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**Future EMU Membership and Wage Flexibility in
Selected EU Candidate Countries**

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Abstract

This paper attempts to evaluate wage rigidity related to risks of increased size and volatility of unemployment after the candidate countries enter the EMU. Such evaluation is done through the study of past labour market adjustment mechanisms and, in particular, the role played by the exchange rate movements and independent monetary policy. The paper examines some institutional and structural characteristics of candidate countries labour markets that could influence the wage elasticity. The analysis indicates that generally nominal wages are not flexible in candidate countries. Inflationary surprises and nominal exchange rate movements have an effect on the adjustment, especially during the Russian crisis. On the other hand fast productivity growth creates the environment in which unit labour can adjust to unfavourable labour market outcomes through moderation of real wage dynamics despite nominal stickiness. The paper indicates possible fields of further in-depth research in this area.

1. Introduction

The future membership in the European and Monetary Union (EMU) is a logical and legal consequence of European Union (EU) accession and the debate about the economic rationale of joining the single currency would be of limited practical importance. Therefore, the policy discussion in recent years has rightly focused on practical aspects of EMU accession. Nevertheless it is excessively focused on the short-term strategy and timetable of meeting nominal convergence and fiscal criteria as outlined in the Maastricht Treaty. We believe that more attention of researchers and policy makers should be focused on factors that might decide whether participation in the monetary union is successful in longer run and policies to affect these factors.

We show in this paper that it is the structure of labour market that is of particular importance for minimizing costs of EMU membership. Flexibility in wages and freedom of international migrations is essential for adjustment to asymmetrical shocks, when exchange rate are irrevocably fixed, monetary policy driven by union-wide consideration and the scope for fiscal policy response is limited. We attempt to evaluate risks of increased size and volatility of unemployment after the candidate countries' accession to the EMU. We do it by studying past labour market adjustment mechanisms and in particular the role played by the exchange rate movements and independent monetary policy. We conclude that these risks might be lower than commonly believed, yet that the governments have the significant role to play by actively promoting reform of labour market institutions.

Section 1 introduces the question of labour market flexibility in the context of monetary union. Section 2 presents empirical evidence on channel of adjustments in candidate economies. Section 3 presents some structural features of their labour markets in relation to earlier analysis. Section 4 concludes.

2. Theoretical Background

In the run-up to the EU accession, the increasing attention is paid to prospects of inevitable future accession to the EMU. The discussion is focused on the strategy and timetable of meeting nominal convergence and fiscal criteria as outlined in the Maastricht Treaty. By contrast, surprisingly little attention is paid to implications of the EMU membership for labour markets in candidate countries. But the performance of the labour market is likely to define the success of participation in the EMU. The membership poses serious risks: within the union the macroeconomic policy has fewer instruments to stabilize output at a level close to the full employment due to loss exchange rate flexibility and independent monetary policy. This might lead to higher or more volatile unemployment rates unless labour markets are truly flexible or asymmetric shocks fully eliminated. These considerations are debated ever since the seminal paper by Mundell (1961) introduced the concept of Optimal Currency Area (OCA) by discussing methods of overcoming asymmetric demand shocks.

2.1 Theory of optimum currency area

This implication of the OCA theory for the importance of increasing labour market flexibility in the monetary union can be illustrated in the simple framework suggested by De Grauwe (2000). Consider, an example of “Hungary” planning to join the EMU¹. We assume that “Hungary”, after a period of full employment, experiences negative trade shock, due to the sudden collapse and irreversible loss of “Russian” export markets. Such shock can be represented as the downward shift in the aggregate demand curve in the “Hungarian” economy (Figure 1). As a result “Hungary” is likely to experience increase in current account deficit and deflationary pressures, that most likely will result in the increase in unemployment. We assume that exposure of current EMU members to “Russian” crisis is null, therefore the shock is truly asymmetrical and price in the EMU area are stable.

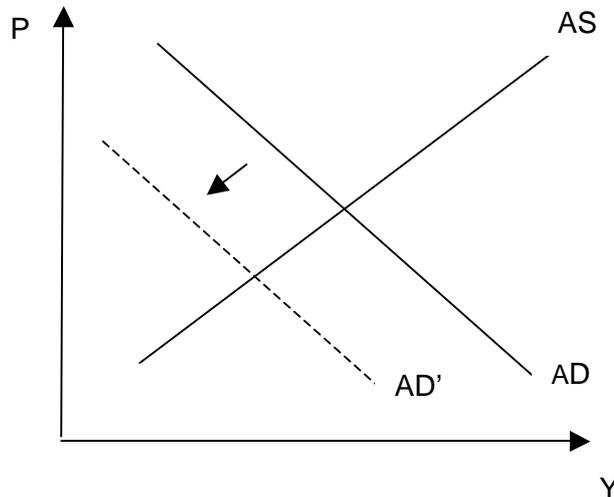
Benefits of nominal depreciation

Consider first the situation in which “Hungary” is still outside the monetary Union. It is clear that depreciation of the domestic currency can be beneficial and bring immediate adjustment. Although “forint” wages are rigid, the depreciation of “forint” can reduce EURO wages and subsequently improve competitiveness of “Hungarian” goods in the EU markets. This shifts aggregate demand curve upwards back to its original position and the economy returns to equilibrium without experiencing painful reductions in domestic product prices and nominal wages or increased labour

¹ In this theoretical section, names “Hungary” and “Russia” are used solely to illustrate theoretical concepts and not to describe actual developments in these countries.

migrations. Degree of international labour mobility and nominal flexibility is of no major consequence for unemployment dynamics².

Figure 1. Negative trade shock



The importance of nominal wage rigidities increases dramatically once “Hungary” joins the EMU. After the accession, the exchange rate of the “Hungarian forint” is irreversibly fixed to the EURO and monetary policy is conducted by the European Central Bank (ECB). As ECB policy is driven by assessment of union wide economic situation, for which “Hungarian” predicament due to its small relative size has little or no importance, there is no hope for loosened monetary policy³. “Hungary” is stuck in the situation of the current account deficit and high unemployment in which all burden of adjustment is thrust upon labour market flexibility.

Increasing role of nominal wage flexibility

One potential channel of adjustment operates through flexible nominal wages that according to Mundell is a perfectly good alternative to nominal exchange rate flexibility. If in a response to rising unemployment “forint” wages and consequently prices of “Hungarian” products fall, competitiveness of the economy is improved⁴. In the Figure 2 this can be illustrated as the rightward shift in the aggregate supply curve that brings economy back to the full employment position, while prices of output fall. The speed at which nominal wages fall seems to be the most essential factor of the size and duration of the unemployment problem in “Hungary”. Unfortunately,

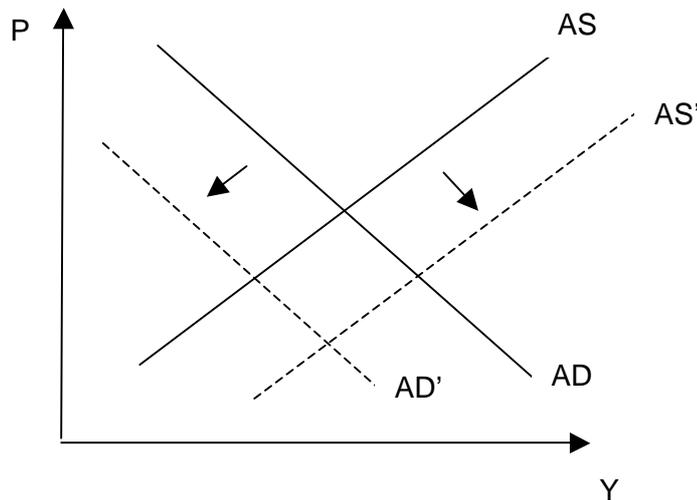
² We discuss in the next section why real wage rigidity might still be a problem.

³ Probably, even if most candidate countries are strongly affected by the Russian crisis, the ECB would hardly take notice due to the low economic weight of the region.

⁴ We define here nominal wage flexibility as the responsiveness of aggregate average nominal wages towards increasing unemployment, i.e. under hypothetical full rigidity, average wages do not fall even when unemployment is rapidly rising. This is an approach dictated by available data that do not capture important difference between wage responsiveness under existing and newly signed employment contracts. It is intuitive that the flexibility under the former is lower than under the latter.

the conclusion of Jackman and Savouri (1998) is that “it seems unreasonable to think that degree of wage flexibility that characterizes European labour markets can substitute for exchange rate flexibility”. We attempt to verify whether this claim is true for candidate economies in the empirical part of this paper.

Figure 2. Adjustment to negative trade shock: nominal wage cuts



Missing labour mobility

High labour mobility is another crucial substitute for flexibility of nominal exchange rates. Indeed Mundell defines OCA as the area within factors of production are mobile but immobile outside as “money wages and prices cannot be reduced in the short run without causing unemployment”. The mechanism of adjustment is very simple: “Hungarian” workers that lose jobs, instead of staying idle, seek employment opportunities outside the country eliminating imbalance in the domestic labour market. The theoretical insight by Mundell is supported by voluminous literature on the main adjustment mechanisms in existing common currency areas, notably USA (Blanchard and Katz, 1992). In all successful unions, migrations invariably play the most prominent role. However, Jackman and Savouri (1998) are very sceptical about the role of migrations as the main adjustment mechanism in EMU as available evidence brings them to simple conclusion that “labour mobility across national boundaries is essentially zero”. This views are shared even by authors most sympathetic to the creation of EMU: Patterson and Amati (1998) from the European Commission believe that “It is unlikely that greater mobility of labour, either within or between Member States, can ever become a major instrument of adjustment within the EU.” Similarly, international migrations are very small in case of candidate countries. For example in years 1996-1997 the annual migrations from Poland to the western countries were not higher then 30.000 persons with a decreasing tendency (Orlowski 2002).

Obviously it can be speculated that propensity to migrate increases, first, when candidate countries join the EU, second, when they join monetary union, but due to cultural and language

problems it is very unlikely to happen even when the remaining restrictions on freedom of movement of labour from accession countries are removed. One of conclusions of Kupiszewski's (2002) study of the large number of existing migration forecasts is, that total net population loss of Poland should not exceed 1 million over next 30 years. It means the average annual net migration of 33.000 persons. Firdmuc (2002) concludes his comprehensive study of pattern of interregional mobility in candidate countries with the blunt prediction: "Indeed, given the low responsiveness of labor mobility to regional unemployment and wages, it appears that the candidate countries may not be well equipped to deal with adverse effects of asymmetric shocks. Transitional barriers to labor mobility in the wake of the enlargement would in fact only aggravate this problem. Hence, an early entry to the EMU could make the monetary union more fragile and be potentially costly both in economic and political terms". We do not necessarily agree with the last conclusion but it is crucial for policymaker to remember challenges that low migrations pose for the monetary integration.⁵

2.2 Beyond theory of OCA

Under the monetary union with low labour mobility, nominal downward stickiness prevents smooth adjustment to the negative asymmetric shock. Accordingly, theory of Optimal Currency Area suggests that successful participation in the EMU depends crucially on the nominal wage elasticity⁶. Related argument for increasing importance of nominal wage flexibility in the monetary union is based upon the proposition that independent monetary policy allows for reducing real wages through higher inflation⁷. Jackman and Savouri (1998) notice that "the evidence suggest that as inflation falls, the sensitivity of nominal wages to unemployment falls". Assuming that described proposition was true, stable and low rates of inflation associated with the loss of independent monetary policy could lead to more rigid real wages.

Implications for empirical work seem to be straightforward. Countries with more flexible nominal wages are better prepared to enter the union. Countries with nominal wage rigidity should seriously consider whether benefits from the EMU participation outweigh possible costs due to labour market maladjustments. Accordingly, in view of observed nominal rigidities, many researchers questioned net benefits and even viability of the monetary union in Europe (Feldstein, 1997). To follow this line of argument in the empirical part of this paper, we should assess

⁵ We come back to the problem of internal migrations in candidate countries as the factor enhancing wage flexibility within a country.

⁶ Although Mundell (1961) considered labour migration to be a solution to adjustment problems within currency union in the world of nominally downward rigid wages and prices, it seems that opposite logic should apply to the feasibility study of the EMU. Fundamental barriers and low levels of international migrations in Europe, suggests that if anything it is the flexibility of wages that need to give way in order to deliver true adjustment mechanism.

⁷ This potential role should not be confused with time inconsistent actions of the wet-nosed central banker. In the famous Barro-Gordon (1983) model, inflation is supposed to push unemployment below its equilibrium level. In our research, we assume that the best that monetary could potentially achieve is to speed up the adjustment to equilibrium level in the case of negative shock.

econometrically degree of nominal wage rigidities in candidate countries. However, this research strategy has number of difficulties that we discuss below.

Role of productivity growth

The first and simplest consideration against exclusive focus in the study on cost of EMU participation among candidate countries on nominal wage elasticity is that it ignores the role of high productivity growth. Costs of monetary union are related to decreased competitiveness due to nominal downward wage stickiness in the absence of exchange rate depreciation or rigidity of real wages due to low and stable inflation. But what matters for hiring and firing decisions are domestic and international unit labour costs (DULC and IULC). They are defined respectively as:

$$IULC = \frac{W}{E \cdot P^*} \bigg/ \frac{Q}{L} = \frac{P}{E \cdot P^*} DULC$$

$$DULC = \frac{W}{P} \bigg/ \frac{Q}{L}$$

where: W is wage in domestic currency, E is nominal exchange rate, P is aggregate price level, P* is foreign price level, Q is real output and L is employment.

When productivity is growing fast (and rapidly rising productivity is exactly what is expected to happen as part of real convergence process) both measures of unit labour costs can be reduced even at rigid wages. In other words, even when “forint” wages and therefore also EURO and real wages are rigid downwards and employment falls in a short run as the immediate result of a shock, rising productivity may by itself (without the need for reduction of any measure of wages) lead to relatively quick reduction of ULCs. This in turn allows restoring employment. A rarely formulated implication emerges: faster growing candidate countries are likely to be ceteris paribus more successful members of the EMU, not because of faster nominal adjustment but thanks to more favourable adjustment environment due to high productivity growth.

Doubts about benefits of flexible exchange rates and national monetary policy

Another problem of research strategy directed at the study of nominal wage flexibility relates to rather optimistic representation of the role that exchange rate flexibility and independent monetary policy have in practice: it is implicit that following asymmetric shock, exchange rate depreciation or monetary expansion can help to restore the equilibrium in labour markets. But this view is based on crucial assumptions that were subsequently questioned.

First it is assumed that nominal exchange rates move and independent monetary policy is conducted in the way that is likely to equilibrate labour markets. And here many authors expressed serious doubts. Viñals (1996) has observed that “.. recent experience suggests that the usefulness of the nominal exchange rate as a tool for macroeconomic adjustment within the European Union is very questionable in a world of free capital movements, where foreign exchange markets are often subject to self-fulfilling speculative crises which take the exchange rate away for prolonged periods from where fundamentals suggest it should be.” If financial shocks are important the observation by Ochel (1997) is particularly important: “ Asymmetrical financial shocks can be better

dealt with in a monetary union than in a system with adjustable exchange rates and are thus not an additional source of unemployment". Even more importantly, Bayoumi and Eichengreen (1994) underline the role of policy induced shocks: "Policy makers may systematically misuse policy rather than employ it to facilitate adjustment, (...) if domestic policy itself is the source of the disturbances, monetary unification with a group of countries less susceptible to such pressures may imply a welfare improvement".

Invalidity of assumption about usefulness of flexible exchange rates and independent monetary policy might easily reverse implications of the theory for the role of labour market flexibility: if exchange rate movements and independent monetary policy are sources of shocks rather than useful adjustment mechanisms, the country with the least flexible wages, has the largest interest in joining the area of stable inflation⁸. Therefore, potential costs of abandoning flexible exchange rates and independent monetary policy for labour markets cannot be assessed without analysis of their effectiveness.

Secondly, in order to believe that depreciation of the currency or expansionary monetary policy can indeed reduce unit labour costs when unemployment is above its equilibrium rate and nominal wages are rigid, it is necessary to assume, respectively, that: i) nominal depreciation might lead to improved competitiveness or reduction in real EURO wages W/EP^* , ii) wages are not rigid in real terms so that inflation can reduce real wages W/P . The relationship between these two assumptions is clear. While the positive role of inflationary policy requires at least temporary money illusion, effective depreciation requires money illusion or low correlation between exchange rate movements and domestic price level, i.e. flexible real exchange rate P/EP^* .

It follows that high nominal wage rigidity does not need to the argument against participation in the monetary union. If real wages W/P are rigid in the sense that nominal wage dynamics follow closely inflation, monetary regime is mostly irrelevant for labour market outcomes. The same is true for smaller countries for which there is high pass-through from exchange rates to prices (rigid P/EP^*). "For small economies in which imports are so important a component of the cost of living that a reduction in real wages through nominal depreciation is rapidly feed through into domestic prices" (Obstfeld, 1985). Indeed since McKinnon (1963) one of main criteria for the choice between fixed and flexible exchange rates was the *degree of openness* in an economy, characterized by relative importance of traded to non-traded goods.

To be specific, if Hungary had rigid real wages, the loss of flexible exchange rates should prove irrelevant from in the sense it does not hurt the adjustment potential of the economy. For larger country like Poland, high real wage rigidity might indeed imply higher potential costs of EMU accession. This is the case because nominal depreciation is more likely to be translated into real depreciation (falling P/EP^*). "The thesis of those who favour flexible exchange rates is that the community in question is not willing to accept variations in its real income through adjustments in

⁸ This point was brought to our attention by Jacek Rostowski.

its money wage rate or price level, but that is willing to accept virtually the same changes in its real income through variations in the rate of exchange” (Mundell 1961).

Indeed there is some empirical evidence that nominal depreciation can be useful in improving competitiveness. First, real wage and price levels seem to fluctuate more among countries with independent currencies than in regions within currency area (De Grauwe and Vanhavebeke 1993, von Hagen and Neumann 1994)⁹. There is also number of recent episodes when devaluation provided competitiveness boost and helped to reduce unemployment. The most often cited example is the UK withdrawal from the EMS in 1992: according to most authors devaluation and monetary expansion contributed to subsequent decade of economic recovery without visible inflationary consequences (Jackman and Savouri, 1998). Another well known episode proves that devaluations can be “a great success” even in relatively small economy: devaluation in Belgium in 1982 had strong and lasting positive impact on current account deficit and employment (De Grauwe, 2000). We are curious whether we can actually deduct similar recent episodes in candidate countries – their presence is crucial for the assessment of need for increasing flexibility in labour markets after their accession to the EMU.

Lucas Critique and prospect for labour market reform

The last and most fundamental problem with the exclusive focus on the measurement of nominal wage flexibility is Lucas Critique: estimates derived under one policy regime have very limited value of in predicting developments under different policy regime. When monetary policy is independent and exchange rate fluctuates, improvement in competitiveness or reduction in real wages does not necessary require nominal flexibility. Observed nominal rigidity is likely to be high, what may tempt a conclusion about undesirability of monetary union. Indeed, none of the candidate countries with independent monetary policy studied in this article ever recorded falling nominal wages. Taken at the face value, this fact leads to overestimation of problems related to nominal rigidities and might wrongly discourage accession to the monetary union. Moreover, we discuss below a good proof that monetary policy framework matters a great deal for nominal labour market flexibility: Lithuania is the only country that experienced nominal wage cuts and it happened under currency board arrangement, that for our purposes is essentially equivalent to the monetary union participation. Introduction of the monetary union has therefore an impact on decisions of economic agents and workers that were able to accept real wage cuts in high inflation environment, might potentially accept nominal wage cuts in fully credible stable price environment¹⁰. Any measure of current nominal rigidity is therefore of limited relevance for the evaluation of likely costs of EMU participation. However, interactions between creation of monetary union and incentives for structural reforms in Europe are not straightforward and increasing

⁹ There are however different factors that might contribute to this result: notably currency areas corresponded historically to countries, which through institutional set up and redistributive policies tended to compress regional wage and price differentials.

¹⁰ This does not necessarily contradict the evidence from Jackman (1998) about falling nominal wages rigidity once inflation is lower, which was provided in the context of unchanged independent and potentially inflationary policy framework.

flexibility in labour markets cannot be taken for granted. Saint-Paul and Bentolila (2001) note with some irony that although unemployment is the Europe's most important problem, all the efforts of European policies were directed towards unified monetary policy, possibly at the cost of labour market reform. Calmfors (1998) argues openly that countries that followed tough macroeconomic policies directed at the EMU membership, largely neglected labour reforms, while they took place in Britain staying outside the union.

Still Calmfors (1998), among many others, believe that given the constraint on active use of exchange rate and monetary policy in accommodating idiosyncratic shocks, incentives for reform would increase once the EMU is in place. This is so called TINA (There Is No Alternative) argument. On the other hand, Sibert and Sutherland (2000) show that labour reform might be less attractive in monetary union, because reduction of inflation bias is not an argument for the reform anymore: creation of the monetary union removes time inconsistency problem originating from domestic market imperfections. Vinals and Jimeno (1998) also show that there is higher positive externality from labour reform under the monetary union, so that incentives for uncoordinated reforms are reduced. Some authors, notably Gordon (1996) underline that outside the EMU the "two-handed" strategies might be implemented: labour market reforms addressing supply side might be combined with monetary policy on demand side. Expansionary monetary policy makes structural reforms more attractive: results are seen immediately, but such policy can be expected from the ECB only if reforms in member countries are coordinated. And such coordination might be very difficult to achieve. Accordingly, Blanchard and Jimeno (1999) argue that within EMU Spain would have to "decrease the unemployment rate with one of its two hands tied behind its back".

Saint-Paul and Bentolila (2001) offer a solution to this controversy by distinguishing two kinds of labour reforms: those speeding up adjustment to shocks and those changing natural rate of unemployment. An incentive for the former kind of reform which involves mainly higher nominal flexibility is likely to be increased within the EMU in line with TINA principle. Unfortunately, an incentive for the latter kind of reform that involves more ambitious and deeper changes in European labour markets might be reduced by the EMU membership.

3. Empirical Investigation

3.1 Understanding adjustment mechanisms

From the discussion above it is clear that econometric estimation of nominal as well as real wage rigidity is unlikely to give robust insights about potential costs of participation in the EMU unless importance of exchange rate, price and productivity movements are analysed at the same time. In our view, the only sensible research strategy is to understand mechanisms of adjustments in labour markets in candidate countries in recent years and then carefully discuss potential impact of accession to the monetary union on these mechanisms. In line with discussion above, we define overall labour market elasticity as the response of two described measures of unit labour costs to

changes in the unemployment. Adjustments might take place through nominal wages, prices and nominal exchange rate that determine real wage dynamics (W/P), depreciation of real exchange rate (P/EP^*) and consequently of real EURO wages (W/EP^*), as well as through improvements in productivity.

We focus on changes as it is very difficult to identify structural and cyclical elements of unemployment in candidate countries and our preliminary econometric investigation suggested that unit labour costs reacted to changes rather than levels of unemployment. We are particularly but not exclusively interested in mechanisms and size of adjustments at times of raising unemployment. Our primary goal is to understand the role exchange rate movements and monetary policy played, as accession to the union implies the need for replacing these labour market adjustment mechanisms. OCA provides insights into the role of exchange rate policy: exchange rate depreciation potentially produces boost to employment by reducing real EURO wages and international ULC. Inflationary surprise might reduce real wages and domestic unit labour costs. We try to verify whether exchange rate movements and monetary policy played such role in reality.

Given the relation between two measures of unit labour costs, and $IULC = \frac{P}{E \cdot P^*} DULC$ the direct interest of workers in real rather than EURO wages, we conduct investigation in two stages. First we examine closely size and factors of adjustments in the domestic unit labour costs. Secondly, we pose the question, whether nominal exchange rate movements provided boost to competitiveness by depreciating real exchange rate and therefore reducing real EURO wages at times of rising unemployment. We study the variation in EURO exchange rates instead of nominal effective exchange rates. The reason is that it is exactly the size and adjustment role of previous variations against the common currency that is crucial for the potential cost of joining the monetary union. If for example past huge variation towards currencies of important trade partners such as US or Russia were consistent with stable EURO exchange rate, the participation in the EMU would not cause any potential trouble. In other words, these are real exchange movements of currencies of candidate countries against Euro, that might have been a result of shocks idiosyncratic for these countries¹¹.

Obviously, it is impossible to fully avoid the Lucas Critique problem: based on current situation we cannot judge well how structural aspects of labour market change after the EMU accession. Our strategy is however, at least in this respect, superior to mechanistic econometric investigation of wage flexibility, as it puts this problem at the core of investigation: We explicitly study how patterns of adjustment and overall labour market flexibility might change upon accession. As an additional benefit, we can compare adjustment mechanisms in candidate countries that still conduct independent monetary policy and those with currency board regime (Lithuania) or quasi-currency board regime (Latvia). In our analysis of actual adjustment patterns in selected candidate countries, we always focus on our main research problem: potential impact of EMU accession on labour market performance. It is however also worth noting that one of interesting results of this

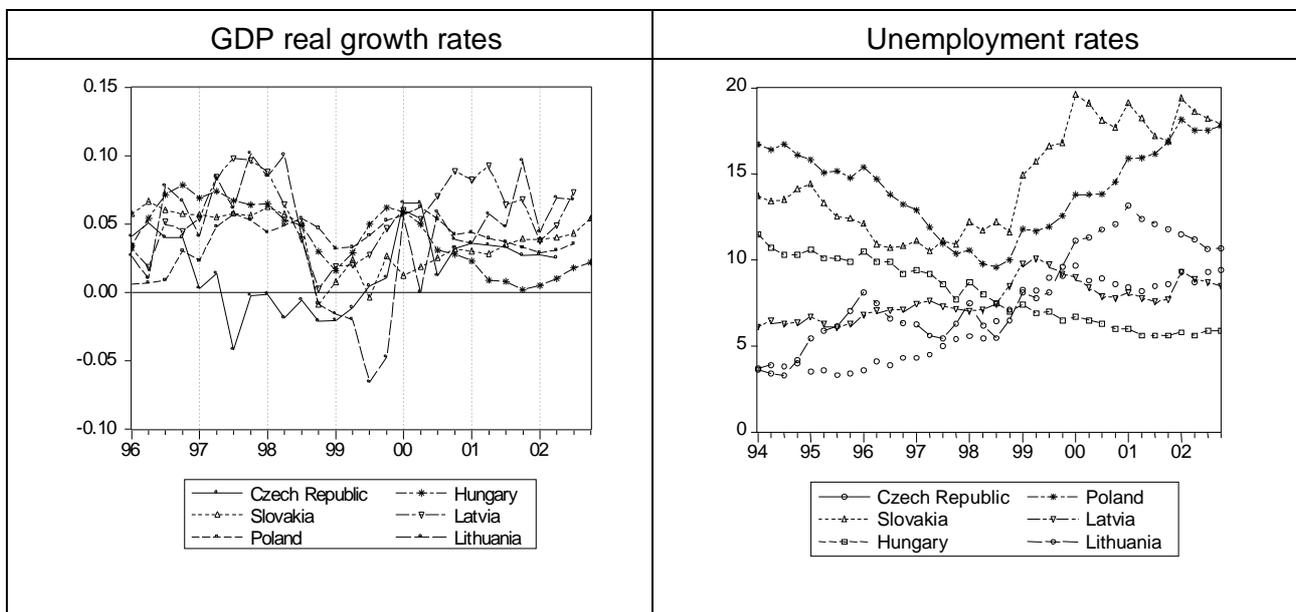
¹¹ We take inflation rate in Germany as the proxy for the inflation in Eurozone.

research is the diversity in adjustment patterns, even in this relatively homogeneous group of countries.

3.2 Country experience

Our investigation is based on quarterly data compiled by the International Monetary Fund in its International Financial Statistics (IFS) database for six candidate countries joining EU in 2004: Czech Republic, Hungary, Latvia, Lithuania, Poland and Slovakia. Unfortunately not adequate data was available for Estonia and Slovenia. Dataset actually used was further updated and completed with statistics from national statistical offices and central banks and covers period between 1993 and 2002. In our analysis of policy responses we concentrate on period since 1995.

Figure 3.



Source: Own calculations based on IMF-IFS data.

We start with discussion of basic trends in real growth and unemployment. (Figure 3) GDP growth rates are generally positive and correlated across countries with the exception of the Czech Republic. This common pattern is particularly dominated by one important shock: Russian crisis in 1998. Growth rates plunged in all countries following the crisis and in none of them recovered to the pre-crisis rates so far. What is also characteristic is that following the Russian crisis growth performance is more heterogeneous across countries. This shock was particularly important for Baltic States with strong trade and financial links with Russia and other CIS countries: Lithuania indeed experienced deep recession in 1999. Moreover, Baltic States could not use monetary response to cushion the crisis, yet their recovery proved as prompt and strong as the crisis itself. Economic performance in last years in Czech Republic was markedly different than in other candidate countries. Currency crisis in 1997 led to the economic recession at times at the peak performance of other countries prior to the Russian crisis. Hungarian economic turmoil of 1995 had similar result on the real growth, but by the 1997 the recovery was strongly on the way. Finally,

what distinguishes Poland's performance is marked economic slowdown in most recent years what produced characteristic double dipped pattern.

The importance of the crisis in 1998 is even clearer for the unemployment rates¹². Average unemployment rates fell moderately between 1994 and 1998 from above 9% to around 8% but following the crisis increased markedly to 12%. Also until 1998 unemployment rates in most countries seemed to converge. In beginning of 1994 the highest unemployment rate in our sample was almost five times larger than the lowest and the spread between the two was 13 percentage points. In forth quarter of 1998, the ratio was only 1.5 and spread 3.5 percentage points. But following Russian crisis unemployment rates seem to diverge: by the end of 2002, the ratio of highest and lowest rates increased to 3 and spread to 12 percentage points. The impression of convergence/divergence cycle is created mainly by V-shaped developments in Poland and Slovakia.

In our study of labour market adjustment we will naturally focus on crisis episodes. Crisis situations provide natural experiments of reaction to adverse shocks that can be readily analysed. More importantly they relate directly to the problem at hand, as it is a fear about adverse asymmetric shock that undermines the most the desire to participate in the monetary union. What is clear even from this introductory discussion, countries without independent monetary policy managed to restore equilibrium not less effectively than others. We also study success and failure stories in our sample. For example Hungary managed to continuously reduce unemployment rates till 2001. The opposite was true for Czech Republic, which nevertheless retained unemployment rates lower than Poland or Slovakia. While these dynamics are partly due to structural changes, we try to study to what extent exchange rate movements and monetary policy can be credited or blamed for them. In the section below we study adjustment patterns in the domestic unit labour costs.

3.2.1 Wage rigidities and adjustment in domestic unit labour costs

Czech Republic

Czech Republic experienced a long period of GDP slump in years 1996-1999 with GDP growth bottoming in mid 1997.(Figure 4) This slump resulted in rapid unemployment rate increase from around 4 percent in the mid of 1996 to the maximum of about 10 percent in the beginning of 2000. When economic growth returned, unemployment remained at this higher level. During the initial period of unemployment growth between the second half of 1996 and mid of 1997 domestic unit labour costs (DULC) continued to grow and did not help to ease the problem. Only for a short period in years 1997-98, sharp decline of real wages prevented larger increases in unemployment. Then DULC stabilised. In this section below we investigate whether relative inflexibility of domestic

¹² There were other factors contributing to lower growth rates and higher unemployment rates such as stagnation in the EU/US economies and costs of opening to EU markets. The role of domestic labour market rigidities in adjusting to the Russian crisis is discussed at length below.

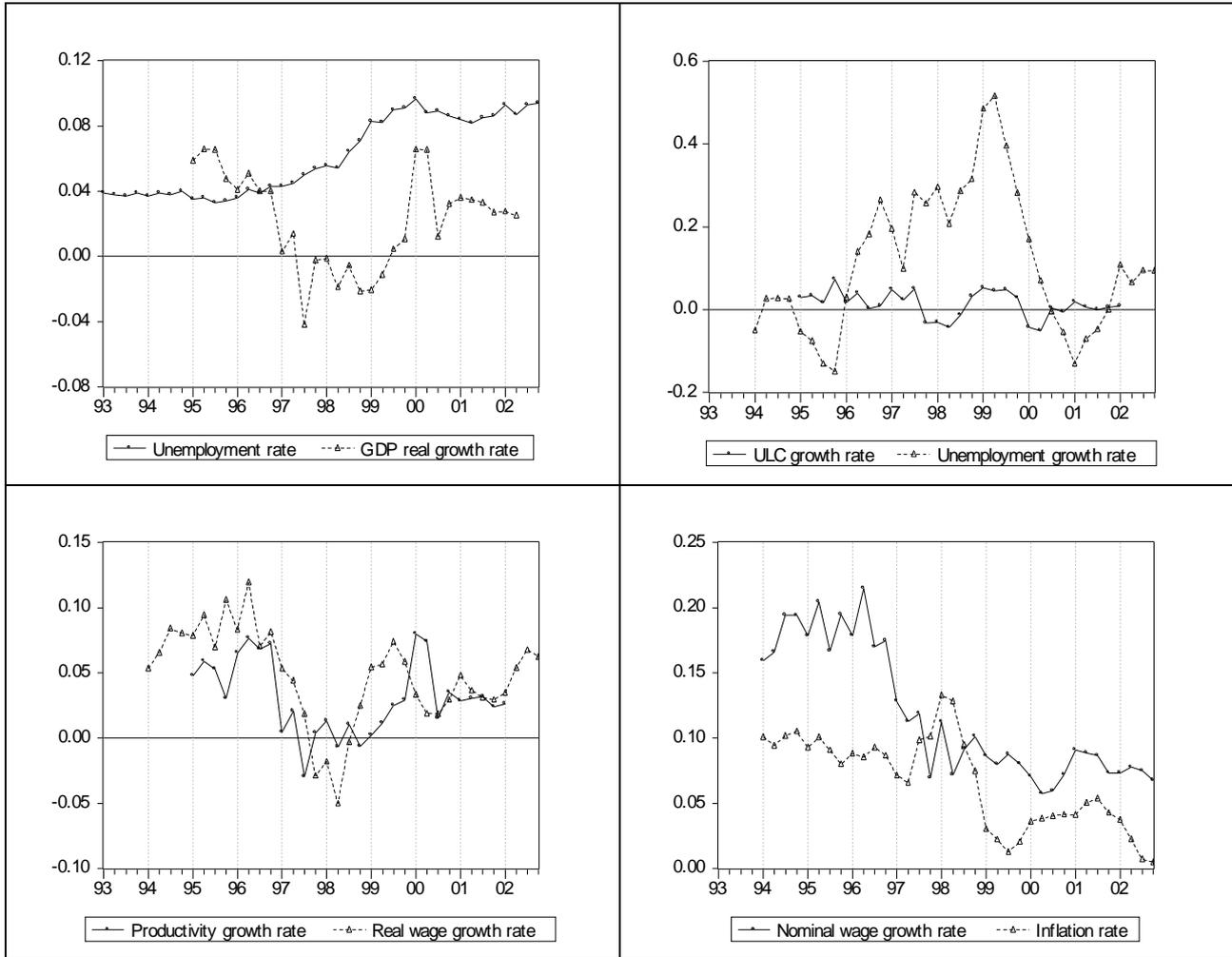
unit labour costs to deteriorating situation in the labour market happened in spite of correcting or perhaps partially because harmful actions of monetary policy.

Real wages do not seem to adjust, with the long run dynamics staying more or less in line with productivity changes. Even the short run real wage decrease in years 1997-1998 has been preceded by similar negative shock to productivity. Results of simple econometric estimation suggest that real wages are not negatively correlated with unemployment in Czech Republic. Regressing real wage dynamics on unemployment level and dynamics, and productivity changes does not produce any significant results. The lack of adjustment in real wage dynamics in Czech Republic, after the initial deep slump in 1997 seems to be strictly related to nominal wage rigidity in this country. After nominal wage growth adjustment in years 1996-1997, they kept rising at relatively stable rate and they did not react to the pronounced unemployment increase that took place in 1999. We can also see that the real wage decrease during the crisis was more the effect of the inflation surprise than nominal wage adjustment. Without the inflation surprise Czech workers would not experience the fall in real wages even during the hardest period of crisis and falling productivity.

It seems that nominal wages in Czech Republic are relatively sticky, (similarly as in the Polish case below). What is different however is the lack of clear level adjustment of DULC as the reaction to rising unemployment since real wages follow the productivity path and on average grow faster than productivity¹³. The relative rigidity of not only nominal wages but also of DULC, as well as its upward trend predicts long term problems of labour market in Czech Republic, whether or not it joins the EMU, although at crisis situation monetary policy proved useful in pushing unit labour cost downwards.

¹³ It might obviously be the result of much better than Polish labour market situation with unemployment rate being less than half of Polish one. However, the difference in levels is a consequence of the more favourable structural characteristics of the Czech labour market with much higher share of modern industry and much lower share of agriculture inherited from communist period.

Figure 4. Channels of adjustments in labour market: Czech Republic



Source: Own calculations based on IMF-IFS data.

Slovakia

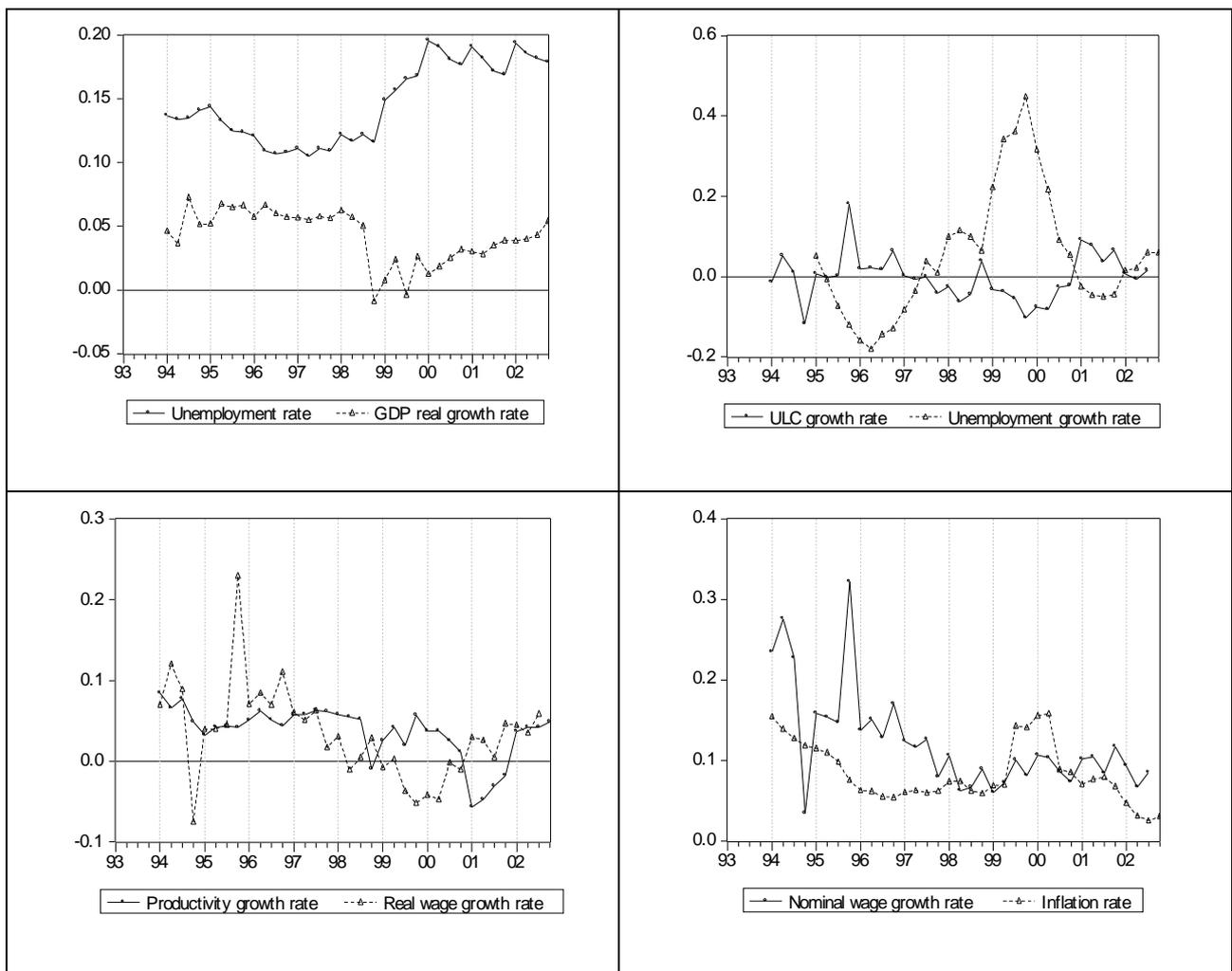
Unemployment rate in Slovakia was falling in 1995, bottomed out at around 11-12% between 1996 and 1998 and boosted rapidly to 19% at the end 1999. Small-scale fluctuations reduced unemployment rate in 2001 and increased it in 2002. In Slovakia, unemployment dynamics were particularly well reflected in the domestic unit labour costs. DULC were increasing precisely at times of falling unemployment. Evidence also points to strong hysteresis effect: while changes in unemployment exert pressures on DULC, a level of unemployment seems to be irrelevant for DULC. Results of regressing real wages on unemployment changes and levels do confirm this observation, with significant coefficient only for unemployment differences. In Figure 5 we investigate channels of adjustments in DULC and we focus in particular on the role played by the independent monetary policy. From our reading of the evidence this role was higher than in any other country in our sample.

While before 1998 unemployment rate was relatively high but stable, the real challenge happened in 1999, when the fallout of Russian crisis coincided with initiation of necessary and rapid structural reforms by the new government with immediate negative impact on GDP growth

rates and employment. Real wages were the main adjustment mechanism to resulting rapid increase in unemployment. But real wage cuts that took place in 1999 had much to do with the increased inflation while nominal wage growth remained stable throughout analysed period. This nominal wage inflexibility is particularly worrying during the most recent disinflation process, what explains the increase in both real wages and DULC.

To sum up, Slovakia is a country in which inflationary impulse was effective in pushing down real wages in reaction to rapidly increasing unemployment rate. On the other hand nominal wages are not very responsive to disinflation. Finally improvement in productivity is not an important channel of adjustment to negative shocks. These results suggest that participation in the monetary union will be costly. It is possible on the other hand that nominal rigidity is exactly due to experience of active monetary policy and would be removed when the country joins the EMU. Although this possibility could be questioned taking into account the lack of nominal wage adjustment to the disinflation in 2001 –2002, a better credibility of the low inflation policy might change this maladjustment pattern.

Figure 5. Channels of adjustments in labour market: Slovakia



Source: Own calculations based on IMF-IFS data.

Hungary

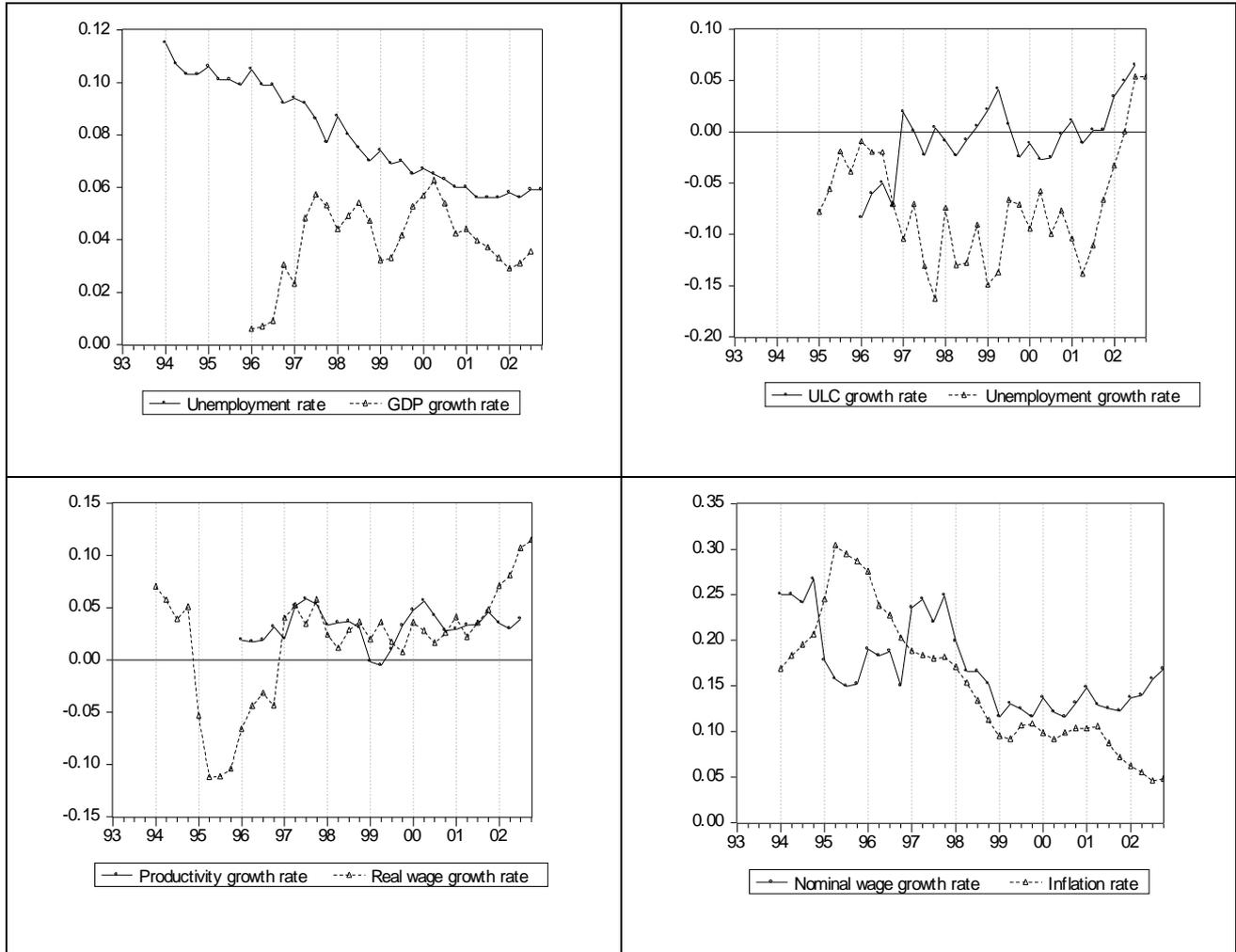
Figure 6 illustrates major adjustments in labour market in Hungary. Unemployment rate in Hungary was falling continuously from 11.5% in 1994 to 5.6% in 2001. Given such favourable trend, not even broken during economic slowdown of 1994-1995 downward adjustment in domestic unit labour costs were not necessary and DULC remained stable through most of the period till 2001. It happened as real wages were rising in line with productivity growth. This moderation could be one of the factors that allowed for sustained fall in unemployment, which has been broken just recently together with a sharp rise in DULC. In the context of this research it is natural to ask whether monetary policy played any role in limiting real wage pressure till 2001 and whether it did have any influence on the rapid deterioration of this favourable trend.

Particularly stable and moderate real wage growth between 1998 and 2001, was not generally supported by inflationary surprises. On contrary, it was adjustment in nominal wage dynamics that had to compensate disinflation process. Therefore, in this period classical dichotomy seems to hold well. However, there are two episodes when substantial real wage changes cannot be explained by productivity changes: GDP slump of 1995 and most recent quarters. It seems that monetary policy played important role in both periods. In the earlier one high inflation combined with decline in nominal wage dynamics (fall from more than 25 percent in end of 1994 to around 15 in half of 1995) led to deep cuts in real wages and domestic unit labour costs and only part of this reduction was reversed by high nominal wage increases in 1997. It is difficult to escape the conclusion that rapid short time inflation surprise and nominal wage moderation in 1995/1996 contributed to subsequent unemployment rate decline.

On the other hand rising real wages in 2002 are not only due to the increasing nominal wage dynamics but also due to the absence of the wage growth adjustment to fast disinflation. As a result DULC have markedly increased what probably contributed to the deterioration of unemployment situation. Nominal wage growth acceleration at the time of falling inflation was partly due to the statutory increase in minimum wages. It might suggest that it was one-time effect; on the other hand it can lead to permanent reduction in nominal wage flexibility. More importantly in the context of this research, increase of DULC in 2002 illustrates also perils of volatile inflation and reversed inflationary surprise: after two years of fluctuating at 10%, inflation fell rapidly below 5% in 2002 and this change was not reflected in nominal wage setting.

To sum up, Hungary seems to have rather inflexible nominal wages with exception of economic slump of 1995 but even at that time inflation surprises played an important role in shifting DULC. The option of inflating proved useful at the time of national emergency in 1995. It seems that participation in the EMU at that time could have led to less favourable domestic unit labour cost and unemployment dynamics. At less turbulent times loss of monetary independence should not have important impact on labour market adjustments. In particular, conservative but stable monetary policy would prevent problems of adjustments to rapidly falling inflation a rate that characterised year 2002.

Figure 6. Channels of adjustments in labour market: Hungary



Source: Own calculations based on IMF-IFS data.

Poland

The most interesting period from the point of view of our research is the period after 1998 as before Poland experienced high economic growth with stabilised and then falling unemployment (see Figure 7). During that time the long run real wage growth followed the rise in productivity keeping the average DULC of the Polish economy unchanged. It seems that wage moderation facilitated the fall in unemployment rate in this period. Since the year 1998 unemployment started to rise very rapidly and keeps rising till the very end of our analysis period in 2002 accompanying slowdown of GDP dynamics. DULC deeply decreased at the very beginning of that period and then keep decreasing thereafter. It indicates for the overall flexibility of labour costs in Poland.

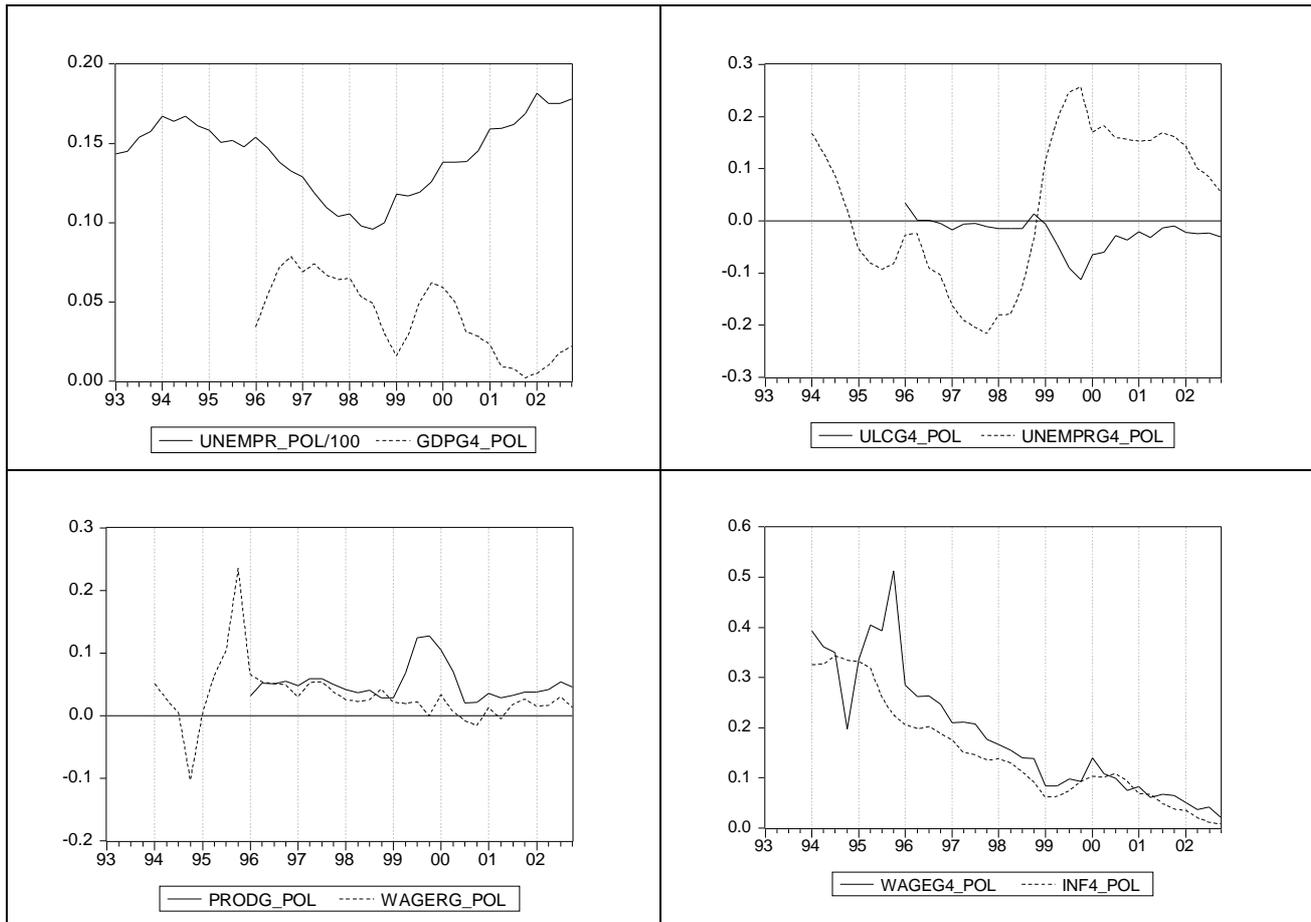
Decomposition of DULC dynamics (Figure 7) clearly shows that productivity dynamics have been rather stable during the entire analysed period, (with an important exception in 1999 – see below). Average annual growth rate of productivity in years 1996-1998 was 4,6 percent and for years 2000-2002 was 4,4 percent. Real wages behaved differently. The annual growth of real wages in the earlier period was 4,2 percent and in the latter only 1,2 percent. Hence it is still

positive but much lower than at times of falling unemployment.¹⁴ It is however also very important what are the mechanics of this flexibility. Real wages may fall as the result of two processes: decrease in nominal wages (or nominal wage dynamics) or due to not-indexed inflation increase. It is quite obvious that being in the EURO area means that nominal wage adjustment is the only way to achieve real wage reduction in case of an asymmetric shock. It seems that the only period of decreasing real wages was both the result of change in price and in nominal wage dynamics, with the earlier being the dominating factor. This observation is also confirmed by the results of simple short-run econometric estimation where nominal wage growth changes are mostly determined by inflation changes and unemployment variable is of only marginal importance. Real wages decreased in the second half of 2000 more as a result of inflation surprise than of relaxation of nominal wage pressure that occurred at that time. It is not good news from the point of view of Poland's EURO zone accession.

On the other hand, neither nominal nor real wages (although growing) have come back to its pre-1999 dynamics allowing DULC to decrease constantly since that period. It lets one to assess that in the EURO area, when inflation shock could not be even partial engine of the real wage adjustment, nominal wages would possibly react with similar results, at least in the longer time span. Even more importantly, high productivity growth rates will allow for reductions in domestic unit labour costs during participation in the monetary union, even if nominal wage stickiness remains a major problem. In this respect, particularly important was the adjustment to growing unemployment in 1999, when impressive improvements in productivity took place. As it was not reflected in higher real wage dynamics a deep reduction in DULC was achieved. It points to interesting adjustment mechanism: under high productivity growth rates the space for DULC reductions is large even when real wages are downward sticky.

¹⁴ This relative flexibility of real wages in Poland is also partially proved by the results of a simple econometric estimation. We have regressed the real wage percentage changes on both unemployment rate and unemployment change (productivity and autoregressive term have also been included in equation) and we obtained the significant coefficient (-0.86) on the change only. The coefficient on unemployment level is insignificant and perversely signed. Both of that would indicate for some level of unemployment hysteresis in Poland that could explain the increase of real wage dynamics since 2001, when unemployment dynamics stabilised. Hysteresis may result in prolonging unemployment problem and low activity of population, as we have currently witness.

Figure 7. Channels of adjustments in labour market: Poland



Source: Own calculations based on IMF-IFS data.

Latvia

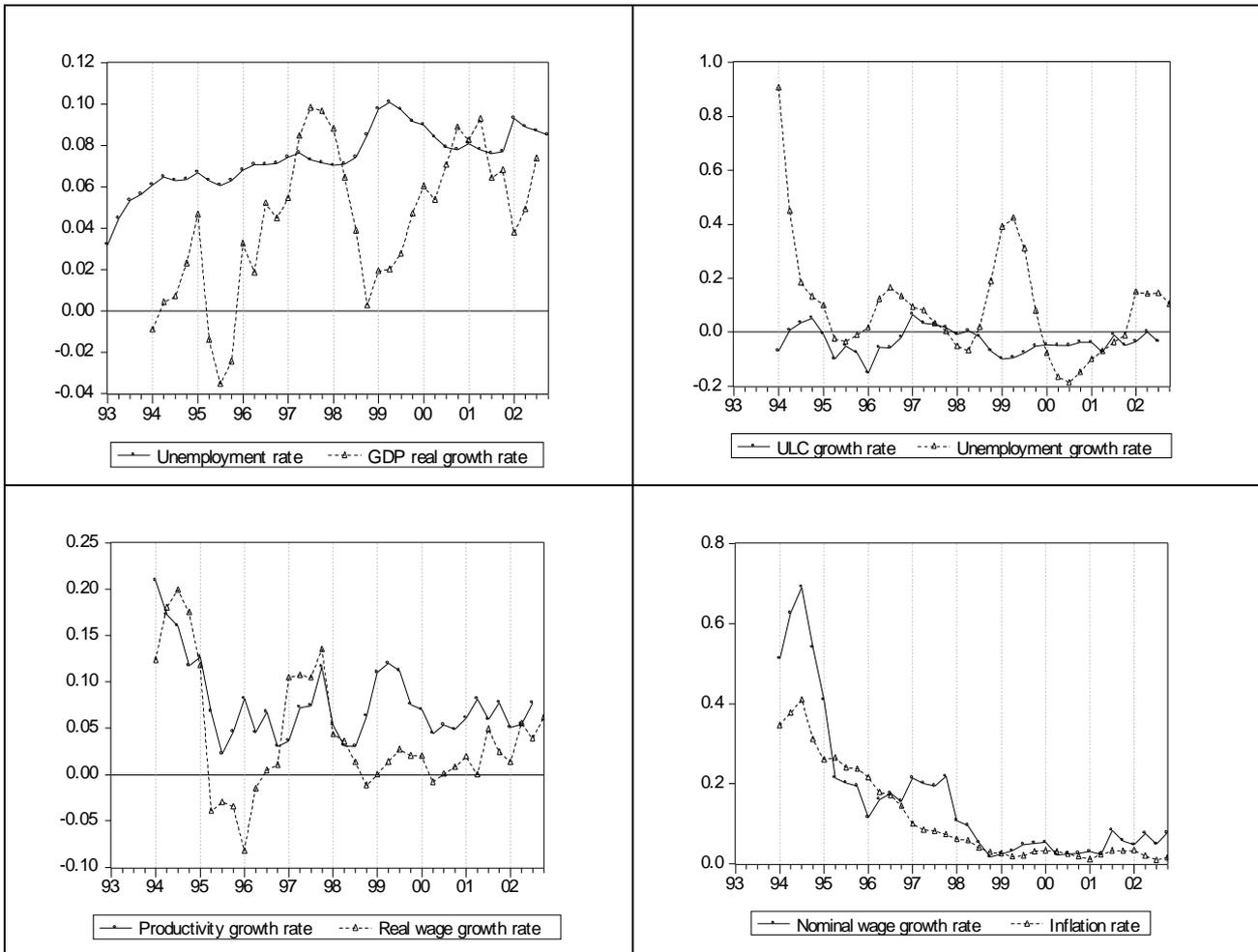
Latvia is the first of two our countries operating under the conditions of limited monetary and exchange rate policy freedom. Specifically, Latvia has formally fixed exchange rate to SDR and its monetary base is permanently covered by net foreign assets at more than 100%, what leaves very limited scope for independent monetary policy. During the analysed period unemployment rate in Latvia seems to be much more stable than in other analysed countries with exception of Hungary. Before the Russian crisis in 1998 it started even to decline as the result of very high economic growth and this decline has been accompanied by sharp increase of real wages. Unfortunately the Russian crisis of 1998 resulted in the sharp GDP slow down and unemployment also picked to more than 10 percent in the beginning of 1999.(Figure 8)

Even this rise, however has been much smaller than in other countries, such as Slovakia, Poland or even Czech Republic. It seems to be the result of sharp adjustment of DULC that took place as a consequence of the unemployment growth. Afterwards, in spite of improving labour market situation, DULC have never regained its positive dynamics till the end of 2002 facilitating the recovery process. Earlier during the GDP slump in 1995-1996 unemployment level did not change at all, presumably also as the result of the DULC adjustment that took place during that time.

The negative DULC dynamics since 1998 are both the effect of moderate real wage growth in years 1998-2001 and very high productivity dynamics during the entire analysed period. Productivity was rising even during the very moment of Russian crisis. Earlier, during the first GDP slump in 1995-1996 real wages reached negative dynamics, leading to DULC decrease and not letting unemployment to boost. Real wages followed productivity growth only once, just before Russian crisis, nevertheless it seems to have been only incidental phenomenon.

Although nominal wage dynamics fell twice in Latvia leading to real wage adjustment it does not seem to be the main factor deciding about the relatively good and stable labour market situation in this country. These are rather general wage growth moderation combined with favourite productivity dynamics producing continuous DULC fall that facilitates declines in unemployment rates. This situation is in opposition to what we have observed especially in Slovakia and Czech Republic and also to some extent Poland where inflation surprises led to most serious real wage adjustments. This characteristic of the Latvian labour market, if preserved in the future, would continue to be the big advantage in case of adverse asymmetric shock after the EURO area accession of this country.

Figure 8. Channels of adjustments in labour market: Latvia



Source: Own calculations based on IMF-IFS data.

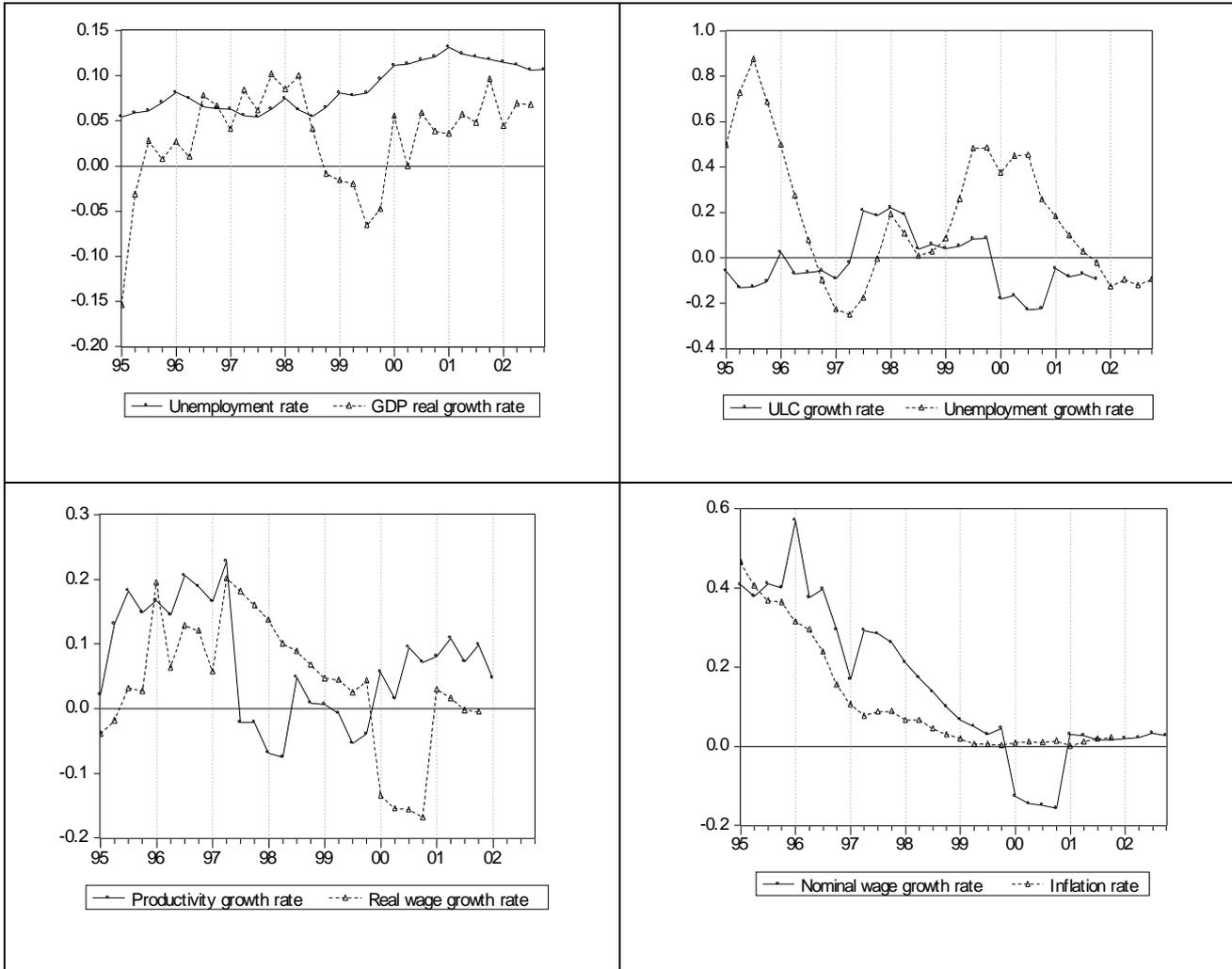
Lithuania

Lithuania is the country with the currency board regime, which implies that it cannot conduct independent monetary policy. Inflationary surprise may not reduce domestic unit labour costs in case of raising unemployment. Moreover due to its tight trade links with Russia and other CIS countries prior to 1998, financial crisis in Russia sent the economy into a deep recession. Unemployment that was at the relatively low level (6-8%) increased markedly in 1998 until reaching its peak of 13% at end of 2000 and started to fall gradually ever since. (Figure 9)

Domestic unit labour costs response was not immediate but impressively strong. During last quarters before the crisis, real wages were growing much faster than productivity and real wages continued to grow moderately in 1999. However, rapid increase in unemployment finally forced very strong adjustment in 2000. As a result real wages plunged and given very low level of inflation, adjustment took place through reductions in nominal wages. Actually Lithuania is the only country in which nominal wage cut, absolute fall not only adjustment in dynamics, took place. Since that time real wages grow more slowly than productivity leading to constant DULC reduction.

The example of Lithuania shows that deep adjustment in real wages is possible under the monetary union if nominal wages are flexible enough. It is however difficult to judge, whether this flexibility is an inherent feature of the Lithuanian labour market or the necessity of dealing with crisis situation in the currency board arrangement forced flexibility on the economy. One-year lag, the actual adjustment came with is the argument for the latter being true.

Figure 9. Channels of adjustments in labour market: Lithuania



Source: Own calculations based on IMF-IFS data.

3.2.2 Real depreciation and adjustment in international labour costs

In this section we investigate whether changes in EURO exchange rates of candidate countries' currencies performed the role of unemployment adjustment mechanism as suggested by the OCA theory. Having examined rigidities of nominal and real wages in the section above this problem can be addressed relatively simply. First question is whether nominal exchange rates affected real exchange rates or were fully reflected in price dynamics. As it was discussed in the theoretical section above, the first scenario is more likely in a larger and less open country like Poland and the second scenario should characterize all smaller countries in our sample. Provided that nominal depreciation is indeed effective, the second test is whether it is useful in the sense that currency indeed depreciates at times of increasing unemployment and falling competitiveness.

From the Table 1, it is clear that while changes in the nominal exchange rate are strongly contemporaneously correlated with real exchange rates in most countries, after only three quarters all the effect diminishes and indeed is reversed. Therefore while it is still possible to suspect that

EURO exchange rate movements provide some short-term relief, they are unlikely to play any major role in medium term adjustments.

Table 1. Nominal depreciation effectiveness

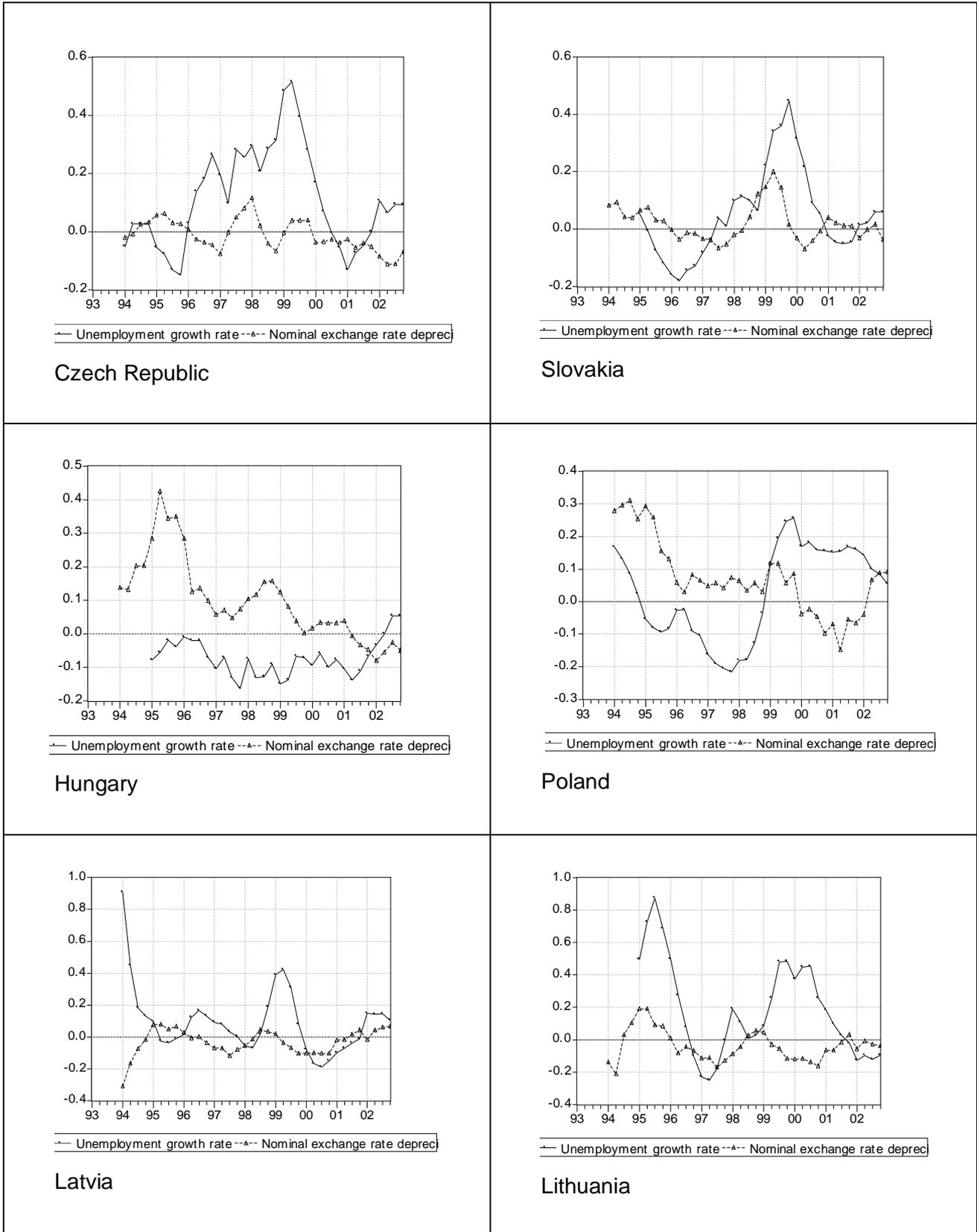
	Correlation between annual rates of nominal and real depreciations		
	Immediate	After 1 quarter	After 3 quarters
Czech Republic	0.81	0.47	-0.29
Slovakia	0.86	0.54	-0.28
Hungary	0.88	0.73	0.36
Poland	0.57	0.33	-0.08
Latvia	0.45	0.24	-0.13
Lithuania	0.19	-0.04	-0.42

Source: Own calculations based on IMF-IFS data.
 * quarterly data since 1994 (1995 for Baltic States)

In the second step, we try to determine whether timing of exchange rate movements suggest that they were responding to the unemployment and competitiveness problems of candidate economies. We know that for Baltic States the answer is negative: exchange rate movements of countries with extreme form of hard peg (Latvia to SDR, Lithuania US dollar) were caused exclusively by cross rates of world major currencies. But also in other countries nominal exchange rate does not seem supportive to labour market adjustments for most of times. In Poland since 2000, in Hungary and Czech Republic since 2001 EURO exchange rate appreciates despite continuously rising unemployment. Only in Slovakia nominal depreciation in 1998 and 1999 seemed to follow increasing unemployment. The only episode when exchange rates proved to be useful, although short lasting, adjustment mechanism was the aftermath of Russian crisis. Practically in all countries, exchange rates depreciated in response to the serious or very serious trade shock, that was basically asymmetrical against existing EMU members. It shall be noted however, that exchange rates response was weak and quickly reversed. (Figure 10).¹⁵

¹⁵ We acknowledge the positive role of these depreciations even if they were results of autonomous or even contagious capital markets' flows as what matters to us is their correlation with increasing unemployment.

Figure 10. Unemployment dynamics and EURO exchange rate depreciation



Source: Own calculations based on IMF-IFS data.

3.3 Summary of results

In the section above we showed in detail adjustment mechanisms in each country under investigation. Adjustment mechanism proved to be remarkably heterogeneous across countries. This observation is confirmed in the Table 2 that presents estimates that related annual change in domestic unit labour costs to the changes in unemployment rate. First six coefficients can be interpreted as the overall labour market elasticity in respective countries, while fixed effects show ULC growth rates at stable unemployment.

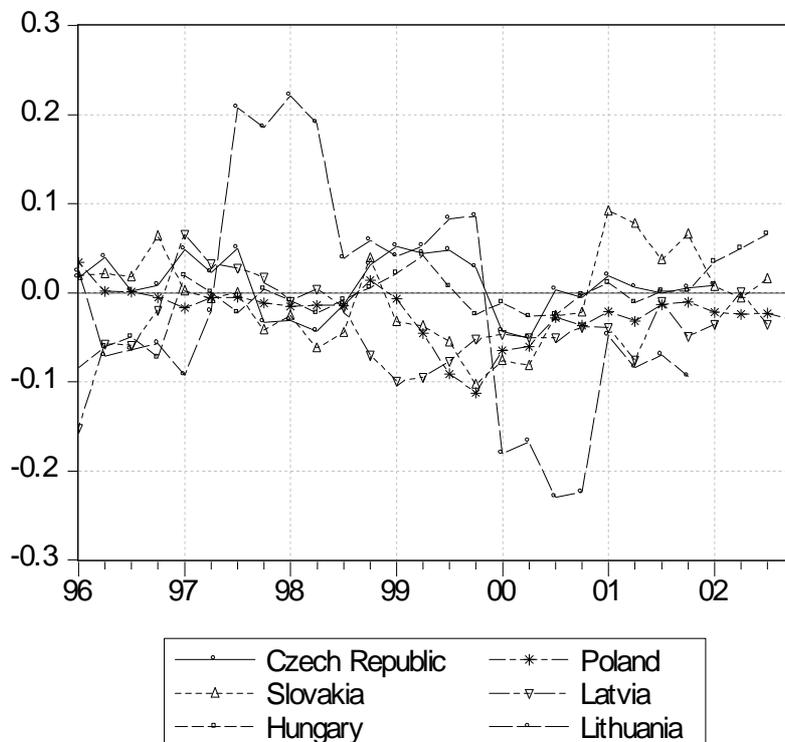
Table 2. Domestic Unit Labour Costs elasticities to unemployment growth in analysed countries

Dependent Variable: ULCG4?				
Method: Pooled Least Squares				
Date: 11/04/03 Time: 04:55				
Sample(adjusted): 1994:1 2002:4				
Included observations: 36 after adjusting endpoints				
Total panel observations 178				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
_CZE--UNEMPRG4_CZE	0.010738	0.059755	0.179698	0.8576
_SLK--UNEMPRG4_SLK	-0.255942	0.067802	-3.774842	0.0002
_HUN--UNEMPRG4_HUN	-0.011475	0.225145	-0.050969	0.9594
_POL--UNEMPRG4_POL	-0.120001	0.072953	-1.644908	0.1018
_LAT--UNEMPRG4_LAT	-0.024124	0.048041	-0.502154	0.6162
_LIT--UNEMPRG4_LIT	-0.147434	0.038817	-3.798149	0.0002
Fixed Effects				
_CZE--C	0.011063			
_SLK--C	0.013123			
_HUN--C	-0.007251			
_POL--C	-0.019591			
_LAT--C	-0.032249			
_LIT--C	0.010266			
R-squared	0.214992	Mean dependent var		-0.012955
Adjusted R-squared	0.162974	S.D. dependent var		0.064452
S.E. of regression	0.058967	Sum squared resid		0.577199
Log likelihood	535.1430	F-statistic		9.092583

Slovakia, Lithuania and Poland have domestic unit labour market costs that are the most responsive to unemployment changes, however adjustments took place through very different channels. Flexibility in Slovakia depended exclusively on inflation surprise, while in Poland mainly productivity, but also to some extent inflation surprise combined with nominal wage moderation played important role. Lithuania adjusted through nominal wages. On contrary, labour markets in

Czech Republic, Hungary and Latvia seem to be remarkably inflexible. Why the last two countries exhibited such positive unemployment dynamics? In our interpretation, the negative average (at stable unemployment) ULC growth rate is the answer. Consistent real wage growth moderation below productivity dynamics proves to be a very good insurance against adverse shocks. Lithuania that generated, on average, increasing domestic unit labour costs needed very deep cuts in real wages after the Russian crisis, Latvia did not. It is worth noting, that Czech Republic exhibits not only rigidity but also ULC increasing on average. It is somehow surprising, that Poland seems to be have one of the most favourable outcomes that combine high flexibility with negative average ULC growth. If these results are taken seriously, high unemployment levels in Poland are due to factor more fundamental than lack of domestic unit labour cost flexibility (qualification and regional mismatches being probably most important).

Figure 11. Domestic unit labour cost growth rates

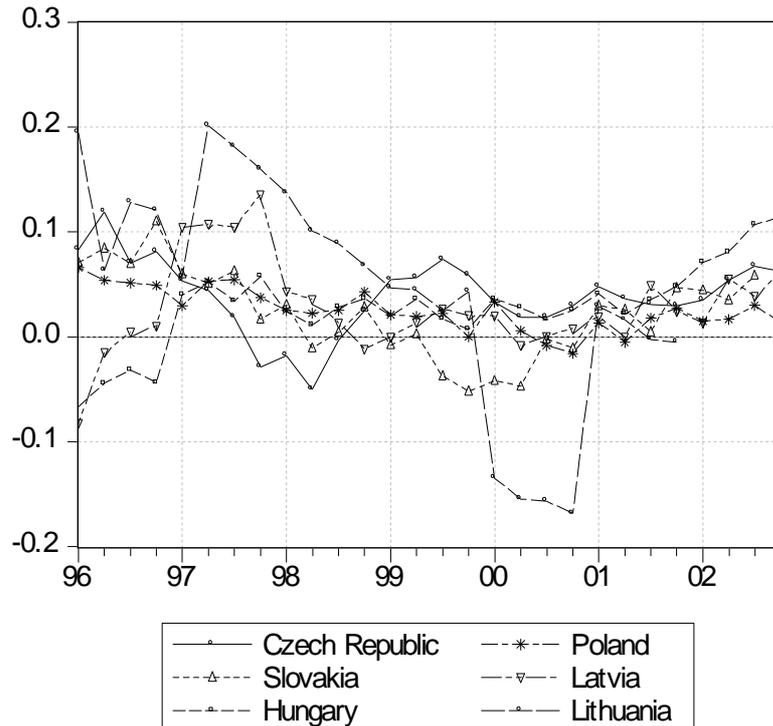


Focusing on importance of monetary policy, there are in total three episodes when inflationary surprise helped to reduce wage costs in the response to the negative shock: Hungary in 1997, Czech Republic 1998/1999 and Poland and Slovakia after the Russian crisis. In each case the surge in inflation allowed to permanently shift real wage trend downwards, only in Hungary this shift was partly offset in next periods. This would suggest that monetary policy might facilitate adjustment at times of economic emergency. However, we need to take notice that the single largest fall in real wages and the only absolute fall in nominal wages happened in Lithuania, the country with currency board arrangement. This again suggests the importance of Lucas Critique, since the nominal wages fell only in the country where there was no other political and economic option. Hence, it is quite plausible that joining the EURO area will just make wages more flexible,

instead of inducing problems due to earlier nominal wage rigidity. Hence the lack of nominal wage flexibility in all the rest of the analysed countries might not be as dangerous as it seems to be.

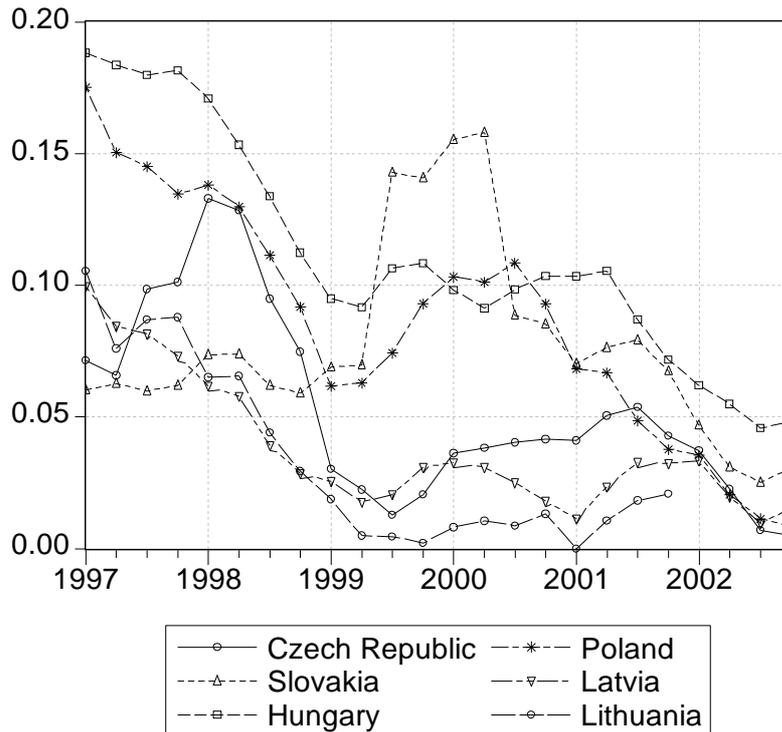
Monetary discretion also proved to have costs. Rapid disinflation which followed inflation surprise led to surge in real wages in all countries with independent monetary policy except for Poland. This surge was not justified by productivity improvements and led to unemployment growth to come back. Discretionary monetary policy that leads to unstable inflation might bring more harm than gain at normal times.

Figure 12. Real wage growth rates



Source: Own calculations based on IMF-IFS data.

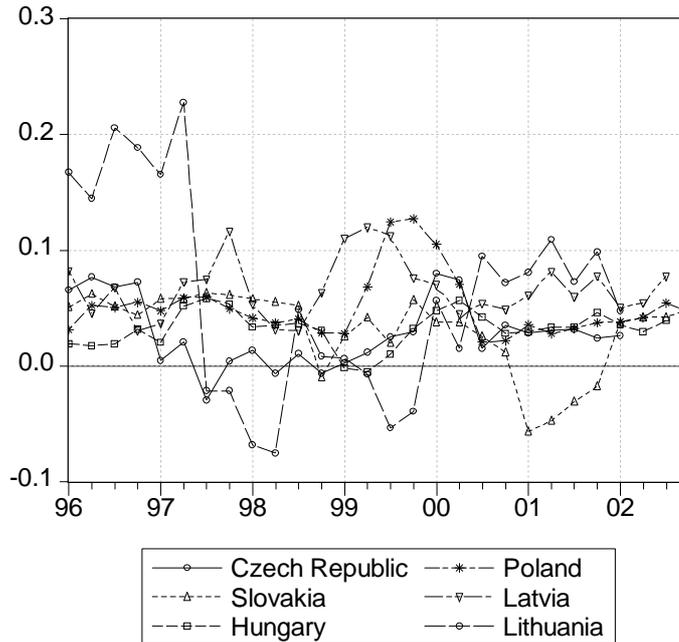
Figure 13. Inflation rates



Source: Own calculations based on IMF-IFS data.

Our analysis indicates also for important positive role of productivity growth. If productivity increases are not awarded instantaneously with corresponding real wage increases, it enables much quicker ULC reduction resulting in possibly less durable and shallower labour market problems. In 2002 productivity in all countries grew at the rate between 2.7% and 4.7% annually. This implies that even at the stable inflation rate of 2% and full downward nominal wage stickiness, domestic unit labour costs can fall at between 4.7-6.7% annually. And we note that in last years, with the notable exception of adjustment following the Russian crisis, no country with independent monetary policy recorded such reductions in ULC. Moreover deeper adjustments following the Russian crisis were achieved exactly by additional improvements in productivity that was not reflected in real wages. This was actually the main channel of adjustment in Poland.

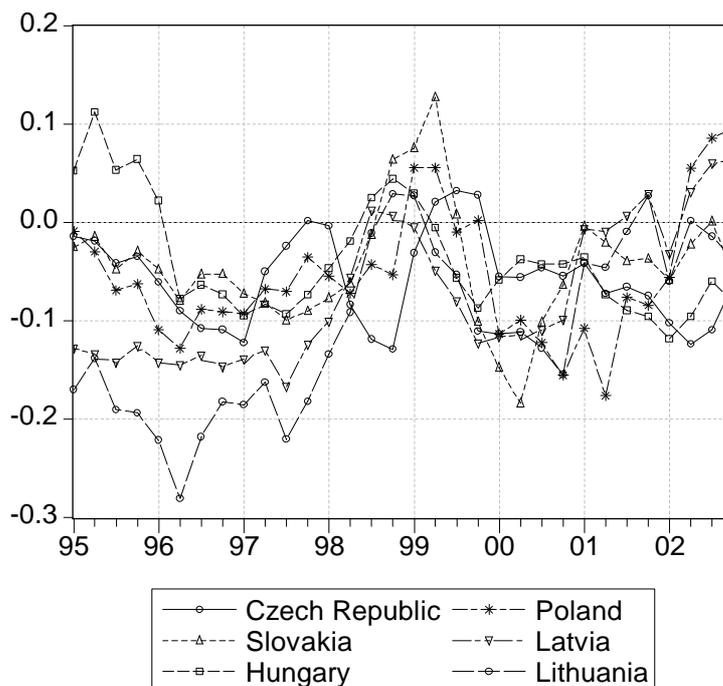
Figure 14. Productivity growth rates



Source: Own calculations based on IMF-IFS data.

On contrary nominal exchange rate movements, in spite their short term impact on real exchange rates do not seem to usually play any important role in adjusting labour market through improving competitiveness against existing EMU members with one important exception of the aftermath of the Russian crisis. Shocks of such depth and degree of asymmetry against current EMU members are rather unlikely to repeat.

Figure 15. Real depreciations rates against euro



Source: Own calculations based on IMF-IFS data.

These results are confirmed by the Table 3 that characterizes the elasticity of dynamics of international unit labour costs to changes in unemployment: only for Slovakia the elasticity of international labour costs seems to marginally higher than in domestic unit labour costs.

Table 3. International ULC elasticities to unemployment changes

Dependent Variable: IULCG4?				
Method: Pooled Least Squares				
Date: 11/18/03 Time: 22:50				
Sample(adjusted): 1994:1 2002:4				
Included observations: 36 after adjusting endpoints				
Total panel observations 183				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
_CZE--UNEMPRG4_CZE	-0.060994	0.121028	-0.503966	0.6149
_SLK--UNEMPRG4_SLK	-0.299906	0.137809	-2.176240	0.0308
_HUN--UNEMPRG4_HUN	0.188192	0.457644	0.411220	0.6814
_POL--UNEMPRG4_POL	-0.160456	0.148288	-1.082053	0.2807
_LAT--UNEMPRG4_LAT	0.506056	0.097651	5.182293	0.0000
_LIT--UNEMPRG4_LIT	-0.104335	0.076925	-1.356319	0.1767
Fixed Effects				
_CZE--C	0.104397			
_SLK--C	0.080625			
_HUN--C	0.081323			
_POL--C	0.060999			
_LAT--C	0.079374			
_LIT--C	0.152368			
R-squared	0.212781	Mean dependent var		
Adjusted R-squared	0.162142	S.D. dependent var		
S.E. of regression	0.119860	Sum squared resid		
Log likelihood	362.2804	F-statistic		

Source: Own calculations based on IMF-IFS data.

4. Selected microfoundations for wage flexibility in future EMU members

This part not being central for our analysis can be considered as its important supplement. This is a short overview of some institutional and structural characteristics of candidate countries' labour markets. The data from the current EMU, ECU and OECD member states are also added. It is neither deep nor comprehensive picture, however we do believe it may shed some additional light on the results of main analysis above. We may see whether our results do have any

underpinning in main institutional and structural phenomena. The comparison with other countries gives us a more general picture of relative situation of our countries in this respect.

We start our overview with comparison of unionisation and bargaining dialogue structures as this characteristic is most commonly pointed out as playing decisive role for wage flexibility (for example, Layard et.al, 1991). Then we will take a look on differences in tax wedges between candidate and current member countries as the next possible source of wage and labour market rigidities, especially in the long run (for example Alesina & Perotti 1993 or Tabellini & Daveri 2000). Then we move to Employment Protection Legislation, which is also often blamed for insufficient wage adjustments through well known insider-outsider mechanism, (comprehensive research in Lindbeck & Snower's book, 1989). Last but not least, we are presenting some comparisons of regional labour market differences and labour mobility data. This is not institutional but more structural characteristic of the labour market. It is interesting, however, for two reasons. At first, lack of internal mobility of the labour force could hamper the wage adjustments in a country. At second, regional immobility is being pointed as a main problem in current EMU states (Soltwedel & Dohse & Boden, 1999). At third, mobility of labour force is also viewed (according to OCA theory) as a possible substitute for wage flexibility.

4.1 Unionisation, patterns of social dialog and bargaining processes – wage formation process

According to, among others, Calmfors and Driffil (1989) the structure of the wage bargaining institutions plays the most important role in the wage formation process, and hence is of utmost importance from the point of view of wage rigidity/flexibility.

According to the standard view, so called Calmfors-Driffil curve is hump shaped. It means that intermediate solutions, i.e., wage negotiations mainly on branch or regional level are definitely the worst choice from the point of view of wage rigidity. Fully de-centralised, i.e., mainly on the firm level or fully centralised system of wage negotiations are the best choices.

Centralised forms of wage negotiations are dominating in most of EU accessing countries (European Commission (EC) 2002b, EC 2003b). This stems mainly from relative underdevelopment of social dialog partner's organisations. Employers' organisations are especially weak in almost all countries. Central social dialogue institutions (such as Tripartite Commission for example in case of Poland) seem to be well developed in all related countries. Bi-partite dialog on branch, regional or other multi-company level has been assessed as weak in all countries with exception of Slovenia. The results of central negotiations are more of informative and indicative than obligatory character. Often they apply only to large (often state owned) companies and to state administration and other public sector employees. The rest of negotiations is taking place mainly on companies' level. It seems therefore that in most of accession countries the mixture of centralised wage bargaining (mainly for state-owned sector) and decentralised bargaining takes place. Taking into account the Calmfors-Driffil relationship, this mixture should be perceived positively from the point of view of wage rigidities.

The data on union density and bargaining coverage in candidate countries (Table 4) are in line with the above characteristics. Union density is comparable to current average EU levels, it is not so in case of bargaining coverage. Unions are well developed mainly in big, often state-owned companies where large share of labour force is still being employed, for these workers wages are negotiated. The results of these negotiations, being conducted centrally or on firms' level, are not extended to the rest of the economy. It results mainly from weaker bargaining co-ordination and extension practices in candidate countries (EC 2002b).

One has to remember, however, about the dominance of the employees' side over employers' in negotiations on any level in candidate countries and also about the strong political role employees' organisation possess. It stems from their strong positions in big post-communists enterprises or even branches characterised (at least in case of Poland) by most rigid wages in economy which thus far have to be restructured. This political strength is especially important when we take into account the relative significance of centralised-tripartite consultations in these countries.

Table 4. Bargaining Coverage Rates and Union Coverage in Selected European and Candidate Countries

	Union Density 2000	Collective Bargaining Coverage (2000)
SELECTED EU COUNTRIES		
Belgium	69	96
Denmark	88	69
Germany	30	79
Spain	15	83
France	9	95
Ireland	45	66
UK	29	39
ACCESSING COUNTRIES		
Cyprus	70	68
Czech Rep.	30	28
Estonia	15	29
Hungary	20	34
Lithuania	15	13
Latvia	30	15
Malta	65	
Poland	15	40
Slovenia	41	100
Slovakia	40	48

UNWEIGHTED AVERAGES		
EU	44	78
EMU area	39	81
Accession Countries	34	42

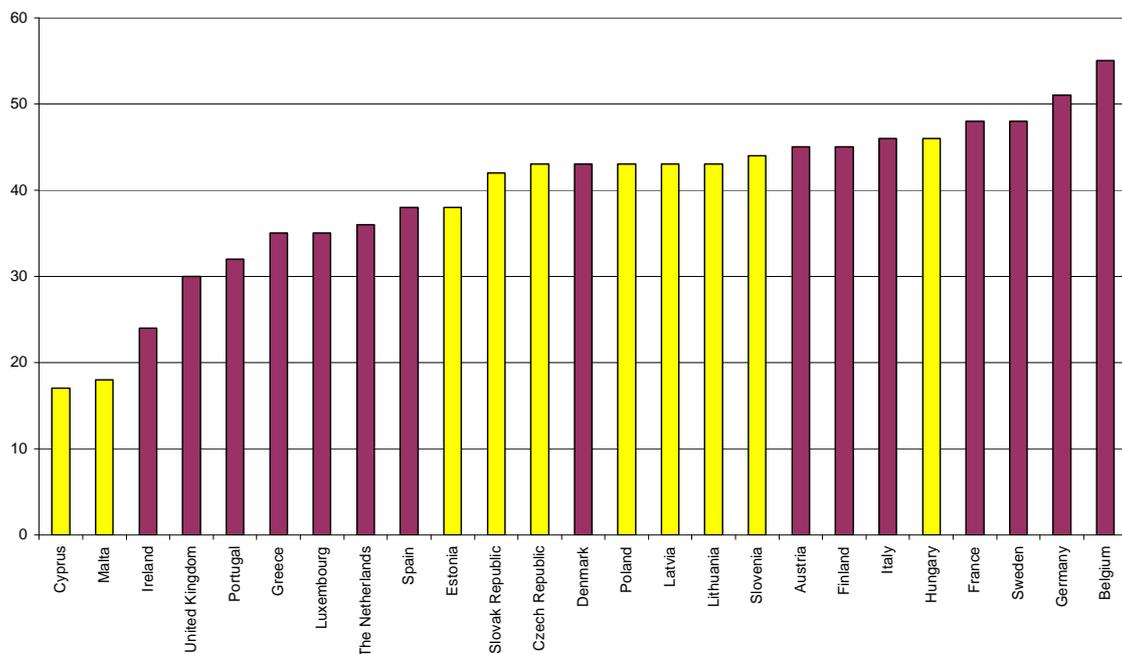
Source: Employment in Europe 2003, EC, DG Employment Report

From the group of 6 countries being analysed in our paper Lithuania has both smallest union density and bargaining coverage. The latter is also very limited in Latvia, with density being on average levels. In the course of our empirical research we found out that nominal and real wages are most flexible in these two countries. The most rigid nominal and real wages have been observed in Slovakia and Czech Republic, with the first of those having both highest union density and bargaining coverage of all. Obviously these results do not prove anything, as it would require more sophisticated analysis. They provide, however, some kind of stimulus for deeper analysis of possible relationship between bargaining, or even general social dialogue structure and wage flexibility in candidate countries.

4.2 Tax wedge

Relatively high tax wedges are very important problem for most of Accession Countries and all Central European ones. High employer's and/or employee's contributions to the social system decide about the size of the wedge in most of countries.

Figure 16. Tax wedge in EU and accession countries in year 2002



Source: OECD Taxing Wages 2002 Report relate to average wages, with exception of Cyprus, Malta, Estonia, Latvia, Lithuania and Slovenia for which data come from "Employment in Europe 2003" Report of DG Employment and relate only to low-earners.

High tax wedge could influence negatively wage flexibility, especially in case of poorly educated low-earners characterised by low productivity. The take-home wage offered to low productivity workers by employer's may easily fall very close or even below the subsistence level and/or below accessible non-wage incomes, such as social system and/or shadow economy in the country or legal (but more probably) illegal job in foreign countries. It has to be taken into account that post-communist economies are abundant of this kind of labour force and the unemployment (broader non-employment) is mainly localised in this group. It means that high tax wedge may be of special importance for total wage flexibility in these countries.

Unfortunately most of accessing countries have relatively high tax wedges (Figure 17), also for the low-earners group, locating them in the middle of European rates. Cyprus and Malta, not analysed in this paper but also structurally different from the rest of accessing countries, are the only two countries significantly different in this respect. Tax wedges among the rest of accessing countries, including six countries from our analysis, are practically the same disabling us to look for any relationship between tax wedges and observed wage flexibility.

4.3 Employment Protection indices

Employment protection is the next institutional factor possibly influencing the scope of wage flexibility. Logical argument for that is quite simple. The more legally protected are jobs the more reluctant are employees to accept wage cuts in case of adverse shocks.

Obviously any comparative aggregated measures of legal systems have to be taken with caution (Boeri & Bertola 1993). Similar legal rules may work completely differently in various institutional environments. Nevertheless such measures are being created and are commonly used by labour economists. The Employment Protection Legislation (EPL) index is the measure we are using in our paper. It has been created by OECD, and is recently popularly used and cited (Ribaud et.al. 2000, Sveinar 2002). It tries to measure separately and then combine three dimension of legal labour market environment: protection of regular contracts, rules concerning temporary contracts and limitations to collective dismissals. From the point of their possible influence on wage flexibility, it seems that the first and also to some extent the last dimension should draw our special attention.

EPL indexes in Accession Countries are not much different from these observed in the rest of Europe. Only Slovenian regulations seem to approach the strict regulations of Southern European markets. On the other hand however, none of accession countries is close, in this respect, to most successful European labour markets such as Ireland or United Kingdom. It has to be taken into account that some of the Accession Countries such as: Poland, Estonia, Slovakia introduced in years 2000-2003 the Labour Code reforms the main aim of which was to make EPL more flexible. (EC 2003b). It seems therefore that EPL should rather not decide about differences in wage-rigidities between current and future EURO-zone members.

Unfortunately the OECD EPL analysis has not been performed for all of 6 countries we analysed. We do not have data for Lithuania and Latvia with most flexible wages, what would be of utmost importance for us. Taking into account data from other countries legal labour market environment is most rigid in Slovakia and Czech Republic. It stems mainly from more rigid regulations concerning permanent contracts and collective dismissals being the most plausible suspects to influence wage rigidity. On the hand, labour market in Hungary seems to be relatively legally flexible also taking into account only this two factors. (Table 5)

Table 5. Employment protection summary indices in selected European, OECD and EU accession countries in late 90s

	Regular*	Temporary	Collective		RT	RTC
Portugal	4,3**	3	3,6		3,7	3,7
Italy	2,8	3,8	4,1		3,3	3,4
Spain	2,6	3,5	3,1		3,1	3,1
France	2,3	3,6	2,1		3	2,8
Germany	2,8	2,3	3,1		2,5	2,6
Ireland	1,6	0,3	2,1		0,9	1,1
UK	0,8	0,3	2,9		0,5	0,9
EU	2,4	2,1	3,2		2,2	2,4
CEEC Average	2,7	1,2	4,1		2	2,4
Slovenia	3,4	2,4	4,8		2,9	3,5
Estonia	3,1	1,4	4,1		2,3	2,6
Slovakia	2,6	1,4	4,4		2	2,4
Czech Rep	2,8	0,5	4,3		1,7	2,1
Poland	2,2	1	3,9		1,6	2
Hungary	2,1	0,6	3,4		1,4	1,7

Source: Ribaud et. al 2002

*"Regular" refers to Employment Protection (EP) of standard contracts; "Temporary" to EP of temporary contracts; "Collective" to regulations concerning collective dismissals; RT – is the combination of the first two' RTC – of all three.

**The bigger the number the more legally rigid is the labour market, the scale is 0-6.

4.4 Regional differences and mobility of labour

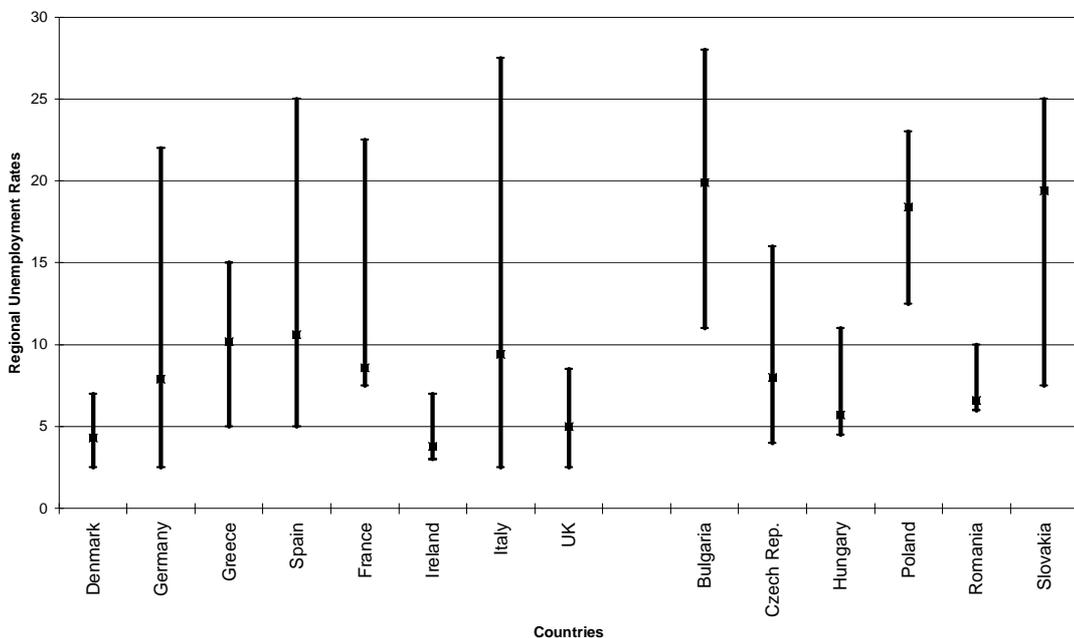
Regional variation of unemployment rates in candidate countries does not seem bigger then in current EMU and EU member states. Regional variations in such countries as Italy and Spain are much bigger than in any even most severely heterogeneous candidate countries, which are in this respect comparable to Germany or France. In Western Europe (with exception of Belgium), however, regional serious disparities may be observed practically only in territorially large states.

On the other hand, in Eastern Europe Bulgaria and Slovakia, which can not be considered as big, are characterised by most severe disparities.

This is obviously related to much lower population's mobility in candidate states, the simplest explanation for each lies in the worse transportation infrastructure, underdeveloped housing market and lower GDP per capita. The comparison of Figures 18 and 19 clearly shows that regional differences are strictly correlated with immobility. With Belgians, Spaniards and Greeks being both the least mobile nations in Europe, and their countries suffering with highest regional disparities. Taking this into account it seems that immobility of labour force in candidate countries may be a big problem of their labour markets in nearest future. It is, however, quite hard to say whether joining the EURO area will result in this problem being more serious then currently. As suggested by Slotwedel, Dohse and Boden (1999). it might become a problem if joining the EMU requires unjustified harmonisation of labour market institution between regions and countries.

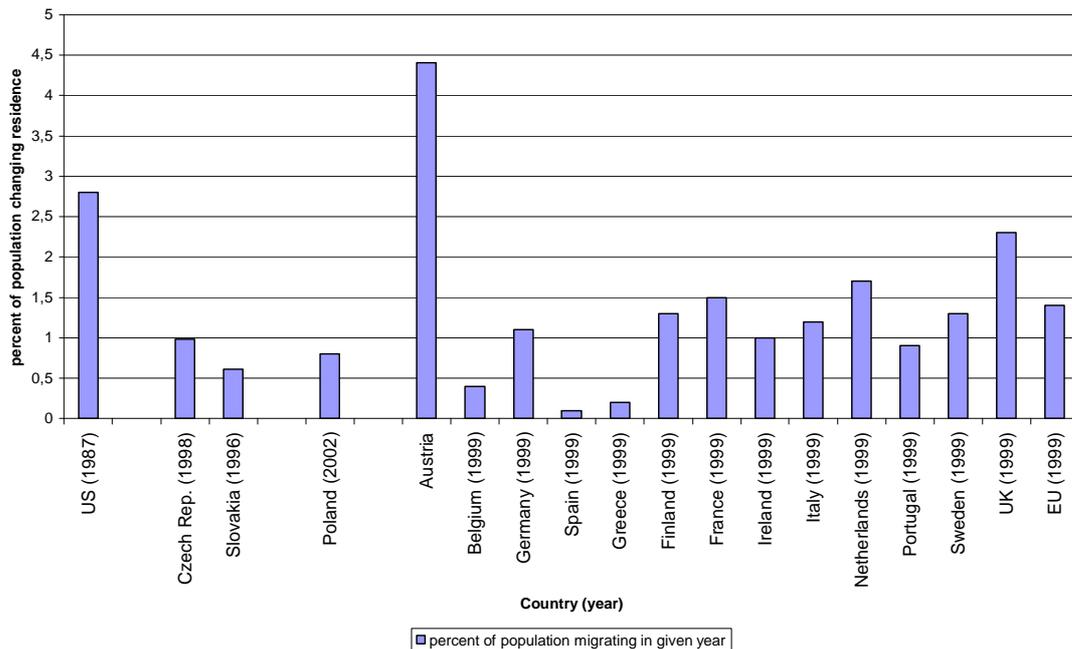
Unfortunately we do not have data on regional unemployment disparities and mobility for all 6 countries we analyse. Data for Lithuania and Latvia are lacking. What we can observe however is that Slovakia is the country with highest regional disparities and lowest labour force mobility. Regional disparity in Czech Republic is similar to Polish, with the former being much smaller than the latter. It seems to coincide with observed differences in wage rigidities between these countries.

Figure 17. Maximum regional differences in Unemployment Rates in selected Candidate and EU countries. Data for 2001



Source: Employment in Europe 2002. EC Report

Figure 18. Percent of population aged 15-64 changing the residence for various years in selected countries



Source: For US Jackman and Savouri 1998, for Czech Republic and Slovakia Fidrmuc 2002, for Poland own calculation based on LFS II'2002, for the rest of countries Employment in Europe 2002, EC Report.

Note: Data for USA, Czech Republic and Slovakia refer to entire adult population.

5. General Conclusions

Summing up, our analysis indicates that with the exception of Lithuania nominal wages are not flexible in candidate countries, what usually is regarded as the strong evidence against the participation in the EMU. The degree of wage rigidity varies significantly among analysed countries. It seems, however, that fast productivity growth create the environment in which unit labour can adjust despite nominal stickiness and through moderation of real wage dynamics. This structural feature would remain crucial after accession to the EMU. It is also quite possible that change of monetary regime would result in more nominal wage flexibility as suggested by example of Lithuania.

Inflationary surprises proved to play important role in adjustments to major adverse shocks triggering real wage adjustments that were not fully reversed afterwards. On the other hand, however, our analysis indicates that at normal times the discretionary monetary policy was more often a shock generator than shock absorber.

Nominal exchange rate movements played some role in the adjustment after the Russian crisis. In all other times, in spite of their short term impact on real exchange rates they did not seem to be correlated with labour market situation. It is therefore our impression, that theory of OCA theory does not shed much light about possible unemployment consequences of EMU membership, in particular as shocks of such depth and degree of asymmetry against current EMU

members as Russian crisis are rather unlikely to repeat, even though large fluctuation in EURO/USD exchange rates may imply severe adjustment problems for some candidate countries.

Finally, experience of countries of most favourable unemployment dynamics suggest, that unit labour costs falling in the long run provide the best insurance against adverse economic shocks. There is no unanimous evidence that real wage growth lower on average than productivity growth would be more difficult to generate inside rather than outside monetary union¹⁶. Moreover, if bargaining is increasingly taking place at the European level, it is generally favourable for countries with better than average productivity dynamics, such as candidates countries, as low real wage dynamics might be imported from slow growing mature economies. This optimistic conclusion is obviously reversed if levels rather than dynamics of wages in existing EMU members start to influence wage bargainers in candidate countries.

There is some prima face evidence for relationship between some institutional and structural characteristics of candidate countries labour markets and observed wage flexibility. The most clear evidence has been found in case of bargaining structure, where especially bargaining coverage rate seemed to be positively correlated with wage rigidity. Limited evidence has also been found in case of employment protection and labour force mobility. No evidence could be found in case of tax wedge. However, results of this supplementary part of our research can not be treated as conclusive. They show to some extent possible fields for further more rigorous and in-depth research.

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¹⁶ Discussion of the impact of EMU participation on wage bargaining patterns is only mentioned due to the strict focus on labour market elasticity. The topic might be investigated in more details in subsequent papers.

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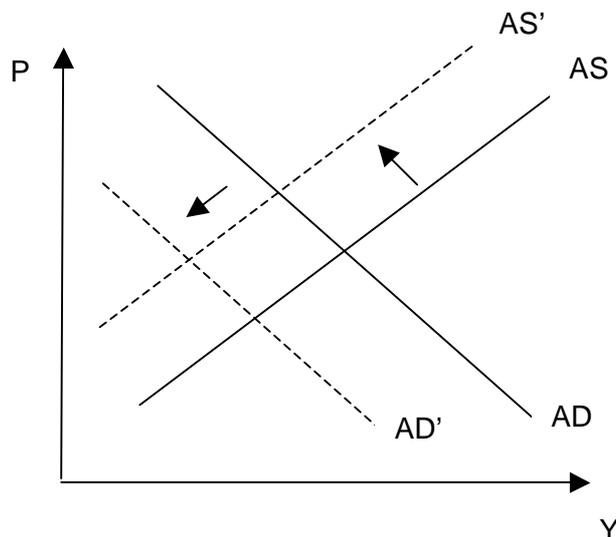
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Annex. Potentially destabilising capital good flows

Another interesting and highly controversial question is whether capital movements can substitute for all other missing adjustment channels. Positive answer would be very encouraging as high capital mobility characterises existing EMU members and increasingly also candidate economies. Unfortunately, we hold opposite view. In our understanding capital mobility might actually aggravate asymmetries in economic performance among EMU member states characterised by high labour market rigidities. It should be noted here, that unlike many other authors we define capital mobility as the actual international mobility of fixed assets (physical stock as machines and equipment) rather than simply financial flows in the balance of payment.

The simple rationale for potentially destabilising role of such defined capital flows is illustrated in the Figure 1A with initial equilibrium as defined in the section one of the main body of this paper. As the demand for country's products falls, capital operates below its full capacity and the real return on invested assets is diminished. This prompts capital outflow which reduces production potential of the economy and therefore shifts the aggregate supply curve to the left. If we assume that nominal wages are downward rigid the fall in output is therefore even more pronounced under capital mobility and given lack of international labour mobility, the increase in unemployment is even larger. High capital mobility seems to be another reason for enhanced labour market flexibility, rather than a substitute for it¹⁷.

Figure A1. Negative trade shock and capital outflow



¹⁷ This insight is confirmed by the experience of economically depressed regions characterized by rigid wages as Southern Italy or Eastern Germany. These regions fail to attract fixed asset investment but their external imbalances are financed through fiscal transfers. In the international context, portfolio capital inflow can indeed finance current account deficits of Hungary, however the fixed asset investments would be negative aggravating the underlining competitiveness problem. This negative impact might be particularly important in case of shocks of longer duration. This story is also in line with seminal contribution from Krugman and Venables(1995).

Below we present a simple microeconomic model that supports the thesis that high capital mobility might provide another justification for enhancing nominal wage flexibility, rather than to substitute for it. This is particularly so in the context of monetary integration and low international migrations.

A small open economy that considers joining the monetary union is characterised by the simple Cobb-Douglas production function:

$$Y = AK^\alpha L^{1-\alpha}$$

where Y is output, K is capital stock, L is employed labour, A measures total factor productivity and $\alpha \in (0,1)$ is the elasticity of substitution between two factors of production. Labour force is fixed as international migrations are zero. Capital stock is a physical good that can be employed domestically and in the case of capital immobility is fixed within the country. Profit maximisation implies that remuneration of two factors of productions corresponds to their respective marginal productivities:

$$\frac{W}{P} = MPL = (1 - \alpha) \cdot AK^\alpha L^{-\alpha} \quad (1)$$

$$\frac{R}{P} = MPK = \alpha \cdot AK^{\alpha-1} L^{1-\alpha} \quad (2)$$

where R is nominal rental cost of capital, W is nominal wage and P is domestic product price expressed in the domestic currency units. We also assume that union (and world) aggregate price level expressed in union currency is P^* , wage level is W^* and rental price of capital is R^* . We assume further the equilibrium relative price of domestically and foreign produced good is S so that:

$$P = SEP^* \quad (3)$$

where E is the nominal exchange rate. When capital stock is internationally mobile, the rental cost of capital in different countries must be equalised, so that:

$$R = ER^* \quad (4)$$

For simplicity we assume that union price level and rental price of capital P^* and R^* are fixed. We combine equation (1) and (2) to get the equilibrium condition in the labour market (1'). Equilibrium condition in capital good market is expressed by equation (2') when capital is immobile across borders and (2'') when capital is mobile. The former is just alternative restatement of (2),

the latter is derived as a combination of (2) and (4). Lower cases denote respective upper case variables but in logarithms and as deviations from the initial equilibrium values.

$$w = a + s + e + \alpha(k - l) \quad (1')$$

$$r = a + s + e - (1 - \alpha)(k - l) \quad (2')$$

$$0 = a + s - (1 - \alpha)(k - l) \quad (2'')$$

Economic interpretation of these equations is obvious and will be discussed when we analyze patterns of adjustment to country specific shocks. One shock has supply side character and is captured as a change in productivity level A . Change in S reflects possible trade shock that modifies equilibrium relative price between domestic and foreign goods. Positive s implies an improvement in terms of trade.

We consider four cases. We always assume that nominal rental cost of capital is perfectly flexible and labour is internationally immobile. What distinguish scenarios are assumptions about zero/full capital mobility and flexibility/rigidity of nominal wages. Under each scenario we discuss adjustment mechanisms within the monetary union and with flexible exchange rates.

Four cases of adjustment

		Nominal wages	
		flexible	rigid
International capital mobility	zero	1	2
	full	4	3

A1. Capital is internationally immobile and nominal wages are flexible

When capital is internationally immobile and wage flexible, equilibrium conditions corresponding to equations (1') and (2') are respectively:

$$w = a + s$$

$$r = a + s$$

when the country is part of the monetary union. When depreciation of the domestic currency is possible two conditions collapse into one:

$$e = -(a + s)$$

Within the union both nominal rental cost of capital and wages fall to offset the negative productivity shock and/or deterioration in the terms of trade. While the same adjustment could be achieved through nominal exchange rate appreciation if the country remained outside the union, the monetary regime is not of consequence for this economy with flexible wages. Nominal wage and exchange rate flexibility are substitutes.

A2. Capital is internationally immobile and nominal wages are downward rigid

As wages are fixed, the only variable that can equilibrate the system is employment. Equations corresponding to (1') and (2') are respectively:

$$r = \frac{a + s}{(1 - \alpha)}$$

$$L = \frac{a + s}{(1 - \alpha)}$$

As a result unemployment emerges. We note that the fall in rental cost of capital is now higher than in case of flexible wages. It is because effects of initial shocks on the marginal product of capital are strengthened by lower labour input. However, this fall in rental price of capital has also the role of cushioning the severity of unemployment as we will clearly show in case 2.

For country with rigid nominal wages, possibility of depreciation is quite attractive as adjustment can be achieved without falling employment. Again there is only one equilibrium condition for both labour and capital markets.

$$e = -(a + s)$$

A3. Capital is internationally mobile and nominal wages are downward rigid

Unlike in the first two cases, the capital is now mobile; therefore it flees the country with the lower rental cost of capital. Labour market equilibrium equation (1') and equation (2'') that expressed international equalisation of rental cost of capital imply jointly that:

$$k - l = -\frac{a + s}{\alpha}$$

$$k - l = \frac{a + s}{(1 - \alpha)}$$

This system of two equations does not have a solution and in economic terms is implosive: capital outflow and employment reduction are reinforcing. As labour market adjustment requires increase in capital/labour ratio through employment reductions and capital market adjustment requires decrease in capital/labour ratio through capital outflows, the economy is constantly shrinking. Potential disaster can be avoided only if at some point nominal wages start to fall or the country drops out of the monetary union or suspend free capital mobility. The mobile capital therefore makes creation of the monetary union in the area of very rigid nominal wage potentially dangerous.

If a depreciation of the currency is possible, equation (1') and (2'') can be solved readily:

$$e = -\frac{a + s}{(1 - \alpha)}$$

$$k = \frac{a + s}{(1 - \alpha)}$$

Unemployment is avoided. It should be noted, however, that the depreciation necessary to retain the full employment is higher than in the case of no capital flows. Restoring competitiveness of domestic workers is more difficult now, as their work is supported with less fixed assets due to capital outflow. Aggregate output is also reduced.

A4. Capital is internationally mobile and nominal wages are flexible

In the case 3 we showed that international capital mobility aggravates strongly unemployment costs of absolute downward nominal wage rigidity. In this section we show that capital flows require deeper cuts in wages. Equations (1') and (2'') have now the following form:

$$w = \frac{a + s}{(1 - \alpha)}$$

$$k = \frac{a + s}{(1 - \alpha)}$$

As we have seen before, the capital is leaving the country in response to the negative shock, what further reduces marginal product of labour. In order to sustain the full employment, wages need to fall more than it was the case without capital mobility. High capital mobility requires higher wage adjustment and again leads to the fall in output. However, unlike in the case of rigid wages, it does not lead to downward spiral in employment and product. Finally, wage flexibility proves to be the perfect substitute for nominal exchange rate flexibility also under the full capital mobility (compare effects of depreciation under case 3).

Summary

The simple theoretical framework presented above does not discuss and is not intended to question numerous benefits of international capital flows that include supporting the catching up process and ensuring static and dynamic efficiencies. It shows solely that capital is very unlikely to flow to countries (or regions) in depressed economic condition. Returns on investments tend to be

low in these unfortunate areas and capital is not altruistic. Capital mobility can therefore aggravate rather than offset negative asymmetric shocks. However this is the rigidity in labour markets that make this normal profit maximising behaviour potentially dangerous for economic stability. The lesson for policy makers is that capital markets would punish rather than substitute for neglected labour reforms and this is particularly true within the monetary union.