Economy and finance

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Large differences in GDP and consumption per inhabitant across Europe

GDP per inhabitant, consumption per inhabitant and comparative price levels 2006-2008

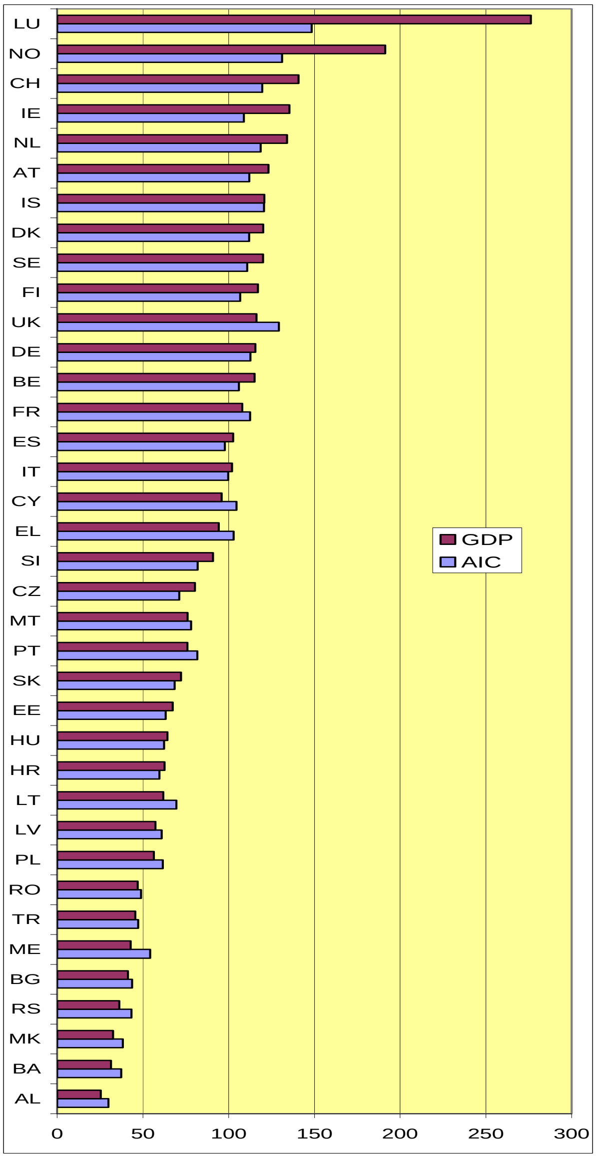
As in the two preceding years, Luxembourg, Ireland and the Netherlands had the highest and Bulgaria the lowest Gross Domestic Product (GDP) per inhabitant among EU Member States in 2008. Actual Individual Consumption (AIC) per inhabitant was highest in Luxembourg, the United Kingdom and the Netherlands, while in Bulgaria, AIC was just 30 percent of Luxembourg's level. The highest price levels in the EU were found in Denmark.

These are among the findings in Eurostat's most recent analysis of purchasing power parities and related economic indicators, covering the years 2006, 2007 and 2008. This article focuses primarily on the latest reference year.

The countries included in the analysis are, in addition to the 27 EU Member States, 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).

For explanation of the country codes, see methodological notes

Chart: Volume indices of GDP and AIC per inhabitant 2008, EU27=100



Source: Eurostat (prc_ppp_ind)

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Relative volumes and comparative price levels

In international comparisons of national accounts data, like GDP per inhabitant, it is preferable not only to express the figures in a common currency, but also to adjust for differences in price levels. Failing to do so would result in an overestimation of GDP levels for countries with high price levels, relative to countries with low price levels.

The indices of relative volumes of GDP and AIC per inhabitant published in this article have been adjusted for price level differences, and are expressed in relation to the European Union average (EU27=100). Thus, if a country's volume index is below 100, that country's level of GDP (or AIC) in per inhabitant terms is lower than for the EU27 as a whole.

The price level adjustment factors, referred to as purchasing power parities (cf. box 1), can also be used in analyses of countries' comparative price levels. Like the relative volumes, the price level indices shown in table 2 are expressed in relation to the EU27 average (EU27=100).

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 differences in price levels and thus indicate the real volume of GDP or AIC at a common price level. 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, the EU27 total.

Relative volumes of GDP per capita

Countries' volume indices of GDP per inhabitant are shown in the left-hand part of table 1.

Luxembourg shows the highest GDP per inhabitant of all countries included, more than two and a half times above the EU27 average, and more than 6 times higher than Bulgaria, which is the lowest EU Member State in terms of this indicator. However, as we shall see in the next section, Luxembourg's consumption per inhabitant is much closer to the European average than its GDP.

In addition to Luxembourg, two Member States stand out with a GDP per inhabitant clearly above the rest. These are Ireland and the Netherlands. However, it is worth noting that while these two countries in 2008 come out practically the same, Ireland used to be at a much higher level in 2006 and 2007. The decline in Ireland's relative position is primarily due to the decline of its GDP.

Austria, Denmark, Sweden, Finland, the United Kingdom, Germany and Belgium all come out within a narrow range. This means that the ranking of these countries should be interpreted carefully. If GDP per inhabitant is taken as an indicator of the standard of living, it is clear that at least Belgium, Germany, the United Kingdom and Finland, with volume indices ranging from 115 to 117, for all practical purposes are at the same level.

France is clearly ahead of Spain and Italy in terms of GDP per inhabitant, with the latter two slightly above the EU27 average. Cyprus and Greece are now at a common level, 4 and 6 percent lower than the EU27 average respectively, with Slovenia just below that.

The Czech Republic stands at 80 percent of the EU27 average, followed by Malta, Portugal and Slovakia. The positive development for Slovakia is quite remarkable if we look at the time series from 2006 to 2008. This is primarily due to stronger economic growth in Slovakia than in most other EU Member States.

Member States with a GDP per inhabitant between 50 and 70 percent of the EU27 average include Estonia, Hungary, Lithuania, Latvia and Poland. Romania and Bulgaria are the only Member States where GDP per inhabitant is less than half the EU27 average.

Table 1: Volume indices per capita 2006-2008, EU27=100

	Gross domestic product			Actual individual consumption		
	2006	2007	2008	2006	2007	2008
Luxembourg	272	275	276	153	147	148
Ireland	145	148	135	110	112	109
Netherlands	131	132	134	117	119	119
Austria	124	123	123	116	113	112
Denmark	124	121	120	112	113	112
Sweden	121	123	120	111	113	111
Finland	115	118	117	103	106	107
United Kingdom	120	117	116	133	131	129
Germany	116	116	116	115	113	113
Belgium	118	116	115	107	105	106
France	109	108	108	113	113	113
Spain	105	105	103	100	100	98
Italy	104	103	102	101	101	100
Cyprus	91	94	96	91	98	105
Greece	93	93	94	102	102	103
Slovenia	88	89	91	78	80	82
Czech Republic	77	80	80	69	71	71
Malta	77	76	76	78	76	78
Portugal	76	76	76	82	80	82
Slovakia	63	68	72	60	65	68
Estonia	65	69	67	61	65	63
Hungary	63	63	64	63	61	62
Lithuania	55	59	62	61	66	69
Latvia	52	56	57	56	61	61
Poland	52	54	56	55	59	62
Romania	38	42	47	42	45	49
Bulgaria	36	38	41	39	41	44
Croatia	57	60	63	55	58	60
Turkey	44	45	46	46	46	47
Former Yugoslav Republic of Macedonia	29	31	33	34	36	38
Norway	184	179	191	128	131	131
Switzerland	136	141	141	117	120	120
Iceland	123	121	121	131	133	121
Montenegro	36	40	43	38	50	54
Serbia	33	34	36	39	40	43
Bosnia and Herzegovina	27	29	31	34	36	37
Albania	23	23	26	26	28	30

Source: Eurostat (prc_ppp_ind)

The EU Candidate Countries (Croatia, the former Yugoslav Republic of Macedonia and Turkey) are all well below the average of the current EU Member States. This is particularly so in the case of the former Yugoslav Republic of Macedonia, which comes out significantly below Bulgaria, and is more in line with the group of countries referred to here as the "Western Balkan countries" (see below). Turkey's GDP per inhabitant stands at 46 percent of the EU27 average, and Croatia's at 63. On the other hand, the three EFTA countries (Iceland, Norway, and Switzerland) are all well above the EU27 average in terms of GDP per inhabitant. The figure for Iceland may appear surprising, given the sharp decline in the country's GDP from 2007 to 2008 in euro terms. However, this is because Icelandic prices have increased less, relative to EU27 prices, than the depreciation of the Icelandic króna against the euro. This case actually provides a good example of why PPPs and not nominal exchange rates should be used in this kind of international comparison.

Most of the four Western Balkan countries (Albania, Bosnia and Herzegovina, Montenegro and Serbia) are lower in terms of GDP per inhabitant than any of the current EU Member States. The exception to this is Montenegro, which comes out just ahead of Bulgaria. However, the development over time is positive for all these countries, particularly Montenegro.

Relative volumes of consumption per inhabitant

Actual Individual Consumption (AIC) consists of expenditure on goods and services consumed and paid for by households, as well as on services provided by non-profit institutions and by government for the purpose of individual consumption, most importantly education and health services. The reason why AIC is preferred over the narrower concept of household consumption in international comparisons, is that the amount of individual services provided by government varies across countries. For example, if dental services are paid for by the government in one country, and by households in another, an international comparison of household consumption expenditure would not compare like with like.

The relative volumes of GDP and AIC per inhabitant are generally highly correlated, because AIC makes up the major part of GDP. However, it is a striking feature that countries usually appear more homogeneous in terms of AIC per inhabitant than in terms of GDP per inhabitant. To illustrate this, it should be noted that twelve countries are clustered in a range between 98 and 113 percent of the EU27 average. For GDP per inhabitant, the volume index of those same countries varies between 94 and 135.

Countries’ volume indices of AIC per inhabitant can be found in the right-hand part of table 1. In 2008, Luxembourg, the United Kingdom and the Netherlands had the highest level of AIC per inhabitant among the EU Member States. On the other hand, AIC per inhabitant was less than 50 percent of the EU average in Bulgaria and Romania.

As we have seen already, Luxembourg also has by far the highest GDP per inhabitant, but its consumption per inhabitant is closer to the EU27 average than its GDP. This is because of the country’s high number of employees who, while working in Luxembourg and thus contributing to GDP, are living across the border in neighbouring countries. The consumer spending of these individuals is included in the consumption expenditure of the country of residence. Still, AIC per inhabitant in Luxembourg is 48 percent above the EU27 average.

Other countries with a substantial discrepancy between GDP and AIC per inhabitant are Ireland and the United Kingdom. The fact that Ireland's AIC per inhabitant is closer to the EU27 average than its GDP, is due to the fact that many companies resident in Ireland are foreign-owned, hence a substantial part of the income earned from production goes abroad. In the case of the UK, the high AIC per inhabitant relative to GDP per inhabitant is due to the country's comparatively low share of investment in GDP.

Comparative price levels in Europe

Differences in price levels across countries can be an interesting topic in its own right. Table 2 shows the comparative price levels of 37 European countries, for GDP and AIC. In the following, we will restrict our remarks to the comparative price levels of AIC, since this is closer to the concept of price levels that most people are familiar with.

In 2008, Denmark is by far the most expensive EU Member State, and indeed the most expensive country in Europe, along with Norway. Other countries with price levels more than 20 percent higher than the EU27 average include Switzerland, Ireland, Luxembourg and Finland, as well as Iceland and Sweden. Belgium and France have price levels between 10 and 20 percent above the average, while Austria, Italy, the Netherlands, Germany, the United Kingdom, Spain, Greece and Cyprus all come out within plus or minus 10 percent of the average.

Lower comparative price levels – 10 to 30 percent below the EU27 average – are found in Portugal, Slovenia, Malta, Estonia and Croatia. A large group of countries have price levels between 30 and 50 percent below the average, these are the Czech Republic, Latvia, Slovakia, Poland, Hungary, Turkey, Lithuania, Romania, Serbia, Montenegro, and Bosnia and Herzegovina. The cheapest countries in Europe are the former Yugoslav Republic of Macedonia, Bulgaria and Albania, with price levels of less than half of the EU27 average.

Exchange rates are crucial in determining comparative price levels, and exchange rate movements consequently play a major role in the development of this indicator over time. In 2008, the case of Iceland is particularly interesting, because the country previously used to be the most expensive one in Europe.

Table 2: Comparative price level indices 2006-2008, EU27=100

	Gross domestic product			Actual individual consumption		
	2006	2007	2008	2006	2007	2008
Denmark	137	138	141	143	142	146
Ireland	121	118	121	127	128	131
Luxembourg	112	114	116	120	124	129
Finland	117	116	118	122	119	123
Sweden	120	118	118	123	121	120
Belgium	108	109	112	110	112	115
France	111	110	112	110	109	111
Austria	105	107	109	104	106	109
Italy	102	101	103	106	104	107
Netherlands	107	105	108	105	103	106
Germany	103	102	105	102	101	103
United Kingdom	113	115	102	112	114	101
Spain	90	90	93	91	92	95
Greece	86	88	90	88	90	94
Cyprus	89	87	90	91	89	92
Portugal	81	82	82	84	85	86
Slovenia	75	78	81	76	78	81
Malta	69	70	72	70	71	74
Estonia	64	68	71	62	67	72
Czech Republic	61	62	70	57	58	68
Latvia	57	67	71	55	62	68
Slovakia	55	60	66	53	58	64
Poland	58	60	67	57	57	63
Hungary	60	64	65	57	62	63
Lithuania	54	57	62	52	55	59
Romania	50	56	54	51	56	54
Bulgaria	38	40	43	39	41	44
Croatia	65	64	69	68	67	71
Turkey	58	60	61	60	65	64
Former Yugoslav Republic of Macedonia	37	37	39	39	38	41
Norway	133	135	135	145	143	146
Switzerland	129	120	126	138	127	134
Iceland	150	158	120	149	154	120
Serbia	41	47	50	43	49	52
Montenegro	41	43	46	48	48	52
Bosnia and Herzegovina	45	46	47	47	48	51
Albania	42	43	43	42	43	45
Coefficients of variation of PLIs						
Euro area (EA16)	0.189	0.175	0.166	0.199	0.191	0.182
EU27	0.308	0.283	0.265	0.326	0.305	0.286
All 37 countries	0.388	0.368	0.335	0.397	0.377	0.346

Source: Eurostat (prc_ppp_ind)

However, due to the strong depreciation of the Icelandic króna from 2007 to 2008, Iceland has become cheaper seen from abroad. A similar but less dramatic exchange rate effect is evident for the United Kingdom, where the price level also decreased substantially in 2008. On the other hand, the Czech koruna and the Polish zloty appreciated against the euro, leading to increased comparative price levels in those countries.

The last three rows in table 2 show the coefficients of variation of the comparative price levels for three groups of countries: The euro area (EA16), the 27 EU Member States, and the entire group of 37 countries. A time series of these coefficients can be interpreted as a price level convergence indicator. While price level dispersion is much more pronounced in the EU as a whole, and in the 37-country group, than in the euro area, price levels in Europe are indeed converging. However, this appears to be less so in the euro area than in the two other country groups.

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 2006 results presented in this publication should be regarded as final, while the 2007 and 2008 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.

Country abbreviations

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	**MT**	Malta
CZ	Czech Republic	**NL**	Netherlands
DE	Germany	**NO**	Norway
DK	Denmark	**PL**	Poland
EE	Estonia	**PT**	Portugal
EL	Greece	**RO**	Romania
ES	Spain	**RS**	Serbia
FI	Finland	**SE**	Sweden
FR	France	**SI**	Slovenia
HR	Croatia	**SK**	Slovakia
HU	Hungary	**TR**	Turkey
IE	Ireland	**UK**	United Kingdom
IS	Iceland		

[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.

Further information

Eurostat Website: http://ec.europa.eu/eurostat

Data on "Purchasing power parities":
http://epp.eurostat.ec.europa.eu/portal/page/portal/purchasing_power_parities/data/database

More information about "Purchasing power parities":
http://epp.eurostat.ec.europa.eu/portal/page/portal/purchasing_power_parities/introduction

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