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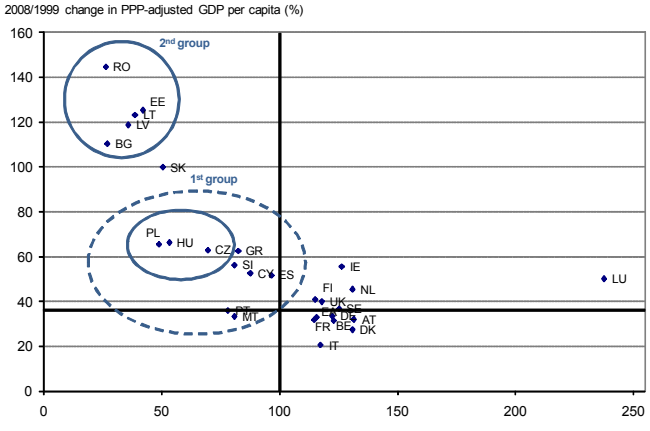
Convergence and "deconvergence" of living standards in the New Member States of the European Union

- Living standards in the New Member States of the European Union (NMSs) converged very rapidly towards the average European standard of living over the first decade of the new century. In many countries in the region, such as the Baltic countries and Bulgaria, GDP per capita adjusted for purchasing power parities (PPP), which is an indicator for comparing living standards between countries, increased by more than 100% between 1999 and 2008, whereas the same indicator for the Member States of the euro area increased by only 30% on average.
- However, the rates of convergence of the NMSs' living standards were not the same over the period under review (1999 to 2008). The NMSs can be divided into two groups according to their path of convergence. The first group is made up of Poland, Hungary and the Czech Republic, where the living standard was the highest in the NMS group in 1999 and where the convergence rate over ten years was slower than in the countries in the second group, made up of the Baltic countries, Bulgaria and Romania.
- The financial crisis seems to have had a major impact on economic growth in the countries of the region, derailing the various catching-up processes under way, especially in the second group of countries that had previously registered rapid convergence. PPP-adjusted GDP per capita declined in all of the NMSs between 2008 and 2009. The countries with fastest convergence rates saw particularly sharp decreases between these two years.
- An extrapolation of PPP-adjusted GDP per capita for 2010 shows that the standard of living resumed its rise in most NMSs between 2009 and 2010, but at a slower pace than during the period from 1999 to 2008. This confirms that a lasting "deconvergence" does not seem to be occurring, but the financial crisis may have hampered the convergence process.
- Once again, the slowdown in increases in living standards in 2010, compared to the previous decade, is more pronounced for the countries of the second group.
- The sharpness of the slowdown in the countries in the second group stems in part from macro-economic imbalances. This should encourage them to adopt more balanced and sustainable growth strategies.

Convergence of the New EU Member States



Source: European Commission

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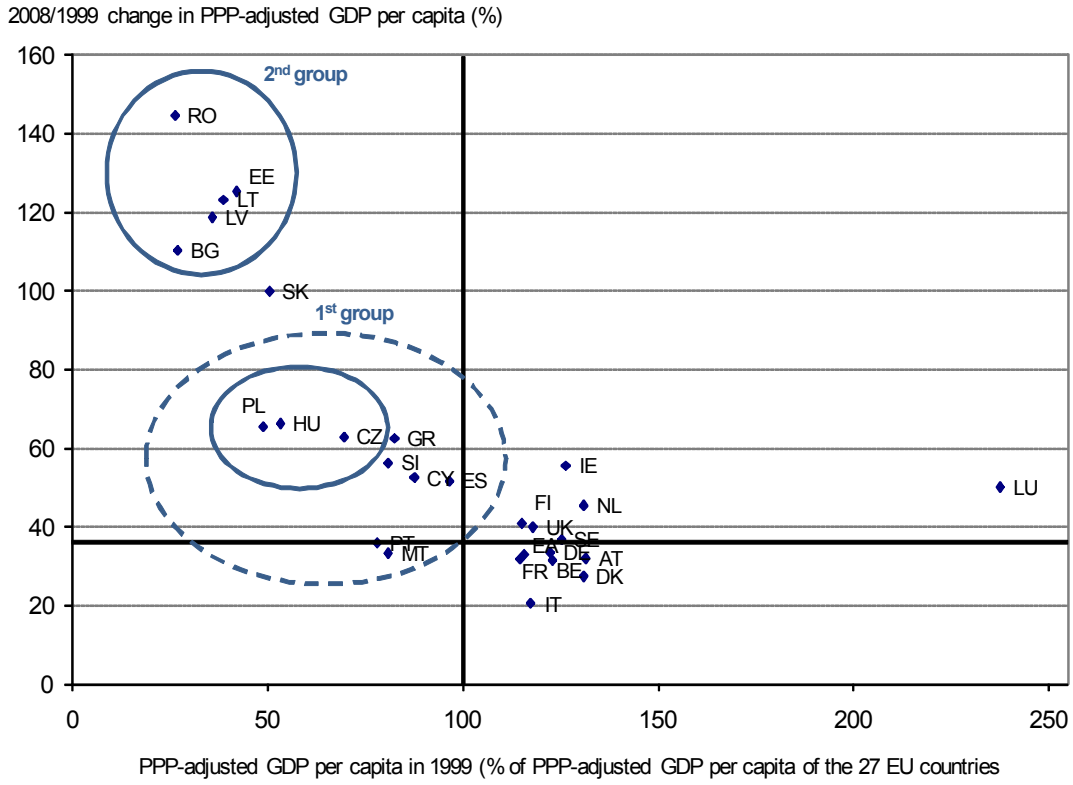
1. Before the crisis, the convergence rate of the NMSs was fastest in the countries with the lowest initial living standards, which is consistent with neo-classical growth theory

The NMSs can be divided into two groups according to their observed standard of living at the end of the nineteen-nineties and their growth over the last ten years (see Chart 1).

The first group is made up of Poland, Hungary and the Czech Republic, where the standard of living in 1999 was the highest in the NMSs and where the convergence rate over ten years was slower than that of the other NMSs. Their average standard of living, measured as PPP-adjusted GDP per capita (see Box 1 below), was approximately 50% or more of that of the European Union (48% for Poland, 53% for Hungary and 70% for the Czech Republic). Their absolute standard of living increased by approximately 60% over ten years to stand at 59% of the EU average standard of living for Poland and Hungary in 2008, and 81% for the Czech Republic (see Chart 1).

The second group is made up of the Baltic countries, Bulgaria and Romania, where the standard of living was low compared to that of the European Union in 1999, but where convergence has been rapid over the last ten years. In 1999, the standard of living in these countries was between 26% of the European Union average in Bulgaria and Romania and 43% in Estonia. Their absolute standard of living rose by more than 100% in ten years, with Romania posting the most rapid increase, seeing its standard of living rise by 143% between 1999 and 2008 (see Chart 1).

Chart 1: Convergence of the New EU Member States



Sources: European Commission

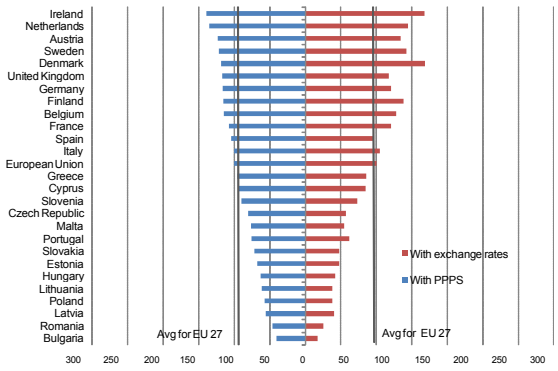
Key: abbreviations: RO Romania, EE Estonia, LT Lithuania, LV Latvia, BG Bulgaria, SK Slovakia, PL Poland, HU Hungary, CZ Czech Republic, GR Greece, SI Slovenia, CY Cyprus, ES Spain, PT Portugal, MT Malta, IE Ireland, FI Finland, NL Netherlands, UK United Kingdom, EA euro area, SE Sweden, DE Germany, FR France, BE Belgium, AT Austria, DK Denmark, IT Italy, LU Luxembourg.
Key: PPP-adjusted GDP per capita of Romania was equal to 43% of PPP-adjusted GDP per capita of the 27 EU countries in 1999 and increased by more than 140% between 1999 and 2008. The bold vertical line represents the average standard of living in the 27 EU countries in 1999. The bold horizontal line represents the change in PPP-adjusted GDP per capita of the 27 EU countries between 1999 and 2008.

Box 1: **GDP per capita at purchasing power parity, criterion for comparing standards of living**

One simple way of comparing countries' standards of living is to compare GDP per capita converted into a common currency. However, the conversion of GDP per capita at market exchange rates fails to eliminate the differences in price levels between them in order to compare real GDP levels. Country X may produce less in real terms than country Y, but have higher prices. Consequently, country X's GDP per capita calculated by conversion to a common currency at market exchange rates would be greater than that of country Y, which is not consistent with the differences between their standards of living (see Chart 2).

To compare actual living standards, the **European Commission and other international organisations (IMF, OECD, UN) convert GDP per capita at purchasing power parities**, which act as exchange rates that adjust for differences in prices. Take two countries, X and Y, with national currencies x and y, respectively. The PPP is the exchange rate at which the conversion of x into y results in the purchasing power of x in country Y being the same as it is in country X.

Chart 2: Comparison of GDP per capita obtained with exchange rates and PPPs in the 27 European Union countries in 2008



Source: DG Trésor calculations

Eurostat calculates PPP in three steps. In the first step, Eurostat selects pairs of similar products in countries X and Y and calculates the relative prices for each pair. In the second step, the products are classified into different groups. A PPP is then calculated for each group of products as an unweighted mean of the PPPs obtained initially for each product. The third step consists of evaluating an overall PPP by calculating the weighted mean of the PPPs obtained for each group of products. The weightings assigned to the groups of products depend on the level of spending devoted to each of them.

The method used to obtain PPPs for each country is simple, **but the choice of products and weightings may be complicated**, resulting in biased PPPs. The products chosen in each country and the consumption patterns identified for weighting purposes must be perfectly comparable. However, some products may be more characteristic of one country than another, and consumption patterns may vary greatly from one country to the next. Furthermore, new PPPs have to be calculated every year, which also requires identification of changes in the supply of products and consumption patterns.

Despite these difficulties, PPP-adjusted GDP per capita is still the best tool for comparing changes in standards of living between countries.

2. The crisis derailed the catching-up process for all of the New Member States, especially the ones with the highest convergence rates between 1999 and 2008

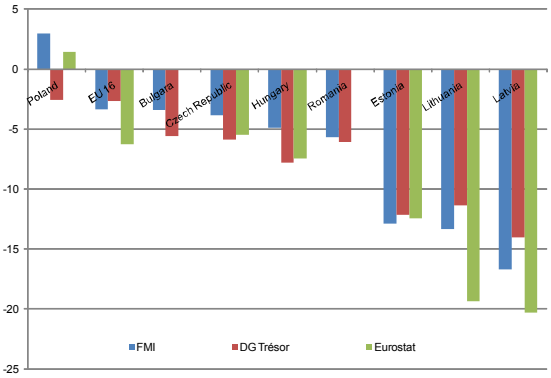
The current economic crisis has hit the NMSs very hard and has probably halted the catching-up process, at least temporarily.

An extrapolation of PPP-adjusted GDP per capita in 2009 (see Boxes 2 and 3) shows that the standard of living in all of the countries under consideration fell in 2009 (see Chart 3). However:

- **The decline in PPP-adjusted GDP per capita between 2008 and 2009 was particularly pronounced for the countries in the second group:** the Baltic countries suffered two-digit declines in their PPP-adjusted GDP per capita (14% for Latvia, 12% for Estonia and 11% for Lithuania). The decline in Romania's GDP per capita was greater than 6%, while Bulgaria was the exception, with a more moderate decline of 5% in its PPP-adjusted GDP per capita.
- On the other hand, the countries in the first group saw smaller declines in their PPP-adjusted GDP per capita between 2008 and 2009, with a drop of 2% in Poland and a decline of 5% in the Czech Republic. Hungary posted the largest decline, with a drop of 7% in its standard of living compared to the rest of the group.

The extrapolation of PPP-adjusted GDP per capita in 2010 show that standards of living were once again rising in most of the NMSs, but not as quickly as between 1999 and 2008. This shows that *lasting deconvergence* does not seem to be occurring, but that the crisis has nonetheless slowed the pace of convergence in the NMSs. This slowdown is, once again, most pronounced for the countries in the second group (see Chart 4). The latter have had more difficulty returning to the convergence path seen before the crisis. For example, Poland and the Czech Republic posted increases of 1.5% and 2.5% respectively in their PPP-adjusted GDP per capita in 2010. This compares to average annual growth rates of 5.7% and 5.5% respectively between 1999 and 2008. The Baltic countries saw their PPP-adjusted GDP per capita rise by an average of 3% in 2010, in contrast to average annual growth rates of 9% between 1999 and 2008. Consequently, the differential between the average annual convergence observed over the past decade and the growth of PPP-adjusted GDP per capita between 2009 and 2010 was greater for the countries in the second group.

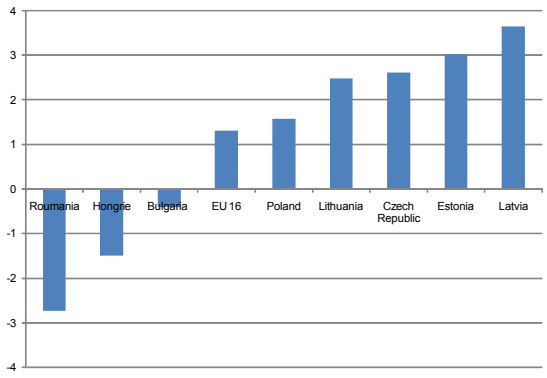
Chart 3: Change in PPP-adjusted GDP per capita of the NMSs between 2008 and 2009 (%)



Source: IMF (World Economic Outlook, April 2010), Eurostat, 2010 forecasts of the European Commission, DG Trésor calculations.

NB : Eurostat does not have PPP-adjusted GDP per capita figures for Bulgaria and Romania.

Chart 4: Change in PPP-adjusted GDP per capita of the NMSs between 2009 and 2010 (%)



Source: Eurostat, 2010 forecasts of the European Commission - DG Trésor calculations

Box 2: **Convergence and Neo-Classical Growth Theory**

Neo-Classical Growth Theory (Solow, 1956) has a helpful property of convergence. When analysed as an empirical research assumption the theory can account for the stylised facts of growth. Convergence means that the lower the initial levels of capital stock and GDP per capita are, the higher the expected growth rate will be. But it is important to specify the nature of this convergence and how it works.

If all economies were intrinsically the same, except for their initial per capita capital intensity, there would be **strict convergence**, meaning that per capita growth in the poorest countries would tend to be faster than in the richest countries and would ultimately catch up to the standard of living of the latter. However, if there are differences between these economies in terms of savings rates, fertility rates, access to technology and government policies, the convergence will be of a different nature. The lower the initial GDP is relative to its steady-state level, as determined by patterns of capital accumulation, technological progress and population growth, the faster the growth rate will be. In this case, convergence means convergence towards the steady-state situation of the economy and not on the situation of the most advanced countries. This is called **conditional convergence**.

In the neo-classical growth model, the property of convergence depends on diminishing marginal returns to capital. Economies with a low level of per capita capital (relative to its steady-state level) tend to have higher rates of return to capital and higher growth rates. Convergence is **conditional** because the steady-state stock of capital and output per capita in this model depend on the savings rate (and investment rate), the population growth rate and the production function, and such characteristics vary from one economy to the next. Recent extensions to the neo-classical model have also suggested including other factors of variation from one country to the next, such as government policies, education and human capital levels (Mankiw, Romer and Weil, 1992), protection of property rights, and even distortions between domestic and international markets.

R. Barro and X. Sala-i-Martin attempted to test the property of strict convergence by studying similar economies, which were actually regional economies in several countries (United States, Japan, Germany, France, Spain, United Kingdom), under the assumption that the different regions of each country under consideration had the same steady state. Their findings show strict convergence within each of the countries studied. The growth rates in the poorest regions of the countries studied were higher over the period under consideration than the growth rates of the most economically advanced regions[a].

Our findings with regard to the New Member States might confirm the authors' findings for the period from 1999 to 2008. The NMSs with the lowest standards of living relative to the average standard of living in 1998 are the ones that showed the most rapid growth of PPP-adjusted GDP per capita between 1998 and 2008. **However, the heterogeneous nature of the NMSs and the disparity of their performances over the recent period make it impossible to find strict convergence, leaving conventional conditional convergence instead**.

a. Source: R. Barro and X. Sala-i-Martin: Economic Growth, MIT Press, 2004

Box 3: **Method for extrapolating PPP-adjusted GDP per capita**

Eurostat provides annual data on PPP-adjusted GDP per capita, but the 2009 data for the countries considered here have not yet been published. Every three years, the OECD publishes a set of PPPs for a benchmark year and proposes obtaining aggregated PPPs for GDP in the intervening years by extrapolation. The PPPs are extrapolated using the inflation rates of the countries under consideration relative to a reference country or geographical zone.

The World Bank's International Comparison Program uses the same method to obtain estimated PPP rates between two benchmark years. "Once the estimations were obtained for the benchmark years, PPPs and the associated PPP-adjusted GDP per capita estimates for both benchmark and non-benchmark economies are extrapolated backward and forward to create time series. For PPPs, this is done using the local rate of inflation (measured by the GDP deflator) relative to the United States, while real GDP and real GDP per capita are extrapolated using growth rates derived from constant price national data"[a]. According to the OECD, this method makes it possible to obtain robust estimates, as long as the extrapolation is made on years that are close to the benchmark year and as long as no major changes occur in the price and spending patterns of the countries under consideration.

The same method was used here to calculate PPP-adjusted GDP per capita in 2009 and 2010 from the 2008 PPPs provided by Eurostat. The 2009 PPPs are extrapolated from the 2008 PPPs first, using the differentials observed between changes in GDP deflators for the countries under consideration in 2009 and the average change in the GDP deflator for the 27 EU countries. This extrapolated PPP was applied to the GDP per capita at current 2008 prices in local currency. Then, the forecasts for real GDP growth between 2008 and 2009 that the European Commission published in the second quarter of 2010 were applied to these figures. The PPPs extrapolated in this manner are in line with those calculated by the IMF. The same method was used to extrapolate PPP-adjusted GDP per capita in 2010.

Table 1: Comparison of euro/local currency PPP rates (local currency units per euro)

	IMF calculations	DG Trésor calculations
Bulgaria	0.8	0.8
Estonia	10.8	10.9
Hungary	168.7	167.6
Latvia	0.4	0.4
Lithuania	2.1	2.1
Poland	2.3	2.4
Czech Republic	17.4	17.5
Romania	2.4	2.1

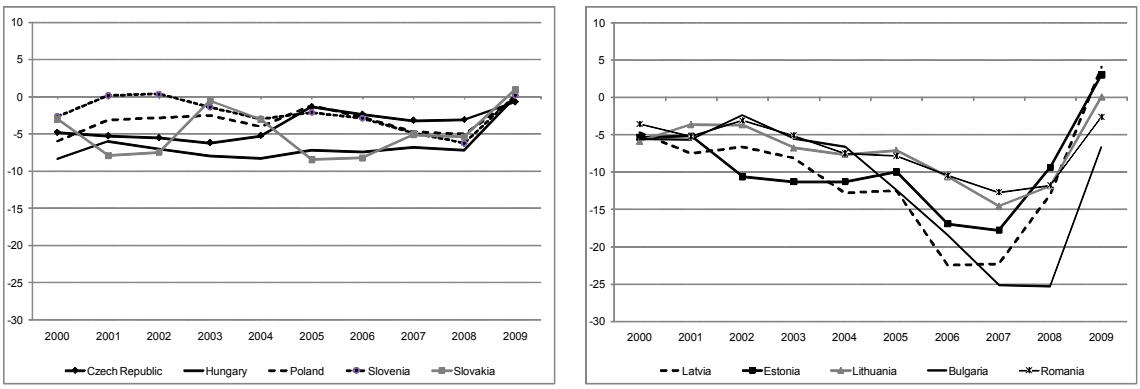
a. Source: Global Purchasing Power Parities and Real Expenditures, 2005 Report, available from the World Bank website: http://site-resources.worldbank.org/ICPINT/Resources/icp-final.pdf

3. The size of the decline in the PPP-adjusted GDP per capita of the countries in the second group in 1999 and their problems in 2009 returning to the pre-crisis convergence rates raises questions about the sustainability of their growth model, which is characterised by deepening internal and external imbalances

Sources: Quarterly national accounts

The countries posting strong growth between 2002 and 2006 ran larger current account deficits than the countries with moderate growth (see Chart 5). Estonia and Latvia had current account deficits standing at more than 10% of their GDP and Bulgaria's stood at 9% of its GDP. On the other hand, the current account deficits of the countries in the first group were not greater than 5% of their GDP, except in the case of Hungary. This difference was even more pronounced in 2007 and 2008, when the current account deficits of the countries with high growth ranged from 10% to 25% of their GDP, much greater than the deficits of the countries in the first group, which were no greater than 10% of their GDP.

Chart 5: Current account balance as a % of GDP



Source: national central banks

These trends reflect the worsening internal balances and competitiveness losses, especially in the Baltic countries.

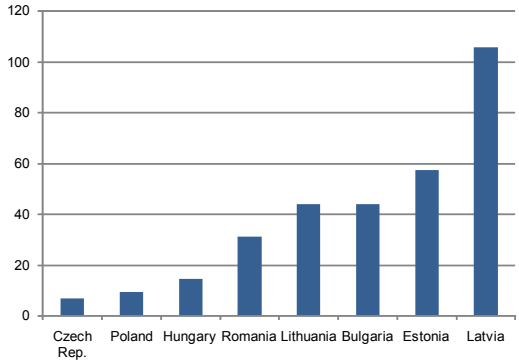
Most of the countries under consideration saw steady rises in their inflation rates year after year between 2005 and 2008. However, the trend was less pronounced in the countries where the convergence rates were more moderate, with inflation rates ranging between 1% and 8%, as opposed to inflation rates between 2% and 16% in the second group of countries, where convergence rates were more rapid.

Furthermore, changes in unit wage costs (UWCs, which are nominal wage costs adjusted for productivity and for all sectors together in this case), show that the hourly cost of labour has risen more rapidly than the hourly productivity of labour in all of the NMSs under consideration, especially in the countries in the second group. The increase in unit wage costs in the countries with strong growth was at least 46% between 2005 and 2008, whereas it was not greater than 23% in the countries in the first group (see Chart 6).

The sector breakdown of unit wage costs between 2005 and 2008 shows that the increase primarily affected the non-traded sector in both groups. However, the increases in unit wage costs in the non-traded sector were offset by decreases in the traded sector in the countries in the first group. Such costs were down by 13% in the Czech Republic and 9% in Poland. In contrast, the increase in the non-traded sector unit wage costs in the countries in the second group came with an increase in unit wage costs in the traded sector, including an increase of nearly 65% in Latvia's manufacturing sector (see Chart 7).

The Balassa-Samuelson effect (see Box 4) explains the unit wage cost trends seen in the countries in the first group and reflects their choice of a growth model with a better balance between their traded and non-traded sectors. On the other hand, the Balassa-Samuelson effect does not seem to come into play in the countries in the second group, which boosted development of their non-traded sector only and consequently accumulated imbalances that are difficult to sustain.

Chart 6: Changes in unit wage costs in the economy as a whole in the NMSs, 2005-2008 (%)



Source: OECD

Box 4: **Balassa-Samuelson Effect**

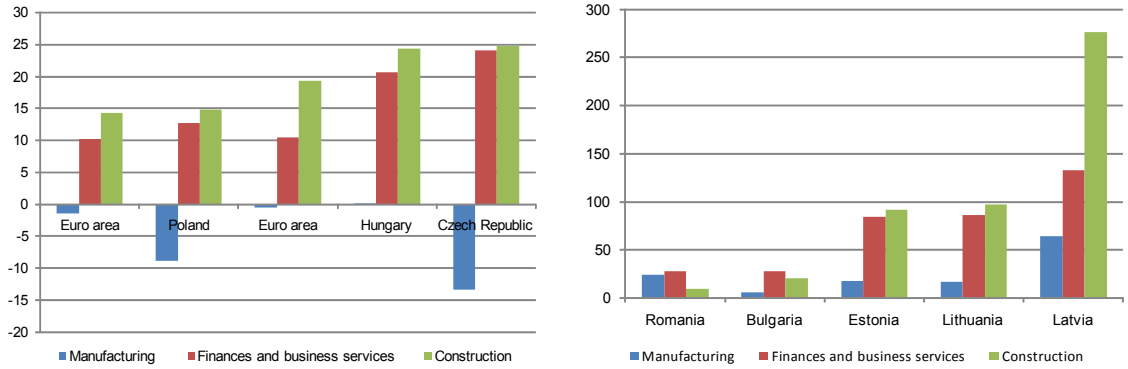
Balassa and Samuelson (1964) explain the differential in price index growth between advanced economies and the economies catching up to them by the productivity differential between the traded and non-traded sectors in the latter economies. Opening up the less advanced economies to international trade leads to productivity gains and higher wages in the traded sector, which does not suffer any net competitive loss. Higher wages then spread from the traded sector to the non-traded sector in these countries. But, productivity gains in this sector do not match those in the traded sector, which leads to higher prices in the non-traded sector.

In terms of unit wage costs, the Balassa-Samuelson effect means that unit wage costs follow similar paths in the traded sectors of both advanced economies and the economies catching up to them (since no country wins market share relative to the others in the steady state) **and that unit wage costs rise sharply in the non-traded sector of the less advanced countries** (since wage increases outstrip productivity gains).

Changes in unit wage costs in the traded and non-traded sectors of the countries in the first group are consistent with the Balassa-Samuelson effect. The changes in wage unit costs in the traded sectors of Poland, Hungary and the Czech Republic are in line with the changes in unit wage costs in the euro area's traded sector, and wage unit costs in the non-traded sectors of the countries in the first group have risen sharply.

On the other hand, changes in unit wage costs in the traded sectors of the second group of countries do not conclusively show that the Balassa-Samuelson effect is at work. Unit wage costs have risen in the traded sector of all of the countries in the second group, whereas unit wage costs have decreased in the euro area's traded sector.

Chart 7: Percent increase in unit wage costs by sector in the NMSs between 2004 and 2008



Source : OCDE[a]

a. The data about changes in unit wage costs for the economy as a whole and by sector in 2007 and 2008 are only partial for Bulgaria and Romania. There is a degree of uncertainty about the changes in unit wage costs shown in Charts 6 and 7 for these countries.

Of the New Member States of the European Union, the Baltic countries, Bulgaria and Romania are among those that achieved the most rapid convergence between 1999 and 2008. However, they were severely harmed by the crisis. Of all of the NMSs under consideration, they saw the biggest declines in their standards of living in 2009 and had more difficulties in 2010 returning to their pre-crisis growth path.

These findings highlight the importance of more sustainable growth. Several indicators, such as the current account balance, inflation and wage costs, show that the growth model of these countries entails worsening external imbalances and a loss of competitiveness, as shown by increases unit wage costs in both their traded and non-traded sectors. Naturally, a current account imbalance is not a problem per se, as long as it is used to finance local investment with high marginal returns and is itself financed by foreign direct investment (FDI) or portfolio investment. Yet, this is not the case in these countries. The level of foreign direct investment is low and it is used primarily to finance real estate. Short-term capital is used to finance the current account deficits, which means that the growth is far from sustainable. On the other hand, the curbs on wage costs in the other New Member States, chiefly Poland and the Czech Republic, reflect the Balassa-Samuelson effect stemming from the faster growth of their export sectors and their choice of a growth model with a better balance between their traded and non-traded sectors.

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