Economy and finance

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# GDP per capita, consumption per capita and comparative price levels in Europe

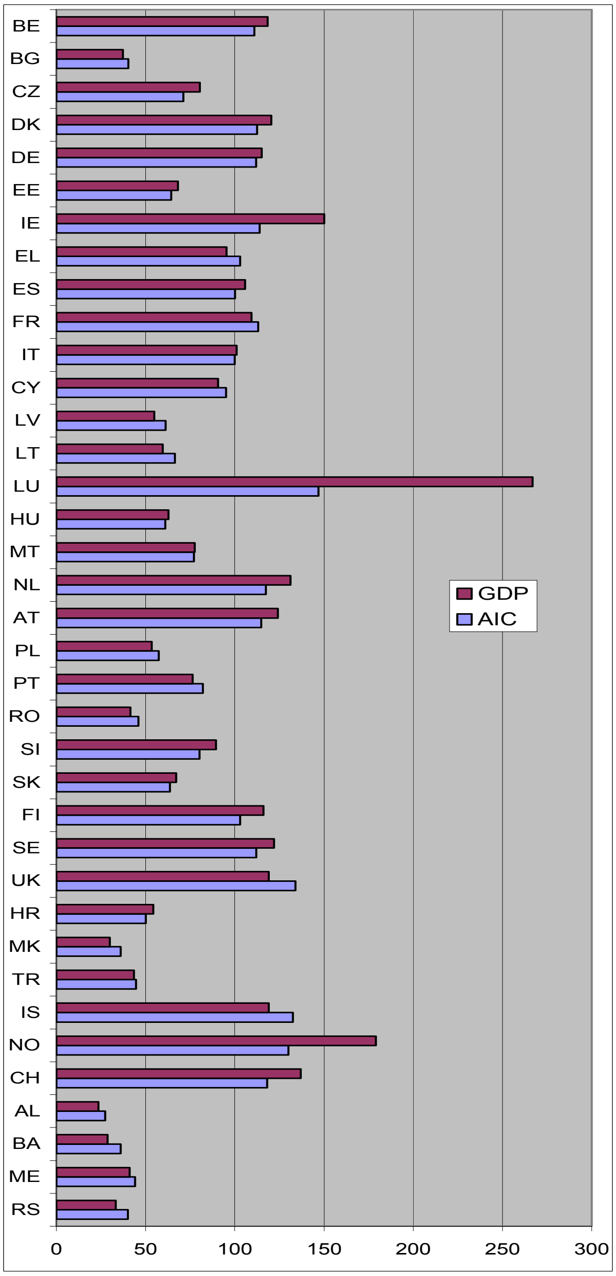
*Final results for 2005 and preliminary results for 2006 and 2007*

**While the trend towards increased convergence of European economies as measured by their GDP per capita is continuing, the income dispersion among the EU Member States remains remarkably high. In 2007, Bulgaria's gross domestic product (GDP) per inhabitant was just 14 percent of Luxembourg's, or 37 percent of the EU total. Luxembourg, Ireland and the Netherlands stand out with the highest GDP per capita in the EU, while Bulgaria has the lowest level among the Member States.**

This article focuses primarily on gross domestic product (GDP) per capita in the 27 EU Member States, but also looks at the level of actual individual consumption (AIC) per capita and at countries' comparative price levels. Furthermore, the analysis covers not only the 27 EU Member States, but also the three EU Candidate Countries (Croatia, the Former Yugoslav Republic of Macedonia, Turkey), three EFTA Member States (Iceland, Norway, Switzerland) and four Western Balkan countries (Albania, Bosnia and Herzegovina, Montenegro, Serbia). Figures refer to the years 2005, 2006 and 2007, while the text focuses on 2007 unless otherwise stated.

*For explanation of the country codes, see Methodological notes*

***Volume indices of GDP and AIC per capita 2007, EU27=100***

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## Per capita volume indices

The per capita volume indices, shown in the chart and in table 1, represent the real volume of GDP and AIC in per capita terms. "Real volumes" means that the figures have been adjusted for price level differences across countries, using purchasing power parities (cf. box 1).They are expressed in relation to the European Union average (EU27=100). If the per capita GDP (or AIC) volume index of a certain country is higher than 100, that country's level of GDP (or AIC) in per capita terms is higher than for the EU27 as a whole. The indices should be interpreted with some caution, allowing for error margins. For example, in 2007 the GDP volume index per capita for Belgium is 118, while that of Denmark is 120. In reality, these figures tell us that the GDP per capita is of similar magnitude in the two countries.

Box 1: Purchasing Power Parities and related economic indicators

Purchasing Power Parities (PPPs) are currency conversion rates that are applied in order to convert economic indicators from national currency to an artificial common currency, called the Purchasing Power Standard (PPS), which equalizes the purchasing power of different national currencies and enables meaningful volume comparisons between countries. For example, if the GDP or AIC per capita expressed in the national currency of each country participating in the comparison is divided by its PPP, the resulting figures neutralise the effect of different price levels and thus indicate the real volume of GDP or AIC at a common price level. In table 1, countries' GDP and AIC per capita are expressed as indices with EU27=100. The choice of basis for the indices is arbitrary, and does not affect the relatives between any pair of countries.  When divided by the nominal exchange rate of a given year, the PPP provides an estimate of the comparative price level of a given country relative to, for instance, as in our charts and tables, the EU27 total. Table 2 shows countries' comparative price levels of GDP and AIC per capita.

## Relative volumes of GDP per capita

The left-hand part of table 1 shows the countries' volume indices of GDP per capita.

Luxembourg stands out with a GDP per capita far above any other of the countries covered. This is to a significant extent due to a particular property of the country's economy: Luxembourg has a large number of cross-border workers relative to its resident population. While they contribute substantially to GDP, these workers are not included in the population figure used to calculate GDP per capita. This does not mean that the figure for Luxembourg is wrong, but it does indicate that GDP per capita cannot be used uncritically as an accurate indicator of, for instance, residents' material living standards.

Other Member States with a high GDP per capita, 20 percent or more above the EU overall level, are Ireland, the Netherlands, Austria, Sweden and Denmark. The case of Ireland is particularly interesting, because comparable statistics from a few years back used to indicate that the country had a lower GDP per capita than most of the other, old EU Member States. The positive development for Ireland continues throughout the years 2005-2007. However, because many companies resident in Ireland are foreign-owned, it is not surprising that Ireland's consumption per capita (cf. next section) is far more in line with other EU Member States than its GDP per capita.

Belgium, the United Kingdom, Finland and Germany come out at approximately the same level of GDP per capita, at 15-19 percent above the EU overall level. France, Spain and Italy are all within 10 percent above this reference level, Greece and Cyprus within 10 percent below.

Among the Member States that have joined the EU since 2004, Cyprus and Slovenia are the wealthiest, while the Czech Republic and Malta are at a level similar to that of Portugal. The development for the Czech Republic seems clearly positive over the three years covered here, while the other three remain at more or less the same level.

The other new Member States have a GDP per capita between 30 and 60 percent below the overall EU level. Estonia, Slovakia, Lithuania, Latvia and Romania appear to have a clearly positive development of their GDP per capita from 2005 to 2007. Bulgaria, the EU Member State with the lowest GDP per capita, and Poland also show growth. Hungary, on the other hand, appears to be stagnating for the time being.

Among the non-EU countries included here, the three EFTA Member States are clearly among the high-income countries of Europe. This is particularly so in the case of Norway, a major petroleum exporter with a relatively small population, but Switzerland surpasses the Netherlands as well, although it does not reach the level of Ireland. Iceland's GDP per capita is in line with Denmark's, 19 percent above the EU overall level.

On the other hand, the EU Candidate Countries Croatia and Turkey have a GDP per capita similar to some of the lower EU Member States, while the third Candidate Country, the former Yugoslav Republic of Macedonia, comes out at a level below Bulgaria's. The four Western Balkan countries without candidate status, Montenegro, Serbia, Bosnia-Herzegovina and Albania, are among the poorest in Europe in relative terms, with Albania's GDP per capita being about one quarter of that of the EU. However, two of these countries, Montenegro and Bosnia-Herzegovina, show considerable growth from 2005 to 2007.

**Table 1: Volume indices per capita 2005-2007, EU27=100**

| | Gross domestic product | | | Actual individual consumption | | |
|---|---|---|---|---|---|---|
| | 2005 | 2006 | 2007 | 2005 | 2006 | 2007 |
| Belgium | 119 | 118 | 118 | 111 | 110 | 111 |
| Bulgaria | 34 | 37 | 37 | 37 | 39 | 40 |
| Czech Republic | 76 | 77 | 80 | 69 | 69 | 71 |
| Denmark | 124 | 123 | 120 | 110 | 112 | 112 |
| Germany | 117 | 116 | 115 | 116 | 114 | 112 |
| Estonia | 61 | 65 | 68 | 58 | 61 | 64 |
| Ireland | 144 | 147 | 150 | 110 | 111 | 114 |
| Greece | 93 | 94 | 95 | 100 | 103 | 103 |
| Spain | 102 | 104 | 106 | 99 | 100 | 100 |
| France | 111 | 109 | 109 | 114 | 113 | 113 |
| Italy | 105 | 103 | 101 | 101 | 101 | 100 |
| Cyprus | 91 | 90 | 91 | 90 | 91 | 95 |
| Latvia | 49 | 53 | 55 | 49 | 56 | 61 |
| Lithuania | 53 | 56 | 60 | 59 | 61 | 66 |
| Luxembourg | 254 | 267 | 267 | 151 | 149 | 147 |
| Hungary | 63 | 64 | 63 | 63 | 63 | 61 |
| Malta | 78 | 77 | 77 | 80 | 78 | 77 |
| Netherlands | 131 | 131 | 131 | 116 | 117 | 117 |
| Austria | 125 | 124 | 124 | 116 | 115 | 115 |
| Poland | 51 | 52 | 53 | 54 | 56 | 57 |
| Portugal | 77 | 76 | 76 | 82 | 82 | 82 |
| Romania | 35 | 38 | 41 | 38 | 42 | 46 |
| Slovenia | 87 | 88 | 89 | 79 | 78 | 80 |
| Slovakia | 60 | 64 | 67 | 58 | 60 | 64 |
| Finland | 114 | 115 | 116 | 101 | 103 | 103 |
| Sweden | 120 | 121 | 122 | 112 | 112 | 112 |
| United Kingdom | 122 | 120 | 119 | 134 | 133 | 134 |
| Croatia | 50 | 52 | 54 | 47 | 48 | 50 |
| Former Yugoslav Republic of Macedonia | 28 | 29 | 30 | 33 | 34 | 36 |
| Turkey | 40 | 43 | 44 | 43 | 44 | 45 |
| Iceland | 130 | 124 | 119 | 135 | 133 | 132 |
| Norway | 176 | 184 | 179 | 126 | 127 | 130 |
| Switzerland | 133 | 136 | 137 | 119 | 118 | 118 |
| Albania | 22 | 23 | 24 | 26 | 27 | 27 |
| Bosnia and Herzegovina | 25 | 27 | 29 | 34 | 34 | 36 |
| Montenegro* | 31 | 35 | 41 | 31 | 38 | 44 |
| Serbia | 32 | 33 | 33 | 38 | 39 | 40 |

**The 2007 index for Montenegro is based on an unofficial, preliminary estimate of GDP*

*Source: Eurostat*

## Relative volumes of consumption per capita

GDP per capita is an important and widely used indicator of countries' level of economic welfare. However, it should not be applied uncritically. For instance, if one intends to compare the relative welfare of consumers across various countries, it can be more fruitful to focus on consumption per capita rather than on GDP.

Actual individual consumption includes consumer goods and services purchased by households, in addition to services provided by non-profit institutions and general government for individual consumption, for example, health and education services. In other words, AIC covers all goods and services actually consumed by households. In international comparisons, it is usually preferred over the narrower concept of household consumption, because the latter is influenced by the extent to which non-profit institutions and general government act as service providers.

AIC per capita is usually highly correlated with GDP per capita, because AIC is in practice by far the biggest expenditure component of GDP. Volume indices of AIC per capita are shown in the right-hand part of table 1.

A striking feature is that AIC per capita is considerably more homogeneous across countries than GDP per capita. Although it is clearly the case that high GDP and high consumption go hand in hand, the wealthiest countries appear rather less wealthy, in relative terms, if we analyse consumption instead of GDP. For example, while we have seen that Luxembourg, Ireland and the Netherlands are the highest EU Member States in terms of GDP per capita, their relative volumes of consumption are far closer to the EU overall level. The same effect is apparent in the case of Norway, Switzerland, Austria, Sweden and Denmark, among others.

On the other hand, there is a tendency for countries with a low GDP per capita to appear better off if we look at AIC. This is the case for most of the countries in south-eastern Europe, and for some of the new Member States like Latvia, Lithuania and Romania as well.

The overall picture is rather complex, though. For instance, even though the United Kingdom clearly belongs to the high-income countries as measured by GDP per capita, in terms of AIC per capita its position is even better, coming second after Luxembourg. On the other hand, there are some countries in the lower income groups, like Croatia, Slovakia and Estonia that appear less well off if AIC per capita is applied. This effect is also quite pronounced for Slovenia and the Czech Republic.

## Comparative price levels in Europe

As explained above (cf. box 1), the volume indices of GDP and AIC take differences in price levels across countries into account. The price level indicator can be an interesting object of study in its own right.

Table 2 shows countries' comparative price levels of GDP and AIC expressed in relation to the overall price level of the 27 EU Member States. In the following, we will focus on AIC, as these price levels include only goods and services actually consumed by households.

Denmark has the by far highest price level in the EU, although it is surpassed by EFTA members Iceland and Norway. The third EFTA country, Switzerland, along with Ireland, Luxembourg, Sweden and Finland, also have price levels that exceed the EU overall level by more than 20 percent. The United Kingdom comes out somewhat below this, while France, Belgium, Italy, Austria, the Netherlands and Germany all have quite similar price levels, slightly above the EU overall level.

It is worth noting that the comparative price level of all the new Member States is below that of the EU27, for most of them considerably so. While Cyprus has a price level in line with that of Greece and Spain, about 10 percent lower than the EU average, the majority of the new Member States have price levels between 20 and 50 percent lower than the EU27. This is the case for Slovenia, Malta, Estonia, Hungary, Latvia, Slovakia, Poland, the Czech Republic, Romania and Lithuania, along with the Candidate Countries Croatia and Turkey.

The lowest price levels in Europe are found in the southeast. Serbia, Montenegro, Bosnia-Herzegovina, Albania, Bulgaria and the former Yugoslav Republic of Macedonia all have price levels of about half the EU overall level, or even considerably less in the case of the three latter.

Denmark's price level is almost 3.5 times higher than Bulgaria's. This example shows that the price dispersion among EU Member States remain very considerable, in spite of close economic integration. However, there is a tendency towards more homogeneous price levels in the EU, with most of the new Member States catching up over time. In the section on GDP per capita, we have seen that the catching-up process is also apparent for that indicator as well.

A basic indicator of the price level dispersion within the euro area (EA15), the EU27 and all the 37 countries has been included at the bottom of table 2. This indicator is calculated as the coefficient of variation of the comparative price level indices above. It appears that price levels are far more homogeneous within the euro area than in the EU27, while the price dispersion is, unsurprisingly, even greater within the entire group of 37countries. Furthermore, there is an indication that while price convergence continues within the EU27 and indeed within Europe as a whole, it may be less pronounced within the euro area.

**Table 2: Comparative price level indices 2005-2007, EU27=100**

| | Gross domestic product | | | Actual individual consumption | | |
|---|---|---|---|---|---|---|
| | 2005 | 2006 | 2007 | 2005 | 2006 | 2007 |
| Belgium | 107 | 108 | 107 | 109 | 109 | 108 |
| Bulgaria | 37 | 38 | 41 | 38 | 39 | 41 |
| Czech Republic | 57 | 60 | 62 | 54 | 57 | 58 |
| Denmark | 138 | 138 | 139 | 146 | 144 | 143 |
| Germany | 104 | 103 | 103 | 103 | 103 | 102 |
| Estonia | 60 | 63 | 67 | 59 | 62 | 66 |
| Ireland | 121 | 120 | 117 | 124 | 125 | 126 |
| Greece | 85 | 86 | 86 | 87 | 88 | 89 |
| Spain | 91 | 91 | 89 | 91 | 91 | 92 |
| France | 110 | 111 | 110 | 109 | 109 | 109 |
| Italy | 104 | 103 | 103 | 107 | 106 | 106 |
| Cyprus | 88 | 89 | 88 | 91 | 92 | 90 |
| Latvia | 52 | 57 | 64 | 51 | 55 | 61 |
| Lithuania | 51 | 54 | 57 | 49 | 52 | 55 |
| Luxembourg | 114 | 114 | 114 | 123 | 123 | 124 |
| Hungary | 62 | 60 | 65 | 59 | 57 | 62 |
| Malta | 68 | 69 | 69 | 69 | 70 | 69 |
| Netherlands | 107 | 107 | 106 | 106 | 105 | 105 |
| Austria | 106 | 106 | 106 | 106 | 106 | 105 |
| Poland | 56 | 58 | 61 | 55 | 56 | 58 |
| Portugal | 82 | 81 | 81 | 84 | 84 | 84 |
| Romania | 47 | 50 | 55 | 48 | 50 | 55 |
| Slovenia | 73 | 75 | 77 | 75 | 76 | 77 |
| Slovakia | 53 | 55 | 61 | 50 | 53 | 59 |
| Finland | 117 | 117 | 118 | 123 | 122 | 122 |
| Sweden | 121 | 120 | 119 | 124 | 123 | 123 |
| United Kingdom | 111 | 113 | 114 | 111 | 111 | 112 |
| Croatia | 63 | 64 | 64 | 64 | 65 | 66 |
| Former Yugoslav Republic of Macedonia | 36 | 36 | 36 | 38 | 38 | 38 |
| Turkey | 59 | 57 | 60 | 60 | 59 | 64 |
| Iceland | 151 | 150 | 158 | 157 | 149 | 153 |
| Norway | 133 | 133 | 136 | 145 | 145 | 146 |
| Switzerland | 134 | 129 | 122 | 142 | 138 | 130 |
| Albania | 42 | 42 | 43 | 42 | 43 | 43 |
| Bosnia and Herzegovina | 44 | 45 | 46 | 46 | 47 | 47 |
| Montenegro | 42 | 41 | 44 | 47 | 47 | 50 |
| Serbia | 39 | 41 | 47 | 41 | 43 | 49 |
| **Coefficients of variation of PLIs** | | | | | | |
| Euro area (EA15) | 0.159 | 0.154 | 0.151 | 0.164 | 0.161 | 0.162 |
| EU27 | 0.324 | 0.310 | 0.285 | 0.342 | 0.328 | 0.307 |
| All 37 countries | 0.402 | 0.390 | 0.371 | 0.418 | 0.400 | 0.380 |

*Source: Eurostat*

Box 2: Regular annual PPP revisions at Eurostat

PPPs are established on an annual basis, therefore only annual revisions apply. According to the regular publication calendar, PPPs are released as preliminary estimates 12 months after the end of the reference year (T) and revised after 24 months, while the final results are released 36 months after the end of the reference year. In addition, an early estimate of PPPs, based on projections, is published - at a high aggregation level - 5 months after the end of the reference year. This regular PPP revision / release calendar is in line with the data delivery timetable for national accounts data as given in the ESA95 regulation(1). Thus, the 2005 results presented in this publication should be regarded as final, while the 2006 and 2007 results are still preliminary.

In the Eurostat database, expenditure categories of national accounts in PPS terms are frequently updated to take into account revisions in national accounts data, as the PPPs are always applied to the latest available national accounts data.

(1) ESA95; European System of Accounts 1995, Council Regulation (EC) 2223/1996 of 25 June 1996

## ESSENTIAL INFORMATION – METHODOLOGICAL NOTES

What are PPPs and PLIs?

The data in this publication are produced by the Eurostat-OECD Purchasing Power Parity (PPP) programme. The full methodology used in the programme is described in the *Eurostat-OECD Methodological manual on purchasing power parities* which is available free of charge from the Eurostat website.

In their simplest form PPPs are nothing more than price relatives that show the ratio of the prices in national currencies of the same good or service in different countries. For example, if the price of a hamburger in France is 2.84 euros and in the United States it is 2.20 dollars, the PPP for hamburgers between France and the United States is 2.84 euros to 2.20 dollars or 1.29 euros to the dollar. In other words, for every dollar spent on hamburgers in the United States, 1.29 euros would have to be spent in France in order to obtain the same quantity and quality – or volume – of hamburgers.

Comparative price levels as presented in this publication are the ratios of PPPs to exchange rates. They provide a measure of the differences in price levels between countries by indicating for a given product group the number of units of common currency needed to buy the same volume of the product group or aggregate in each country.

Price level indices (PLIs) provide a comparison of the countries' price levels with respect to the European Union average: if the price level index is higher than 100, the country concerned is relatively expensive compared to the EU average and vice versa. The EU average is calculated as the weighted average of the national PLIs, weighted with the expenditures corrected for price level differences. Price level indices are not intended to rank countries strictly. In fact, they only provide an indication of the order of magnitude of the price level in one country in relation to others, particularly when countries are clustered around a very narrow range of outcomes. The degree of uncertainty associated with the basic price data and the methods used for compiling PPPs, may affect in such a case the minor differences between the PLIs and result in differences in ranking which are not statistically or economically significant.

The main use of PPPs is to convert expenditures (including GDP) of different countries into real expenditures (and real GDP). Real expenditures are valued at a uniform price level and so reflect only differences in the volumes purchased in countries. PPP and real expenditures provide the price and volume measures required for international comparisons.

| | | | |
|---|---|---|---|
| **AL** | Albania | **IT** | Italy |
| **AT** | Austria | **LT** | Lithuania |
| **BA** | Bosnia-Herzegovina | **LU** | Luxembourg |
| **BE** | Belgium | **LV** | Latvia |
| **BG** | Bulgaria | **ME** | Montenegro |
| **CH** | Switzerland | **MK**[1] | Former Yugoslav Republic of Macedonia |
| **CY** | Cyprus | | |
| **CZ** | Czech Republic | **MT** | Malta |
| **DE** | Germany | **NL** | Netherlands |
| **DK** | Denmark | **NO** | Norway |
| **EE** | Estonia | **PL** | Poland |
| **EL** | Greece | **PT** | Portugal |
| **ES** | Spain | **RO** | Romania |
| **FI** | Finland | **RS** | Serbia |
| **FR** | France | **SE** | Sweden |
| **HR** | Croatia | **SI** | Slovenia |
| **HU** | Hungary | **SK** | Slovakia |
| **IE** | Ireland | **TR** | Turkey |
| **IS** | Iceland | **UK** | United Kingdom |

[1]MK is a provisional code which does not prejudge in any way the definitive nomenclature for this country, which will be agreed following the conclusion of negotiations currently taking place on this subject at the United Nations.

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