

# Unit labour costs, exchange rates and responses to the crisis in CESEE

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After a sharp (about -40%) drop in foreign trade during the 2008-2009 crisis, the ongoing economic recovery in most Central and East European countries (CEECs) has been associated with a strong revival of exports.<sup>1</sup> By mid-2010 the pre-crisis export levels have been reached again in most CEECs. External demand recovered, but what have been the internal driving forces of CEECs' current export revival and what strategies follow the individual countries in order to restore/maintain/foster competitiveness? This note looks at recent developments of *Unit Labour Costs* (ULC) in the region and analyses the individual components of labour cost competitiveness. Different responses to the crisis, productivity developments and the role of the exchange rate regime are discussed as well.

Rapidly rising unit labour costs (and thus deteriorating cost competitiveness) have been a characteristic feature of most CEECs during at least the previous decade. Aggregate international ULC (at GDP level, adjusted for the exchange rate – see Box 1 for definitions) have nearly doubled in the majority of countries since 2000, irrespective of the exchange rate regime (Figure 1). There have been two major exceptions to this trend: Poland (with a floating exchange rate) and Slovenia (with a traditionally stable exchange rate and a 'fixer', using the euro since 1 January 2007). In both countries, the exchange-rate adjusted ULC increased by less than 30% between the years

2000 and 2010.<sup>2</sup> During the boom years immediately preceding the crisis (2005-2008), ULC were growing at double-digit average annual rates in the majority of CEECs (and even faster in Russia and Ukraine), exceptions being Hungary (5.6% p.a.) and Slovenia (1.8%). As the only country in the region, Slovenia even managed to improve its competitive cost position relative to Austria in that period (the latter's ULC grew slightly faster, by 2.5% p.a. during the period 2005-2008). The international competitive cost position (relative ULC) of all other CEECs deteriorated as their ULC grew much faster than in Austria in that period. Obviously, such developments cannot be sustainable in the medium and long run – although the CEECs' ULC levels are still relatively low: according to our estimates less than 50% of the Austrian level in 2010, with the exception of Slovenia and Croatia (Figure 2).

The global crisis resulted in a temporary and uneven (both across countries and in time) fall in ULC during 2009-2010. It is interesting to note that the time pattern of individual countries' ULC adjustment differed – not least according to their exchange rate regime. In countries with *floating exchange rates* (the Czech Republic, Hungary, Poland, Romania, Russia and Ukraine – 'floaters'), ULC dropped in 2009 as compared to 2008 (by as much as 15% in both Poland and Ukraine) – largely thanks to a devaluation of the national currency (see Figure 3). On the other hand, countries with *fixed exchange rates* (either on a currency board such as Bulgaria, Estonia, Latvia and Lithuania or using the euro such as Slovenia, Slovakia and Austria – 'fixers') have been deprived of the devaluation option. This lack of exchange rate flexibility initially resulted in an increase in their ULC in 2009 (by as much as 15% in Bulgaria, 10% in Slovakia and Slovenia, 5.6% in Austria) as their GDP and aggregate labour productivity (GDP per employed person) was falling while wages increased (the latter with the exception of the Baltic States). A – partial – restoration of competitiveness (a reduction of ULC) is expected only for 2010 in

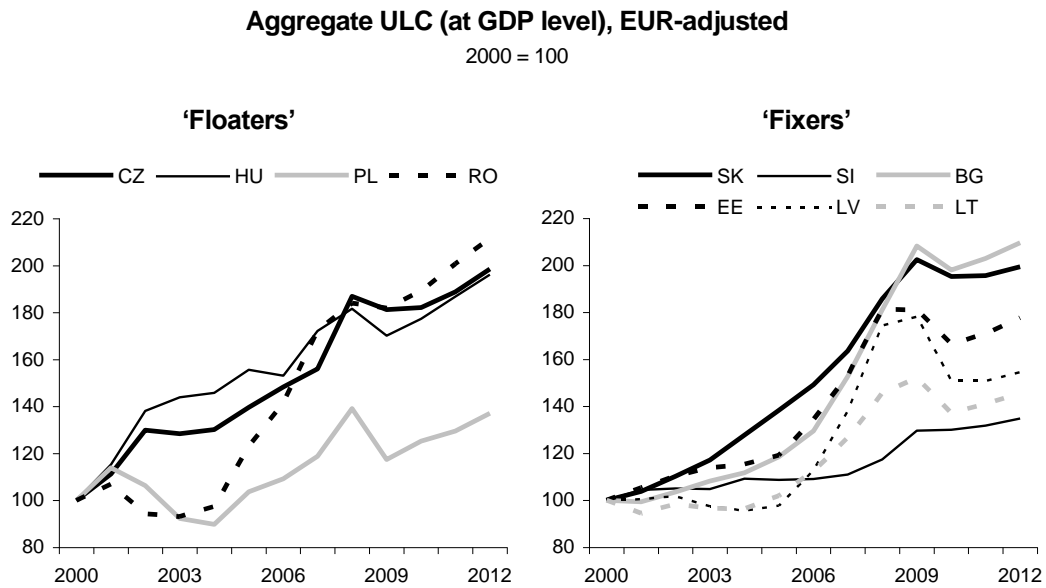
\* The author thanks Kazimierz Laski and Robert Stehrer, both wiiw, for valuable comments.

<sup>1</sup> See V. Astrov, M. Holzner, K. Laski, L. Podkaminer et al. (2010), 'Will Exports Prevail over Austerity?', *wiiw Current Analyses and Forecasts*, No. 6, July.

<sup>2</sup> For detailed data, also for other countries in the region, see Table 1.

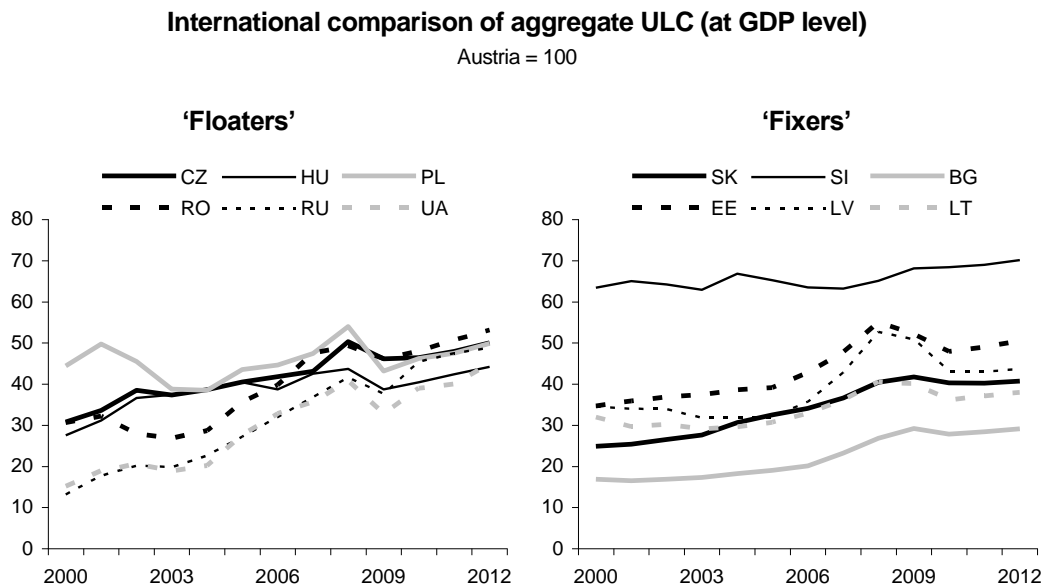
countries with fixed exchange rates (as opposed to Figure 1

an increase in ULC expected for the 'floaters').



Source: Author's estimates based on wiiw Database incorporating Eurostat and national statistics; forecasts: wiiw.

Figure 2



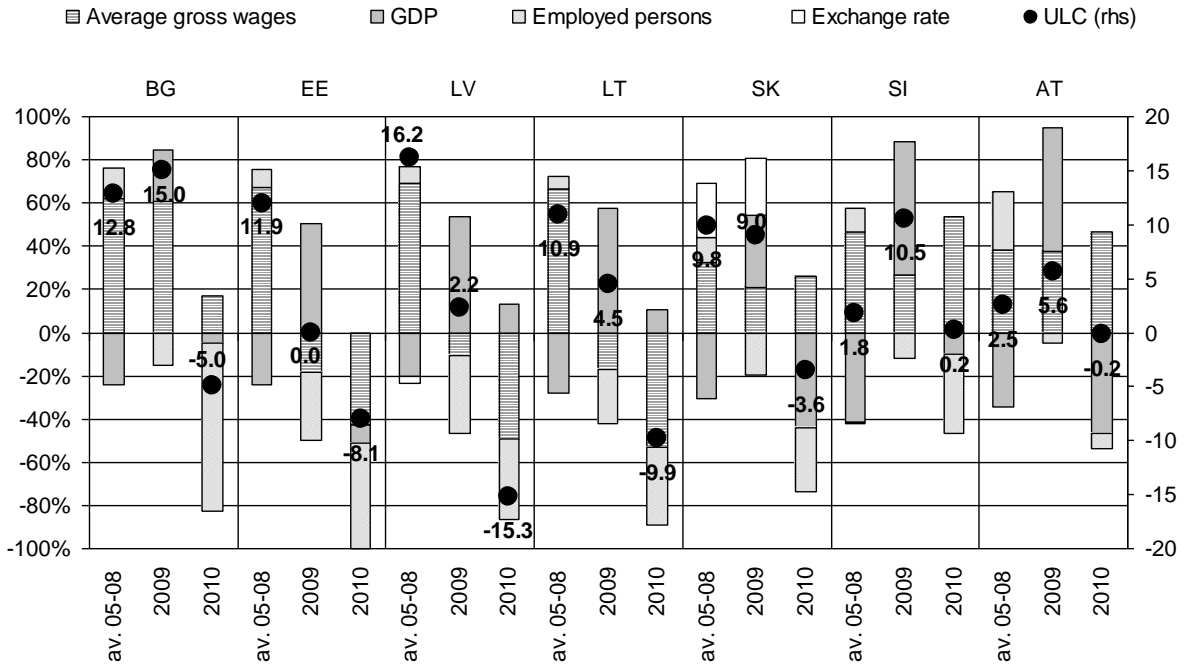
Source: Author's estimates based on wiiw Database incorporating Eurostat and national statistics; forecasts: wiiw.

Apart from the varying spatial and time dimension of ULC adjustments between 'floaters' and 'fixers', it is also interesting to look at ULC adjustment patterns by their individual components (apart from the exchange rates these are wages and labour productivity, the latter decomposed into changes in output and employment – see Box 1 for details). As mentioned above, countries with flexible exchange rates managed to reduce their ULC in 2009 to a large degree thanks to exchange rate adjustments

(currency depreciations). The latter usually more than compensated the adverse effects of declining labour productivity. Labour productivity dropped due to the falling GDP while employment cuts were initially kept in check. 'Competitive' devaluations even permitted a modest increase in nominal wages in some countries (Poland and Ukraine are extreme examples where devaluations captured most of ULC adjustment in 2009 – see Figure 3, 'floaters').

Figure 3

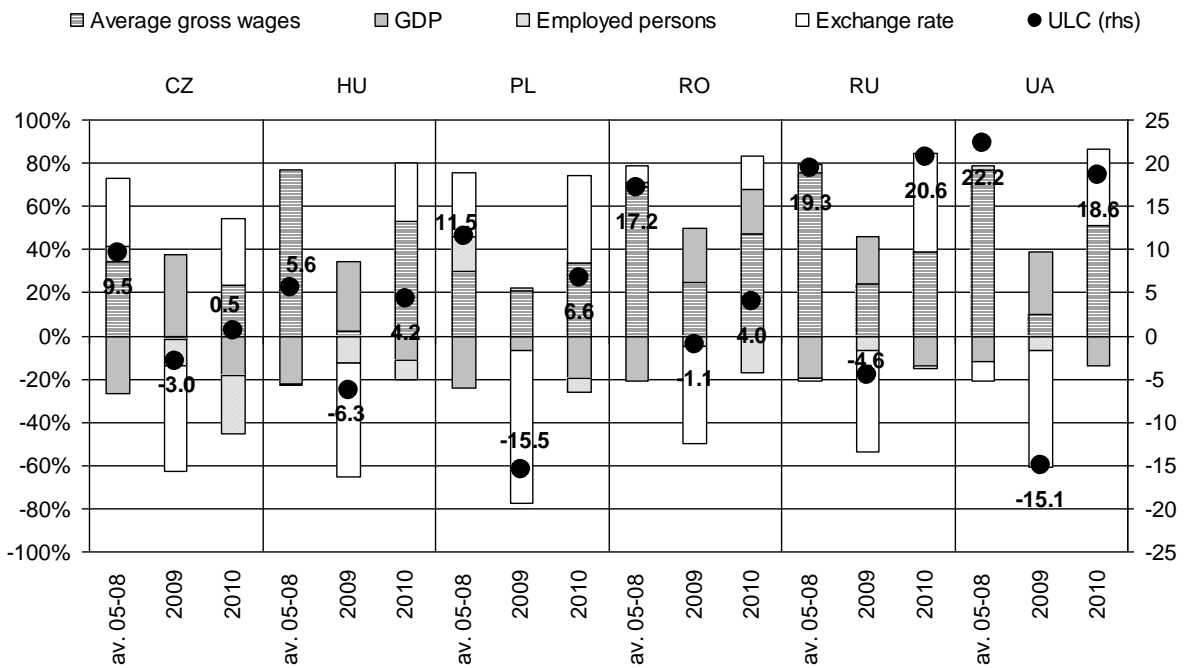
**ULC growth and contributions of main components average annual changes in %, 2005-2010  
'Fixers'**



Source: wiiw Annual database incorporating national statistics and Eurostat

Figure 4

**ULC growth and contributions of main components average annual changes in %, 2005-2010  
'Floaters'**



Source: wiiw Annual database incorporating national statistics and Eurostat

Box 1 *Definition of Unit Labour Costs (ULC)*<sup>3</sup>

Assuming that individual ULC components are defined on a comparable basis (in time and across countries/industries, respectively, or both), ULC can be defined as follows:

$$ULC = LC / LP$$

where LC are labour costs or gross wages (per employed person) and the labour productivity (LP) is defined as real output per employed person:

$$LP = OUT / EMP$$

Thus, unit labour costs can be rewritten as:

$$ULC = LC/LP = LC / (OUT / EMP) \quad (1)$$

Accordingly, any change ( $\Delta$ ) in unit labour costs ( $\Delta ULC$ , measured either in logarithm or per cent) can be decomposed in the following way (time or country subscripts are omitted):

$$\Delta ULC = \Delta LC - \Delta LP = \Delta LC - \Delta OUT + \Delta EMP \quad (2)$$

ULC will rise (that is, labour cost competitiveness will decline) when the labour cost increase is higher than the corresponding increase in productivity and *vice versa*. In turn, productivity changes are determined by the relative growth rates of output and employment: For instance, LP will increase if (real) output growth is faster than employment growth. And, with given labour costs, this will lower ULC and increase the cost competitiveness of the respective country or industry. Formula (2) is basically valid for comparisons in both time (ULC growth rates) and across countries (ULC levels).<sup>4</sup> In practice, it is much easier to compare growth rates rather than levels (especially productivity level comparisons are problematic) since the available statistical data tend to be more consistent over time than across countries.<sup>5</sup> In international ULC comparisons over time, the 'national' ULC in formula (2) are frequently adjusted for the relative movements of exchange rates (ER). Labour costs in national currency are therefore converted into euro (at current exchange rates) and fluctuations of exchange rates have an impact on ULC as well.<sup>6</sup> The exchange rate effect has been substantial – see the differences in ULC performance of 'floaters' vs. 'fixers'.

On the other hand, the 'fixers' lack by definition the exchange rate tool for restoring ULC competitiveness and have to resort to other policy instruments: either to cut nominal wages or to reduce employment in order to compensate the falling output (so-called internal devaluation). As Figure 4, 'fixers' shows, it is usually employment which bears the main burden in restoring ULC competitiveness in the absence of exchange rate flexibility (in the Baltic States, nominal wages are being cut as well).

In sum, one can see that flexible exchange rates not only permit a faster ULC adjustment for restoring competitiveness in times of crisis (note that 'floaters' were able to reduce ULC already in 2009), but the country can achieve this with much less adverse effects for employment. This is one of the reasons why it is argued that flexible exchange rates turned out to be the preferable option of exchange rate regime (and countries with this option should not rush to abandon it) in times of crisis.<sup>7</sup>

A similar picture is provided by a decomposition of ULC in industry: in countries with fixed exchange rates, the main burden of ULC adjustment is shared by employment. And even major employment cuts (such as in Slovakia during 2009) do not prevent ULC from rising (Figure 5). The latter policy, that is a major reduction of employment, was 'successful' only in Latvia and Lithuania, and even there at the cost of severe recession. Again, the competitive position of industry in 'floaters' improved in 2009 by a combination of a sizeable exchange rate adjustment and relatively less pronounced employment cuts (Figure 6).

<sup>3</sup> See P. Havlik (2005), 'Unit Labour Costs in the New EU Member States', *wiiw Statistical Reports*, No. 1, for details.

<sup>4</sup> Changes in time ( $\Delta$ ) can be replaced by differences among countries.

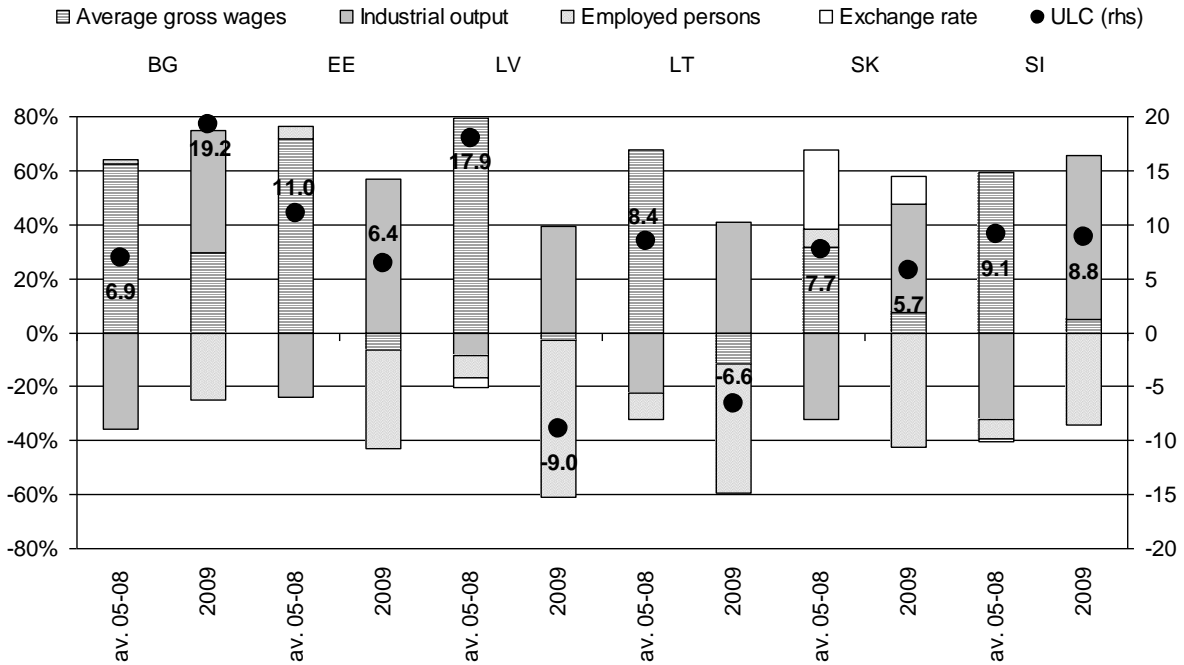
<sup>5</sup> The NMS have witnessed sweeping changes in their statistical reporting methodology during recent years and the time consistency of their data is thus often problematic in comparisons over time as well.

<sup>6</sup> Currency appreciation will push up labour costs expressed in euro and thus ULCs as well; currency depreciation ('competitive devaluation') will lower labour costs in euro and thus reduce ULCs of the respective country. Alternatively, if one is interested in the (domestic) purchasing power of wages, PPPs can be used for the conversion of LC instead of ER. In the absence of branch-specific Unit Value Ratios, productivity levels are usually compared after the conversion from national currency using PPPs.

<sup>7</sup> See K. Laski and L. Podkaminer (2010), 'Long-term growth prospects in Central and Eastern Europe hinge on changes in the basic paradigms of EU economic policy-making', in: V. Astrov, M. Holzner, K. Laski, L. Podkaminer et al., 'Will Exports Prevail over Austerity?', *wiiw Current Analyses and Forecasts*, No. 6, July 2010, pp. 1-22, and M. Landesmann and V. Gligorov (2010), 'Redirecting the growth model in Central and Eastern Europe: Policy issues', in V. Gligorov, P. Havlik, M. Landesmann, J. Pöschl, S. Richter et al., 'Crisis is Over, but Problems Loom Ahead', *wiiw Current Analyses and Forecasts*, No. 5, February 2010, pp. 1-21.

Figure 5

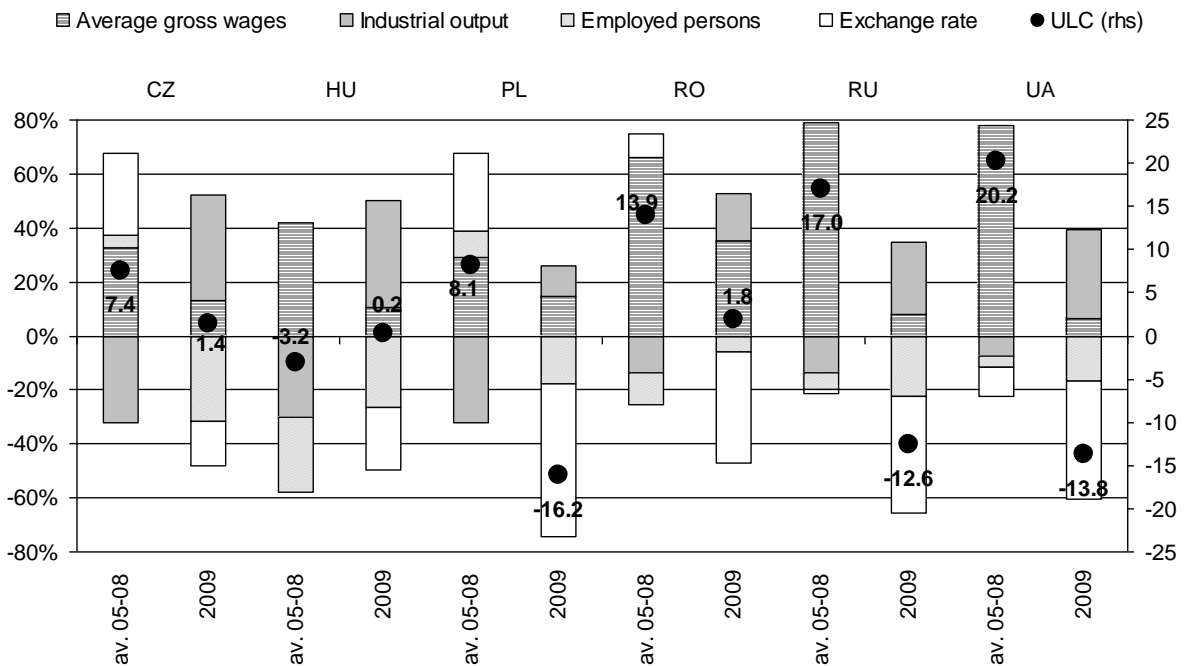
**Industry ULC growth and contributions of main components, average annual changes in %, 2005-2009  
'Fixers'**



Source: wiiw Annual database incorporating national statistics and Eurostat

Figure 6

**Industry ULC growth and contributions of main components, average annual changes in %, 2005-2009  
'Floaters'**



Source: wiiw Annual database incorporating national statistics and Eurostat

Table 1

## Indicators of macro-competitiveness, 2005-2012

annual changes in %

	2005	2008	2009 prelim.	2010	2011 forecast	2012	2005-08 average
<b>Bulgaria</b>							
GDP deflator	3.7	11.3	4.5	2.6	3.3	3.2	7.8
Exchange rate (ER), EUR/NC	-0.1	0.0	0.0	0.0	0.0	0.0	0.0
Real ER (CPI-based)	3.7	8.0	1.5	1.2	1.3	1.0	5.5
Real ER (PPI-based)	3.4	4.4	-2.9	1.5	1.8	1.1	5.0
Average gross wages, NC	10.7	21.6	12.8	1.4	3.3	4.8	15.7
Average gross wages, real (PPI based)	2.6	9.7	20.6	-1.2	0.0	1.6	5.6
Average gross wages, real (CPI based)	4.4	8.7	10.1	-1.6	0.3	1.8	6.9
Average gross wages, EUR (ER)	10.6	21.6	12.8	2.5	3.2	3.1	15.7
Employed persons (LFS)	2.0	3.3	-3.2	-6.3	1.6	1.6	3.6
GDP per empl. person, NC at 2000 prices	4.2	2.6	-1.9	6.7	0.8	1.5	2.5
Unit labour costs, NC at 2000 prices	6.2	18.5	15.0	-5.0	2.5	3.3	12.9
Unit labour costs, ER (EUR) adjusted	6.1	18.5	15.0	-5.0	2.5	3.3	12.8
<b>Czech Republic</b>							
GDP deflator	-0.4	1.9	2.6	1.5	2.0	2.6	1.5
Exchange rate (ER), EUR/NC	7.1	11.3	-5.6	1.7	2.0	2.0	6.3
Real ER (CPI-based)	6.5	14.1	-6.0	1.4	2.3	2.5	7.0
Real ER (PPI-based)	3.2	5.2	-3.5	2.1	2.5	2.6	2.8
Average gross wages, NC	5.3	8.5	-0.2	1.3	4.2	5.6	6.9
Average gross wages, real (PPI based)	4.8	8.1	1.3	-0.2	2.1	3.0	5.9
Average gross wages, real (CPI based)	3.6	2.1	-0.9	-0.2	2.2	3.1	3.5
Average gross wages, EUR (ER)	12.7	20.8	-5.8	3.5	5.4	8.2	13.6
Employed persons (LFS)	1.2	1.6	-1.4	-1.5	0.0	1.0	1.5
GDP per empl. person, NC at 2000 prices	5.1	0.8	-2.9	2.5	2.5	2.4	3.8
Unit labour costs, NC at 2000 prices	0.2	7.7	2.7	-1.2	1.7	3.1	3.0
Unit labour costs, ER (EUR) adjusted	7.3	19.8	-3.0	0.5	3.7	5.2	9.5
<b>Estonia</b>							
GDP deflator	5.5	6.7	-0.6	1.5	3.0	4.0	7.5
Exchange rate (ER), EUR/NC	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Real ER (CPI-based)	1.9	6.7	-0.8	-0.3	1.3	2.0	3.8
Real ER (PPI-based)	-2.4	1.7	4.6	0.4	1.5	2.0	1.1
Average gross wages, NC	10.8	13.9	-5.3	-3.5	3.4	5.7	15.4
Average gross wages, real (PPI based)	8.9	5.4	-6.0	-4.9	0.4	1.7	9.4
Average gross wages, real (CPI based)	6.4	3.0	-5.5	-4.9	0.4	1.7	8.4
Average gross wages, EUR (ER)	10.8	13.9	-5.3	-4.0	4.0	5.1	15.4
Employed persons (LFS)	2.0	0.2	-9.2	-4.3	1.8	1.7	2.5
GDP per empl. person, NC at 2000 prices	7.3	-3.8	-5.3	5.1	0.7	1.8	3.1
Unit labour costs, NC at 2000 prices	3.3	18.3	0.0	-8.1	2.7	3.9	11.9
Unit labour costs, ER (EUR) adjusted	3.3	18.3	0.0	-8.1	2.7	3.9	11.9
<b>Hungary</b>							
GDP deflator	2.1	3.8	4.9	2.6	1.9	1.9	3.9
Exchange rate (ER), EUR/NC	1.5	-0.1	-10.3	1.9	1.9	1.9	0.0
Real ER (CPI-based)	2.8	2.2	-7.6	4.5	3.7	2.9	2.7
Real ER (PPI-based)	0.4	-1.6	-2.6	3.5	2.3	1.8	-0.6
Average gross wages, NC	8.8	7.5	0.4	3.7	4.8	5.1	8.1
Average gross wages, real (PPI based)	5.5	2.8	-3.9	1.0	2.9	3.1	4.3
Average gross wages, real (CPI based)	5.1	1.4	-3.5	-0.7	1.3	2.0	2.6
Average gross wages, EUR (ER)	10.4	7.5	-9.9	5.2	6.7	7.5	8.2
Employed persons (LFS)	0.0	-1.2	-2.5	-0.6	1.1	1.1	-0.1
GDP per empl. person, NC at 2000 prices	3.5	1.9	-3.9	1.4	1.4	1.9	2.4
Unit labour costs, NC at 2000 prices	5.2	5.6	4.4	2.2	3.4	3.1	5.6
Unit labour costs, ER (EUR) adjusted	6.7	5.5	-6.3	4.2	5.3	5.0	5.6
<b>Latvia</b>							
GDP deflator	10.1	15.4	-0.8	-3.0	0.9	1.9	13.8
Exchange rate (ER), EUR/NC	-4.5	-0.4	-0.4	0.4	0.0	0.0	-1.4
Real ER (CPI-based)	0.0	10.8	1.8	-4.3	-0.7	0.0	5.4
Real ER (PPI-based)	-1.0	4.5	-1.4	-3.6	-0.6	-0.1	5.3
Average gross wages, NC	16.5	20.5	-3.8	-11.1	0.0	2.4	22.8
Average gross wages, real (PPI based)	7.9	8.1	0.9	-8.3	-0.9	0.5	10.2
Average gross wages, real (CPI based)	9.0	4.5	-6.8	-8.3	-1.0	0.4	12.0
Average gross wages, EUR (ER)	11.3	20.0	-4.2	-11.2	0.0	3.4	21.1
Employed persons (LFS)	1.6	0.6	-12.6	-8.5	0.0	2.2	2.5
GDP per empl. person, NC at 2000 prices	9.0	-5.1	-6.2	5.5	0.0	0.0	4.2
Unit labour costs, NC at 2000 prices	6.9	27.0	2.6	-15.7	0.0	2.4	17.8
Unit labour costs, ER (EUR) adjusted	2.2	26.5	2.2	-15.3	0.0	2.4	16.2

(Table A/3 ctd.)

Table A3 (ctd.)

	2005	2008	2009 prelim.	2010	2011 forecast	2012	2005-08 average
<b>Lithuania</b>							
GDP deflator	6.7	9.7	-2.3	0.0	1.0	2.0	7.8
Exchange rate (ER), EUR/NC	0.0	0.0	0.0	0.1	0.0	0.0	0.0
Real ER (CPI-based)	0.5	7.2	3.1	-1.7	-0.7	0.0	3.1
Real ER (PPI-based)	7.1	11.2	-10.2	-1.0	-0.5	0.0	6.3
Average gross wages, NC	11.0	19.4	-4.6	-6.9	2.1	4.1	17.0
Average gross wages, real (PPI based)	-0.5	1.0	10.3	-7.0	1.1	2.1	5.4
Average gross wages, real (CPI based)	8.2	7.5	-8.4	-6.9	1.1	2.1	10.6
Average gross wages, EUR (ER)	11.0	19.4	-4.6	-7.5	3.6	3.5	17.0
Employed persons (LFS)	2.6	-0.9	-6.8	-4.7	2.2	1.4	1.4
GDP per empl. person, NC at 2000 prices	5.0	3.7	-8.7	3.3	-0.8	1.0	5.5
Unit labour costs, NC at 2000 prices	5.8	15.1	4.5	-9.9	2.9	3.1	10.9
Unit labour costs, ER (EUR) adjusted	5.8	15.1	4.5	-9.9	2.9	3.1	10.9
<b>Poland</b>							
GDP deflator	2.6	3.0	3.6	2.3	2.8	2.4	2.8
Exchange rate (ER), EUR/NC	12.5	7.7	-18.8	5.6	0.0	0.0	6.6
Real ER (CPI-based)	12.5	8.3	-16.4	6.3	0.8	0.5	6.5
Real ER (PPI-based)	8.5	3.9	-12.5	5.4	0.5	0.0	3.9
Average gross wages, NC	3.8	10.1	5.5	4.7	6.5	7.2	6.7
Average gross wages, real (PPI based)	3.3	7.5	1.5	3.7	4.4	5.1	4.9
Average gross wages, real (CPI based)	1.7	5.6	1.4	2.2	3.9	4.6	4.0
Average gross wages, EUR (ER)	16.8	18.6	-14.4	10.2	6.3	7.1	13.6
Employed persons (LFS)	2.3	3.7	0.4	-0.9	0.5	2.0	3.5
GDP per empl. person, NC at 2000 prices	1.3	1.3	1.3	3.7	2.9	1.4	1.9
Unit labour costs, NC at 2000 prices	2.5	8.7	4.1	1.0	3.4	5.7	4.7
Unit labour costs, ER (EUR) adjusted	15.4	17.1	-15.5	6.6	3.4	5.7	11.5
<b>Romania</b>							
GDP deflator	12.2	15.3	2.8	5.0	4.0	5.0	12.9
Exchange rate (ER), EUR/NC	11.9	-9.4	-13.1	0.9	2.4	2.5	2.4
Real ER (CPI-based)	19.4	-5.7	-9.2	4.1	4.8	4.5	6.9
Real ER (PPI-based)	16.1	-1.7	-8.2	4.8	5.0	5.5	8.0
Average gross wages, NC	18.3	26.1	7.2	2.8	5.2	5.9	21.1
Average gross wages, real (PPI based)	9.4	9.4	5.3	-2.1	1.1	0.8	10.0
Average gross wages, real (CPI based)	8.4	16.9	1.5	-2.1	1.1	1.8	13.1
Average gross wages, EUR (ER)	32.3	14.2	-6.9	3.4	8.7	8.0	24.0
Employed persons (LFS)	-0.5	0.2	-1.3	-1.0	0.0	0.5	0.6
GDP per empl. person, NC at 2000 prices	4.6	7.2	-5.9	-0.2	1.5	3.0	5.8
Unit labour costs, NC at 2000 prices	13.0	17.7	13.9	3.0	3.6	2.8	14.5
Unit labour costs, ER (EUR) adjusted	26.5	6.6	-1.1	4.0	6.1	5.4	17.2
<b>Slovakia</b>							
GDP deflator	2.4	2.9	-1.1	-1.0	2.0	3.0	2.3
Exchange rate (ER), EUR/NC	3.7	8.0	3.8	0.0	0.0	0.0	6.4
Real ER (CPI-based)	4.3	8.3	3.7	-0.8	0.3	0.0	7.0
Real ER (PPI-based)	2.9	4.2	0.6	-3.1	0.5	0.0	3.8
Average gross wages, NC	9.2	8.1	3.0	2.1	3.9	5.1	8.3
Average gross wages, real (PPI based)	5.6	5.5	10.3	4.2	1.9	3.0	6.3
Average gross wages, real (CPI based)	6.2	4.0	2.0	1.1	1.9	3.0	4.9
Average gross wages, EUR (ER)	13.2	16.8	6.9	2.1	3.9	5.1	15.2
Employed persons (LFS)	2.1	3.2	-2.8	-2.4	0.0	0.9	2.9
GDP per empl. person, NC at 2000 prices	4.5	2.9	-2.0	5.9	3.7	3.1	4.9
Unit labour costs, NC at 2000 prices	4.5	5.1	5.1	-3.6	0.2	1.9	3.2
Unit labour costs, ER (EUR) adjusted	8.3	13.5	9.0	-3.6	0.2	1.9	9.8
<b>Slovenia</b>							
GDP deflator	1.6	3.8	2.0	1.5	2.0	2.0	2.9
Exchange rate (ER), EUR/NC	-0.3	0.0	0.0	0.0	0.0	0.0	-0.1
Real ER (CPI-based)	0.0	1.8	-0.1	-0.3	0.3	0.0	0.9
Real ER (PPI-based)	-2.5	-2.3	2.4	-2.1	0.5	0.0	-1.2
Average gross wages, NC	3.6	8.3	3.4	2.2	3.4	3.9	5.7
Average gross wages, real (PPI based)	1.7	4.3	4.9	3.2	1.4	1.9	2.5
Average gross wages, real (CPI based)	1.1	2.6	2.5	0.6	1.4	1.9	2.0
Average gross wages, EUR (ER)	3.3	8.3	3.4	2.2	3.4	3.9	5.6
Employed persons (LFS)	0.7	1.1	-1.5	-1.5	0.0	1.0	1.4
GDP per empl. person, NC at 2000 prices	3.8	2.3	-6.4	1.9	2.0	1.6	3.7
Unit labour costs, NC at 2000 prices	-0.2	5.8	10.5	0.2	1.4	2.3	1.9
Unit labour costs, ER (EUR) adjusted	-0.5	5.8	10.5	0.2	1.4	2.3	1.8

(Table A/3 ctd.)

Table A3 (ctd.)

	2005	2008	2009 prelim.	2010	2011 forecast	2012	2005-08 average
<b>Croatia</b>							
GDP deflator	3.3	6.3	3.3	2.0	2.5	2.0	4.3
Exchange rate (ER), EUR/NC	1.3	1.6	-1.6	0.5	0.0	0.0	0.9
Real ER (CPI-based)	2.4	4.0	-0.2	0.7	0.8	0.0	2.2
Real ER (PPI-based)	0.1	3.6	1.8	1.4	1.0	0.0	1.0
Average gross wages, NC	4.4	7.1	2.2	-1.6	4.1	4.1	6.0
Average gross wages, real (PPI based)	1.4	-1.2	2.6	-3.5	1.6	2.0	1.5
Average gross wages, real (CPI based)	1.0	0.9	-0.2	-3.5	1.5	2.0	2.0
Average gross wages, EUR (ER)	5.7	8.7	0.6	-1.0	3.8	4.6	6.9
Employed persons (LFS)	0.7	1.3	-1.9	-2.2	0.0	1.3	1.2
GDP per empl. person, NC at 2000 prices	3.5	1.1	-4.0	0.7	2.0	1.2	3.0
Unit labour costs, NC at 2000 prices	0.9	5.9	6.5	-2.2	2.0	2.8	2.9
Unit labour costs, ER (EUR) adjusted	2.2	7.6	4.8	-1.7	2.0	2.8	3.8
<b>Macedonia</b>							
GDP deflator	3.8	7.3	2.8	0.1	3.0	2.9	5.7
Exchange rate (ER), EUR/NC	0.1	-0.1	-0.1	0.2	0.0	0.0	0.0
Real ER (CPI-based)	-1.6	4.3	-1.9	-1.6	1.3	1.0	0.9
Real ER (PPI-based)	-0.9	3.7	-3.0	-0.8	1.5	0.9	1.4
Average gross wages, NC 1)	2.7	8.7	9.0	-0.1	5.0	5.1	6.0
Average gross wages, real (PPI based)	-0.5	-1.5	16.6	-0.1	1.9	2.1	0.2
Average gross wages, real (CPI based)	2.2	0.3	9.9	-0.1	2.0	2.0	2.4
Average gross wages, EUR (ER)	2.8	8.5	9.1	0.4	4.1	5.9	6.0
Employed persons (LFS)	4.3	3.2	3.4	0.0	1.6	4.7	3.9
GDP per empl. person, NC at 2000 prices	-0.2	1.6	-4.0	1.0	0.4	-1.6	0.8
Unit labour costs, NC at 2000 prices	2.8	7.0	13.6	-1.0	4.6	6.8	5.2
Unit labour costs, ER (EUR) adjusted	2.9	6.8	13.5	-0.8	4.6	6.8	5.2
<b>Albania</b>							
GDP deflator	2.7	4.3	4.1	2.5	1.8	2.4	3.3
Exchange rate (ER), EUR/NC	2.8	0.7	-7.0	-5.7	2.2	7.9	1.0
Real ER (CPI-based)	3.0	0.4	-5.9	-4.6	2.5	7.9	1.1
Real ER (PPI-based)	3.5	0.9	-5.0	-7.6	1.7	8.9	0.6
Average gross wages, NC 1)	5.0	6.0	10.0	3.1	4.0	5.0	11.1
Average gross wages, real (PPI based)	0.1	-0.4	11.8	4.2	2.9	1.9	6.9
Average gross wages, real (CPI based)	2.6	2.6	7.6	0.1	1.9	2.9	8.1
Average gross wages, EUR (ER)	8.0	6.7	2.3	-0.6	4.2	12.0	12.2
Employed persons (LFS) 2)	0.3	-7.9	0.6	-5.4	1.0	1.9	-1.5
GDP per empl. person, NC at 2000 prices	5.4	17.1	3.5	7.5	1.2	1.1	7.8
Unit labour costs, NC at 2000 prices	-0.3	-9.5	6.2	-4.1	2.7	3.8	3.0
Unit labour costs, ER (EUR) adjusted	2.5	-8.9	-1.2	-9.5	4.9	12.0	4.0
<b>Bosnia and Herzegovina</b>							
GDP deflator	4.4	7.4	0.2	0.6	1.1	1.0	6.0
Exchange rate (ER), EUR/NC	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Real ER (CPI-based)	0.8	3.7	-1.4	-1.3	-0.7	-1.0	1.9
Real ER (PPI-based)	.	.	.	.	.	.	.
Average gross wages, NC	6.5	16.6	8.2	-0.3	0.8	1.7	10.4
Average gross wages, real (PPI based)	.	.	.	.	.	.	.
Average gross wages, real (CPI based)	3.4	8.5	8.6	-0.8	-0.2	0.6	5.7
Average gross wages, EUR (ER)	6.5	16.6	8.2	-0.3	0.8	1.7	10.4
Employed persons (LFS) 3)	0.5	4.8	-3.5	-4.6	0.0	0.0	2.8
GDP per empl. person, NC at 2000 prices	3.4	0.9	0.3	5.0	1.0	2.9	2.6
Unit labour costs, NC at 2000 prices	3.0	15.6	7.9	-5.1	-0.2	-1.3	7.6
Unit labour costs, ER (EUR) adjusted	3.0	15.6	7.9	-5.1	-0.2	-1.3	7.6
<b>Montenegro</b>							
GDP deflator	4.3	7.7	2.8	4.3	4.4	3.0	8.4
Real ER (CPI-based)	0.1	3.6	2.4	-0.8	1.3	1.0	1.6
Real ER (PPI-based)	-2.0	7.3	-0.2	3.1	2.8	1.0	2.5
Average gross wages, NC	7.8	22.5	5.6	1.1	4.6	4.4	19.1
Average gross wages, real (PPI based)	5.6	7.5	9.9	-3.1	0.2	1.4	11.3
Average gross wages, real (CPI based)	5.4	14.1	2.1	0.1	1.6	1.4	14.3
Employed persons (LFS)	-4.5	0.6	-2.4	0.7	2.3	0.0	4.0
GDP per empl. person, NC	13.9	14.4	-0.3	2.4	4.2	6.0	12.2
GDP per empl. person, NC at 2000 prices	9.1	6.2	-3.0	-2.4	0.0	2.9	3.5
Unit labour costs, NC at 2000 prices	-1.2	15.4	8.8	3.6	4.6	1.4	15.1
Unit labour costs, ER (EUR) adjusted	-1.2	15.4	8.8	3.6	4.6	1.4	15.1

1) In 2009 wiw estimate (including allowances for food and transport). - 2) Until 2007 registered employment data. - 3) Until 2006 registered employees.

(Table A/3 ctd.)

Table A3 (ctd.)

	2005	2008	2009 prelim.	2010	2011 forecast	2012	2005-08 average
<b>Serbia</b>							
GDP deflator	15.5	12.1	11.8	7.3	4.2	2.8	12.0
Exchange rate (ER), NC/EUR	-12.5	-1.8	-13.3	-8.8	-6.4	-4.3	-2.9
Real ER (CPI-based)	-0.4	5.8	-6.7	-5.1	-4.2	-2.5	5.7
Real ER (PPI-based)	-4.1	3.8	-4.9	-3.3	-3.9	-3.6	3.7
Average gross wages, NC	24.1	17.9	-3.3	6.0	6.1	6.1	22.1
Average gross wages, real (PPI based)	8.7	4.9	-8.5	-1.2	1.8	3.2	9.6
Average gross wages, real (CPI based)	6.8	5.5	-11.0	0.0	2.0	2.0	9.4
Average gross wages, EUR (ER)	8.6	15.7	-16.2	-4.3	0.0	2.2	18.6
Employed persons (LFS)	-6.7	6.3	-7.3	-4.1	0.0	0.0	-0.9
GDP per empl. person, NC at 2000 prices	13.2	-0.7	4.6	5.3	2.0	3.0	6.8
Unit labour costs, NC at 2000 prices	9.6	18.7	-7.6	0.7	4.0	3.0	14.3
Unit labour costs, ER (EUR) adjusted	-4.1	16.5	-19.8	-8.2	-2.6	-1.5	11.0
<b>Russia</b>							
GDP deflator	19.2	18.0	2.3	7.1	7.0	5.7	16.8
Exchange rate (ER), NC/EUR	1.6	-3.9	-17.5	13.2	-2.5	-2.4	-0.4
Real ER (CPI-based)	11.8	5.8	-8.6	18.4	2.6	2.3	8.1
Real ER (PPI-based)	17.6	9.8	-20.5	23.1	5.7	5.2	11.7
Average gross wages, NC	26.9	26.7	9.0	11.3	12.3	11.3	26.4
Average gross wages, real (PPI based)	5.2	4.4	17.5	1.2	2.1	1.2	8.0
Average gross wages, real (CPI based)	12.8	11.1	-2.5	4.5	5.0	4.0	13.5
Average gross wages, EUR (ER)	28.9	21.8	-10.0	26.9	9.3	8.5	25.9
Employed persons (LFS)	1.3	0.6	-2.4	-0.4	0.0	-0.4	1.3
GDP per empl. person, NC at 2000 prices	5.0	5.0	-5.7	4.4	4.2	4.9	5.5
Unit labour costs, NC at 2000 prices	20.9	20.7	15.6	6.6	7.8	6.1	19.8
Unit labour costs, ER (EUR) adjusted	22.8	16.0	-4.6	20.6	5.1	3.5	19.3
<b>Ukraine</b>							
GDP deflator	24.6	28.6	13.6	10.5	9.0	8.0	22.6
Exchange rate (ER), NC/EUR	3.5	-10.3	-29.1	8.7	-4.8	5.0	-3.8
Real ER (CPI-based)	14.9	8.4	-18.6	18.0	2.1	11.2	7.9
Real ER (PPI-based)	15.9	14.4	-21.6	18.8	2.3	11.2	10.6
Average gross wages, NC	36.7	33.7	5.5	12.8	13.5	14.3	32.3
Average gross wages, real (PPI based)	17.2	-1.3	-0.9	2.1	4.1	5.9	10.3
Average gross wages, real (CPI based)	20.5	6.8	-8.9	2.1	4.1	5.9	15.0
Average gross wages, EUR (ER)	41.4	20.0	-25.1	25.4	4.5	21.7	27.3
Employed persons (LFS)	1.9	0.3	-3.7	0.0	0.2	0.2	0.8
GDP per empl. person, NC at 2000 prices	0.8	2.0	-11.8	3.4	4.7	6.0	4.2
Unit labour costs, NC at 2000 prices	35.7	31.1	19.7	9.1	8.4	7.9	27.0
Unit labour costs, ER (EUR) adjusted	40.3	17.7	-15.1	18.6	3.2	13.2	22.2
<b>Austria</b>							
GDP deflator	2.1	2.0	1.8	0.7	0.6	1.4	2.0
Real ER (CPI-based)	0.1	-0.4	-0.5	-0.4	0.1	-0.3	-0.3
Real ER (PPI-based)	-2.0	0.1	-3.9	-0.4	-0.2	-0.6	-0.4
Average gross wages, NC	2.3	3.2	2.3	1.3	1.7	2.3	3.1
Average gross wages, real (PPI based)	0.2	-3.0	10.5	0.6	0.4	0.9	-0.7
Average gross wages, real (CPI based)	0.0	0.0	1.8	-0.1	-0.1	0.6	0.8
Employed persons (LFS)	2.1	1.5	-0.3	-0.2	0.2	0.5	2.2
GDP per empl. person, NC at 2000 prices	0.3	0.5	-3.2	1.5	1.2	1.5	0.6
Unit labour costs, NC at 2000 prices	2.0	2.7	5.6	-0.2	0.5	0.8	2.5
Unit labour costs, ER (EUR) adjusted	2.0	2.7	5.6	-0.2	0.5	0.8	2.5

NC = national currency (including euro-fixed series for euro area countries - SK, SI, AT). ER = Exchange Rate, PPI = Producer price index, CPI = Consumer price index. Positive growth of real exchange rates means real appreciation.

Sources: wiiw Database incorporating national and Eurostat statistics, wiiw estimates. Forecasts by wiiw.