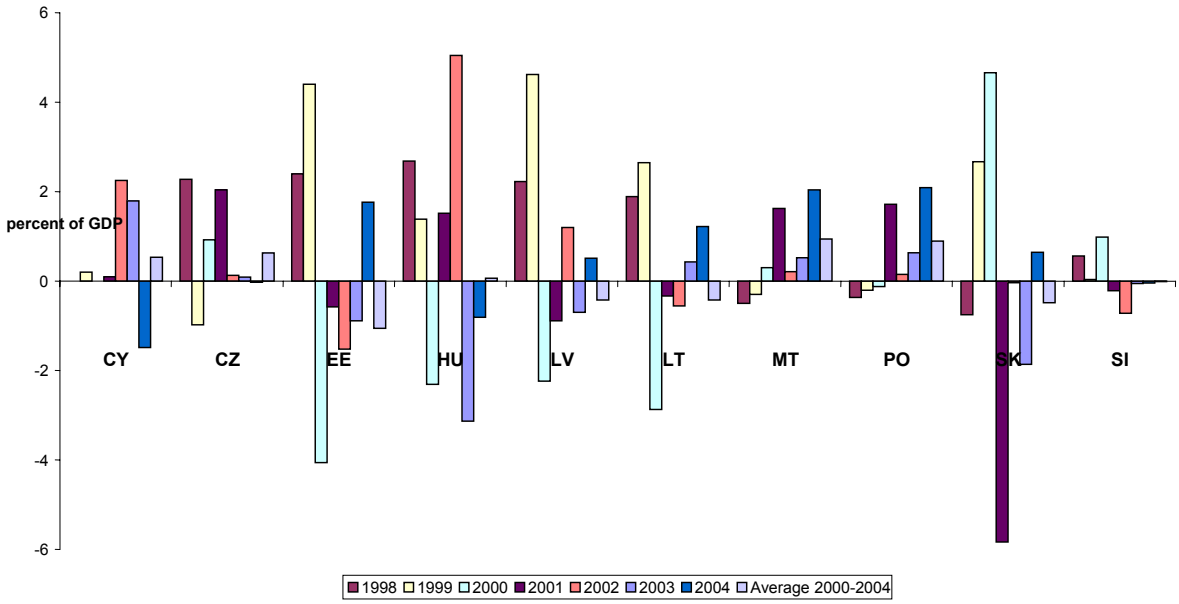
Source: European Commission (2003b).

Figure 6: General Government Budget Deficits



Source: Own calculations

Figure 7: Fiscal Impulses



Source: Own calculations

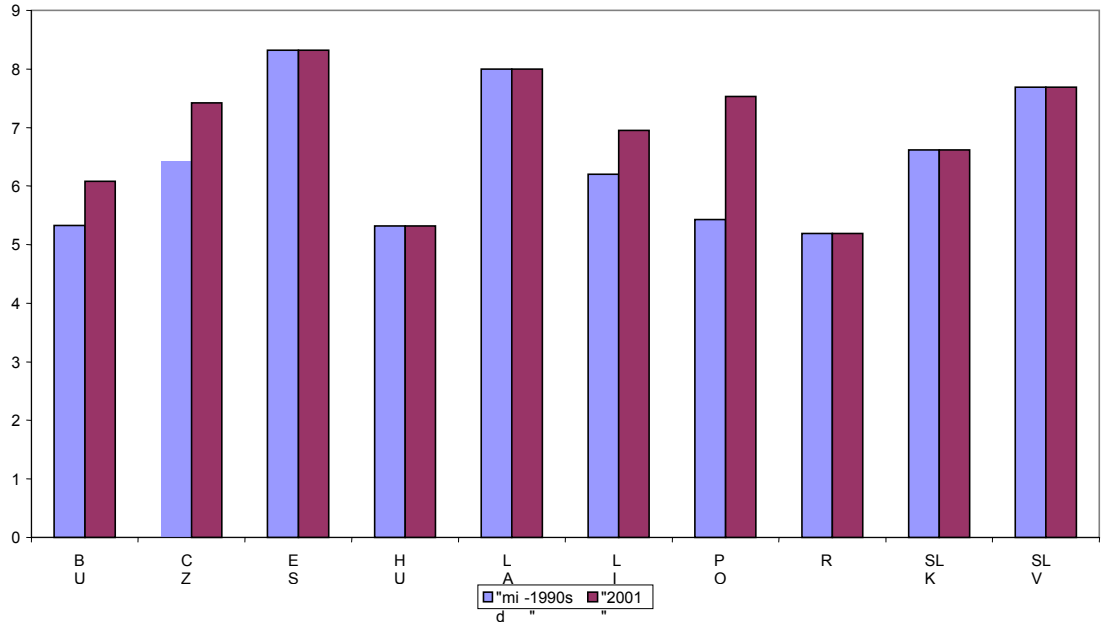
Table 10: Quality of Fiscal Adjustments

	Fiscal Expansions			Fiscal Contractions	
Country, year	Size	Contribution of spending	Country, year	Size	Contribution of spending
EE 99	4,4	68.2	CZ 99	-1.0	100.0
HU 99	1,2	50.0	MT 99-00	-1.9	76.3
LV 99	4,6	17.4	CY 00	-2.1	0.0
LT 99	2,7	96.3	EE 00	-4.4	105.5
SK 99-00	3.6	-12.7	HU 00	-2.6	-65.0
CZ 01	1.9	189.5	LV 00-01	-1.9	191.9
HU 01-02	3.2	76.1	LT 00	-3.1	245.5
PO 01	1.7	100.0	SK 01	-6.3	133.3
CY 02	2.2	68.2	EE 02	-1.5	0.0
LV 02	1.1	136.4	HU 03-04	-2.2	111.4
CZ 03	6.5	90.8	SK 03	-2.1	-104.8
MT 03	4.0	35.0	CY 04	-1.7	305.9
CY 03	1.7	282.4	CZ 04	-5.9	118.6
EE 04	1.9	89.5	MT 04	-3.8	-42.1
LT 04	1.1	272.2			
PO 04	1.9	89.5			
Average	2.7	103,1		-2,9	77,8

Note: Size indicates the change in the government budget deficit as percent of GDP. Contribution of spending is the change of the government spending-GDP ratio as percent of the change in the deficit ratio.

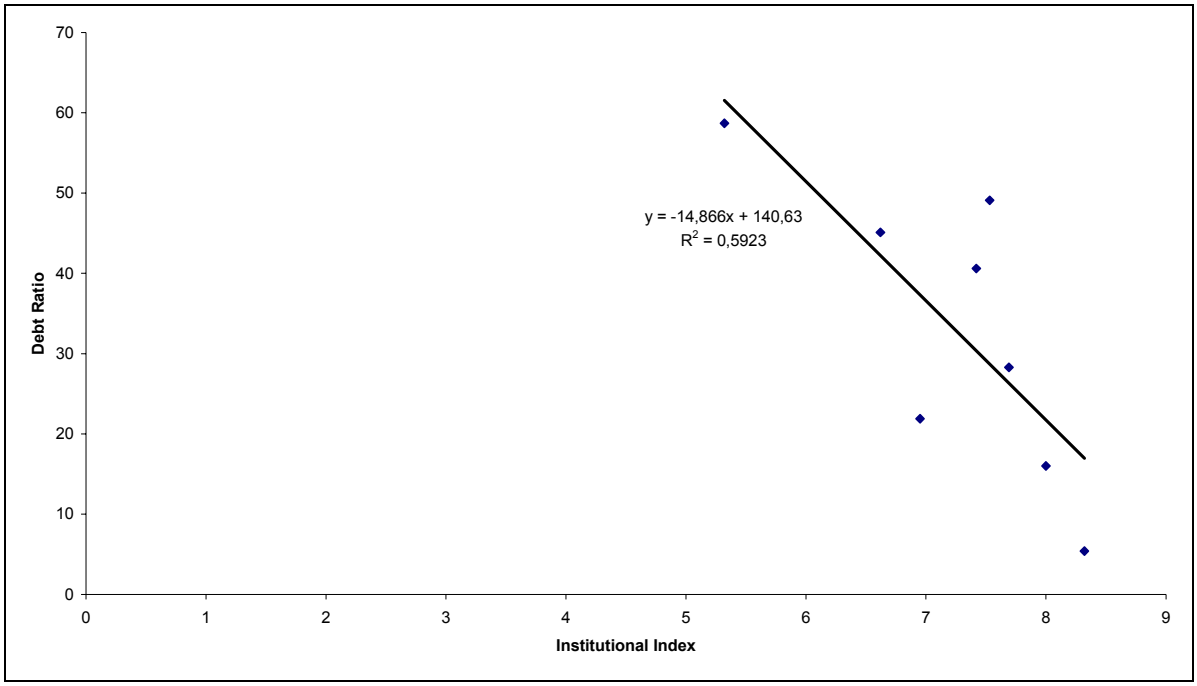
Source: Own calculations

Figure 8: Budgeting Institutions



Source: Own calculations

Figure 9: Budget Processes and Debt Ratios



Source: Own calculations

Table 11: External Performance 2000-2003

Country	Current Account Balance	Capital Inflows	Direct Investment	Portfolio Investment	Other Investment	Gross Foreign Debt	Foreign Debt/ Exports
Cyprus	-4.2	6.4	1.5	-1.2	5.1	70.0	1.27
Czech R.	-5.1	9.9	8.9	-0.8	-0.8	26.6	0.41
Estonia	-8.8	9.9	5.4	1.4	2.6	30.0	0.37
Hungary	-5.6	5.6	2.2	2.6	0.3	44.6	0.65
Latvia	-8.4	9.6	3.8	-1.9	7.2	46.4	1.02
Lithuania	-5.6	7.9	3.2	1.5	2.4	24.8	0.50
Malta	-6.2	9.1	5.2	-19.7	20.2	135.8	1.49
Poland	-3.9	4.1	4.4	1.3	-1.8	22.1	0.77
Slovak R.	-3.4	8.0	10.0	4.0	6.8	n.a.	n.a.
Slovenia	-0.4	7.9	4.3	0.1	3.1	30.8	0.31

Notes: All entries are averages of annual rates in percent of GDP. Capital inflows include errors and omissions. Investment figures are net. Czech Republic and Poland: 2000-2002, Slovak Republic: 2000.

Source: International Financial Statistics, European Commission

Table 12: Large Capital Inflows in Incumbent Countries

Country	Years of Large Capital Inflows	Average Capital Inflows (percent of GDP)
Italy	1987-90	2.0
Portugal	1987-91	5.4
	1996-99	5.9
Spain	1987-91	4.5
	1996-97	3.0
Greece	1986-88	4.5
	1998-99	6.0
Ireland	1986-88	2.3
	1993	1.9
	1995	0.9
	1998	1.2

Source: Begg et al. (2003)

Table 13: Marginal Product of Capital (Multiple of German MPC)

	CY	CZ	EE	HU	LV	LT	MT	PO	SK	SI
1996	2.76	4.17	10.35	4.87	16.36	9.95	1.51	8.07	6.08	2.87
2002	2.23	4.08	6.03	3.88	9.80	6.74	1.34	5.48	4.33	2.15

Source: Own estimates

Table 14: Annual Average Real Money and Credit Growth, 1999-2003

	Real Money Growth Less Real Output Growth	Real Domestic Credit Growth Less Real Output Growth
Cyprus	7.7	8.2
Czech Republic	6.4	-1.1
Estonia	14.0	18.5
Hungary	10.2	7.2
Latvia	13.2	28.0
Lithuania	11.3	12.2
Malta	5.8	4.5
Poland	6.7	6.3
Slovak Republic	7.3	-1.2
Slovenia	12.5	13.5

Notes: Average annual growth rates of broad money and domestic credit. Malta: 1999-2002.

Source: IMF, own calculations based on International Financial Statistics

Table 15: Volatility of Capital Inflows

Cyprus	Czech Republic	Estonia	Hungary	Latvia	Lithuania	Malta	Poland	Slovak Republic	Slovenia
								Standard Deviation	
4.1	4.6	3.6	5.0	5.6	3.0	4.4	2.8	2.6	4.4
								Change 1999-2000	
-4.2	0.7	0.3	-1.5	-5.4	-2.0	-2.9	-1.4	-1.5	0.9
					Largest Capital Inflow Reversal during 1994-2003				
-8.2	-11.2	-6.5	-19.9	-5.8	-6.1	-17.2	-3.8	-2.3	-9.9
(2003)	(1997)	(1997)	(1996)	(2002)	(1999)	(1995)	(2001)	(1997)	(2003)

Notes: Standard deviations for Poland and Czech Republic: 1994-2002, for Slovak Republic: 1994-2000. All entries are in percent of GDP

Source: Own calculations based on International Financial Statistics

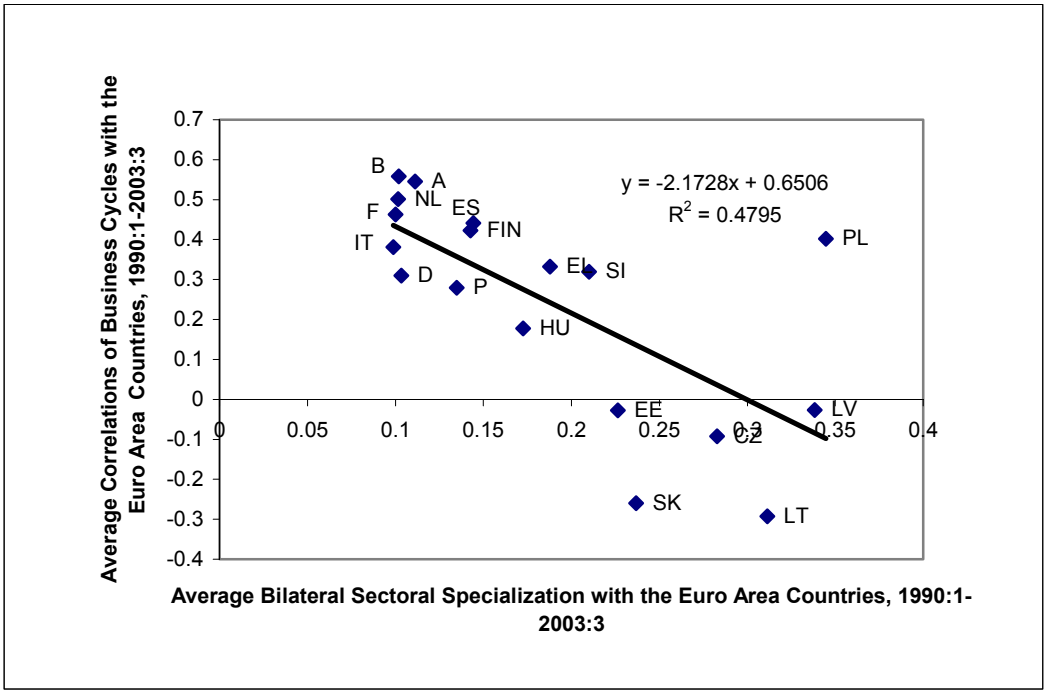
Table 16: Correlations of Business Cycles with the euro Area and with the new EU members

	Correlations of business cycles[a], with the euro area,1990:1-2003:3	Correlations of business cycles[a],with the new EU countries, 1990:1-2003:3
Euro area countries		
Belgium	0.56	0.06
Germany	0.31	0.06
Greece	0.33	-0.00
Spain	0.44	0.05
France	0.46	0.04
Italy	0.38	0.04
Netherlands	0.50	0.06
Austria	0.55	0.06
Portugal	0.28	0.04
Finland	0.42	0.05
New EU countries		
Czech Republic	-0.09	-0.04
Estonia	-0.03	0.03
Hungary	0.18	0.04
Lithuania	-0.29	-0.01
Latvia	-0.03	0.01
Poland	0.40	-0.01
Slovenia	0.32	0.03
Slovakia	-0.26	0.00

[a] weighted averages using population shares as weights

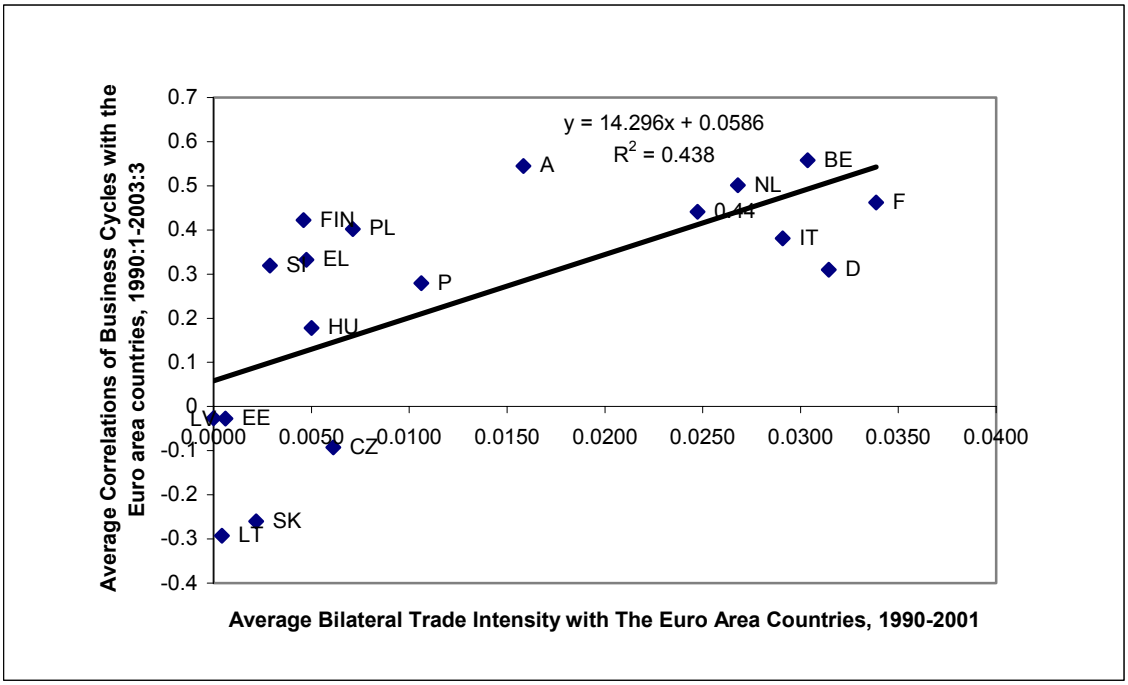
Source: Traistaru (2004)

Figure 10: Similarity of Economic Structures and Business Cycles Synchronization



Source: Own computation based on EUROSTAT data

Figure 11: Trade Integration and Business Cycles Synchronization



Source: Own computations based on EUROSTAT data

Table 17: Wage Flexibility in the New EU Member States, 1993-2003

	Elasticity of regional wages with respect to local unemployment rates	Regional wages responsiveness with respect to changes in the local productivity levels[a]
Cyprus and Malta	0.5551***	0.2890
	(0.0406)	(0.4230)
Estonia, Latvia, Lithuania	-0.1567***	1.9353***
	(0.0384)	(0.2670)
Czech Republic	0.0324	1.3186***
	(0.0222)	(0.1408)
Hungary	0.1487***	0.0415
	(0.0343)	(0.1590)
Poland	0.0037	1.4768***
	(0.0150)	(0.1038)
Slovak Republic	-0.0633***	0.7386***
	(0.0224)	(0.1772)
Time fixed effects	Yes	Yes
N obs	451	369
R^2	0.7044	0.3773

Data source: European Regional Database, Cambridge Econometrics

[a] gross value added per employed
Robust standard errors in parentheses
***, **, * significant at 1, 5, 10 percent

The regressions include a constant and the following control variables: the shares of agriculture, industry, market-services, non-market services in regional gross value added

The data covers 41 NUTS 2 regions in the ten new EU countries. The number of NUTS 2 regions in each country is as follows:
Cyprus: 1; Malta: 1; Estonia: 1; Latvia:1; Lithuania:1; Slovenia:1; Czech Republic:8; Hungary:7; Poland:16; Slovakia: 4

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