

Major dispersion in GDP per inhabitant across the EU

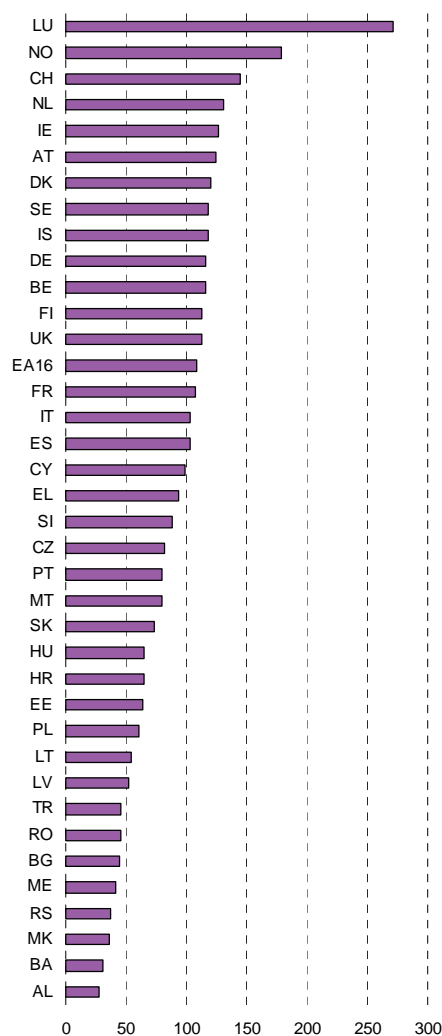
GDP per inhabitant, consumption per inhabitant and comparative price levels 2007-2009

In 2009, Bulgaria and Romania recorded the lowest levels of Gross Domestic Product (GDP) per inhabitant among EU Member States, at less than half the EU average. The Netherlands was 31 percent above that average, surpassed only by Luxembourg. Levels of Actual Individual Consumption (AIC) were somewhat more homogeneous, but still revealed very substantial differences across EU Member States. As in previous years, Denmark had the highest price level in the EU.

These are among the findings in Eurostat's most recent analysis of purchasing power parities and related economic indicators, covering the years 2007, 2008 and 2009. Even though the results for 2009 are set to be revised in 2011 and 2012, this article will focus primarily on the latest reference year.

The countries included in the analysis are the 27 EU Member States, three EFTA Member States (Iceland, Norway, and Switzerland), three EU Candidate Countries (Croatia, the former Yugoslav Republic of Macedonia, and Turkey) and four Western Balkan countries (Albania, Bosnia and Herzegovina, Montenegro, and Serbia).

Figure 1: Volume indices of GDP per inhabitant 2009, EU27=100



Source: Eurostat (online data code: [prc_ppp_ind](#))
For explanation of the country codes, see [methodological notes](#)

Relative volumes and comparative price levels

In international comparisons of national accounts data, such as GDP per inhabitant, it is desirable 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, for instance, if a country's volume index is below 100, that country's level of GDP (or AIC) per inhabitant 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.

Gross Domestic Product per inhabitant

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

As in previous years, the dispersion in GDP per inhabitant across the EU Member States remains quite remarkable. Luxembourg, which has by far the highest GDP per inhabitant not only in the EU, but among all the 37 countries included in this analysis, is more than two and a half times above the EU27 average, and about 6 times higher than Bulgaria, which is the poorest EU Member State as measured by this indicator. One particular feature of Luxembourg's economy which to some extent explains the country's very high GDP per inhabitant is the fact that a large number of foreign residents are employed in the country and thus contribute to its GDP, while at the same time they are not included in the resident population.

The Netherlands, which comes out second among the EU Member States, is still three times higher than Bulgaria, at 31 percent above the EU27 average. If we look at all 37 countries, EFTA Member States Norway and Switzerland both have a GDP per inhabitant which surpasses the Netherlands.

Ireland, which as recently as 2007 was ranked second among the EU Member States, falls back very significantly from 2007 to 2009. This is primarily due to the development of its nominal GDP, which decreased by almost 16 percent between these two years. While Ireland does maintain its position as one of the richest EU Member States in terms of GDP per capita, this is not fully reflected in the country's level of consumption, as we shall see later.

In 2009, Austria was the fourth richest EU Member State, followed by Denmark, Sweden, Germany and Belgium. It is worth noting that the latter four, along with EFTA Member State (and EU Candidate Country) Iceland, are all within a relatively narrow range of five index points, which means that there is some uncertainty about their internal ranking. Among these countries, Sweden shows a significant decline between 2007 and 2009.

Finland and the United Kingdom are both at about the same level, having experienced a decline in their relative positions, while France comes out clearly ahead of Italy and Spain, which have been at similar levels for several

years. On the other hand, Cyprus is among the EU Member States which shows a positive development over time, with a GDP per inhabitant at about the EU27 average in 2009. This puts Cyprus clearly ahead of Greece and Slovenia.

The Czech Republic, Portugal and Malta are all clustered around 20 percent below the EU27 average, well ahead of Slovakia, which is among the countries which have seen its relative position improve. This is also the case for Hungary and Croatia, one of the EU Candidate Countries, and in particular for Poland. In spite of this, Poland's GDP per inhabitant was still 39 percent below the EU27 average in 2009.

Estonia, Lithuania and Latvia all show a substantial decline of their relative position from 2007 to 2009. In 2009, Estonia's level of GDP

per inhabitant was similar to that of Hungary, while Lithuania and Latvia were clearly below the level of Poland, and followed by Romania and Bulgaria. The latter is among the countries with a very substantial increase in its GDP per inhabitant over the years we look at here. Turkey, an EU Candidate Country, was at about the same level as Romania and Bulgaria.

Five countries have a GDP per inhabitant below the level of Bulgaria. These are Montenegro, Serbia, the former Yugoslav Republic of Macedonia, Bosnia and Herzegovina, and Albania. However, it should be noted that most of these countries saw a substantial improvement in their relative position from 2007 to 2008. For the former Yugoslav Republic of Macedonia and for Albania, this development continued in 2009.

Table 1: Volume indices per inhabitant, 2007-2009 (EU27=100)

	Gross domestic product			Actual individual consumption		
	2007	2008	2009	2007	2008	2009
LU	275	280	271	149	151	152
NL	132	134	131	119	117	116
IE	147	133	127	113	108	102
AT	123	124	124	113	111	114
DK	123	123	121	114	113	112
SE	125	122	118	114	114	114
DE	116	116	116	113	113	116
BE	116	115	116	106	106	107
FI	117	118	113	106	109	108
UK	116	115	112	129	127	125
EA16	109	109	109	107	106	107
FR	108	107	108	113	111	113
IT	104	104	104	101	102	101
ES	105	103	103	99	98	96
CY	93	97	99	96	105	104
EL	91	93	93	103	107	104
SI	88	91	88	80	82	82
CZ	80	81	82	71	72	73
PT	78	78	80	83	84	84
MT	77	77	79	76	79	80
SK	68	72	73	65	70	72
HU	62	64	65	61	62	61
EE	69	68	64	64	63	56
PL	54	56	61	59	61	64
LT	59	61	55	66	69	63
LV	56	56	52	61	59	50
RO	42	47	46	45	49	45
BG	40	44	44	44	45	46
NO	179	189	178	131	131	134
CH	140	143	145	119	121	123
IS	121	122	118	132	120	110
HR	60	64	65	58	61	59
TR	45	47	46	48	49	49
MK	31	34	36	36	40	40
ME	40	43	41	50	54	50
RS	33	37	37	40	44	45
BA	29	30	31	35	37	37
AL	23	26	27	28	29	31

Source: Eurostat (online data code: [prc_ppp_ind](#))

Relative volumes of consumption per inhabitant

While GDP per inhabitant is often used as an indicator of countries' level of welfare, it is not necessarily a suitable indicator for households' actual standard of living. For the latter purpose, a better indicator may be Actual Individual Consumption (AIC) per inhabitant.

In national accounts, Household Final Consumption Expenditure (HFCE) denotes expenditure on goods and services that are purchased and paid for by households. Actual Individual Consumption (AIC), on the other hand, consists of goods and services actually consumed by individuals, irrespective of whether these goods and services are purchased and paid for by households, by government, or by non-profit organisations. In international volume comparisons, AIC is often seen as the preferable measure, since it is not influenced by the fact that the organisation of certain important services consumed by households, like health and education services, differs a lot across countries. For example, if dental services are paid for by the government in one country, and by households in another, an international comparison based on HFCE would not compare like with like, whereas one based on AIC would.

Countries' volume indices of AIC per inhabitant can be found in the right-hand part of table 1. In 2009, as in previous years, Luxembourg had the highest level of AIC per inhabitant in the EU, 52 percent above the average of the 27 Member States. However, while Luxembourg can be said to belong to "a division of its own" in terms of

GDP, this is less so for AIC. One reason for this is that the consumption expenditure of foreign residents working in Luxembourg is recorded in the national accounts of the country of residence.

Generally, GDP and AIC per inhabitant are highly correlated, because a country with a high level of welfare as measured by GDP will also have a high potential for consumption. However, in some cases, this correlation is not so obvious. For example, while the GDP per inhabitant in the United Kingdom was 12 percent above the EU average in 2009, its AIC per inhabitant was 25 percent above the average, and thus the second highest in the EU. Conversely, Ireland's GDP per inhabitant was 27 percent higher than the average, while its AIC per inhabitant was only marginally above the average EU level. Ireland, together with Estonia, Latvia and Iceland, is also one of the countries which has seen a very substantial decline in its relative position during the 2007-2009 period. On the other hand, countries which show remarkable improvement include Cyprus, Slovakia and Poland, as well as Serbia, the former Yugoslav Republic of Macedonia, and Albania.

AIC per inhabitant is usually more homogenous across countries than GDP per inhabitant. To illustrate this, it can be seen from table 1 that for AIC, 14 countries are clustered in a relative narrow range between one and 16 percent above the EU average, whereas the same countries have GDP levels which go from 7 percent below to 31 percent above the average.

Comparative price levels in Europe

The price level adjustment factors used to derive the volume indices in table 1 can also be applied in an analysis of countries' price levels. Table 2 shows countries' comparative price levels to the right, with the EU27 average at 100, for AIC only. It also shows the purchasing power parities and exchange rates applied in the calculation of the comparative price levels (cf. box 1). In the following, we will restrict our discussion to the comparative price levels of AIC, since this is closer to the concept of price levels that most people are familiar with than a price level indicator based on GDP.

Denmark is by far the most expensive EU Member State, and indeed the most expensive country in Europe. Other countries with price levels more than 20 percent higher than the

EU27 average include Ireland, Luxembourg and Finland, as well as EFTA Member States Norway and Switzerland. Belgium, France, Austria, Sweden, the Netherlands, Italy and Germany all have price levels of up to 20 percent above the average.

The case of Iceland is particularly interesting, as the country used to be the most expensive one in all of Europe as recently as 2007. The most important factor contributing to this remarkable development is the very strong depreciation of the Icelandic króna. As can be seen from table 2, Iceland's PPP actually increases substantially, reflecting a much higher increase in prices than in the EU27. However, this effect is more than offset by the depreciation of the currency.

Spain, Greece and the United Kingdom all have price levels slightly below the EU average, followed by Cyprus, Portugal and Slovenia.

At the lower end of the table, we find several countries clustered between 20 and 50 percent below the average price level: Malta, Estonia, Croatia, Latvia, Slovakia, the Czech Republic,

Lithuania, Hungary, Turkey, Poland, Montenegro, Bosnia and Herzegovina, and Romania fall within this range. Price levels of less than half the EU average are found in Serbia, Bulgaria, Albania, and in the former Yugoslav Republic of Macedonia.

Table 2: PPPs, exchange rates and comparative price levels (EU27=100) for AIC

	Purchasing power parities			Exchange rates			Comparative price levels		
	2007	2008	2009	2007	2008	2009	2007	2008	2009
DK	10.4549	10.7011	11.1451	7.4506	7.4560	7.4462	140	144	150
IE	1.2740	1.3248	1.3126	1.0000	1.0000	1.0000	127	132	131
LU	1.2378	1.2659	1.3106	1.0000	1.0000	1.0000	124	127	131
FI	1.1862	1.2088	1.2473	1.0000	1.0000	1.0000	119	121	125
BE	1.1134	1.1443	1.1799	1.0000	1.0000	1.0000	111	114	118
FR	1.0870	1.1227	1.1446	1.0000	1.0000	1.0000	109	112	114
AT	1.0624	1.0944	1.1204	1.0000	1.0000	1.0000	106	109	112
SE	11.1935	11.4229	11.8970	9.2501	9.6152	10.6191	121	119	112
NL	1.0348	1.0627	1.1037	1.0000	1.0000	1.0000	103	106	110
EA16	1.0198	1.0412	1.0676	1.0000	1.0000	1.0000	102	104	107
IT	1.0412	1.0398	1.0677	1.0000	1.0000	1.0000	104	104	107
DE	1.0108	1.0299	1.0532	1.0000	1.0000	1.0000	101	103	105
ES	0.9245	0.9513	0.9768	1.0000	1.0000	1.0000	92	95	98
EL	0.8946	0.9112	0.9673	1.0000	1.0000	1.0000	89	91	97
UK	0.7853	0.8182	0.8515	0.6843	0.7963	0.8909	115	103	96
CY	0.5238	0.9086	0.9314	0.5826	1.0000	1.0000	90	91	93
PT	0.8447	0.8658	0.8730	1.0000	1.0000	1.0000	84	87	87
SI	0.7761	0.8143	0.8384	1.0000	1.0000	1.0000	78	81	84
MT	0.3049	0.7343	0.7546	0.4293	1.0000	1.0000	71	73	75
EE	10.5053	11.1408	10.8822	15.6466	15.6466	15.6466	67	71	70
LV	0.4295	0.4864	0.4750	0.7001	0.7027	0.7057	61	69	67
SK	19.4829	19.9259	0.6656	33.7750	31.2620	1.0000	58	64	67
CZ	16.1761	16.8488	17.2646	27.7660	24.9460	26.4350	58	68	65
LT	1.8884	2.0884	2.0973	3.4528	3.4528	3.4528	55	60	61
HU	154.6074	160.7380	164.6938	251.3500	251.5100	280.3300	62	64	59
PL	2.1325	2.2460	2.3167	3.7837	3.5121	4.3276	56	64	54
RO	1.8724	2.0598	2.1636	3.3353	3.6826	4.2399	56	56	51
BG	0.7893	0.8495	0.8576	1.9558	1.9558	1.9558	40	43	44
NO	11.4800	12.0186	12.5107	8.0165	8.2237	8.7278	143	146	143
CH	2.0926	2.0925	2.1352	1.6427	1.5874	1.5100	127	132	141
IS	134.9894	153.3735	173.1454	87.6300	127.4551	172.6700	154	120	100
HR	4.9090	5.0401	5.0817	7.3376	7.2239	7.3400	67	70	69
TR	1.1310	1.1912	1.2544	1.7865	1.9064	2.1631	63	62	58
MK	23.8977	25.0479	24.3912	61.1730	61.5201	61.2815	39	41	40
ME	0.4807	0.5211	0.5253	1.0000	1.0000	1.0000	48	52	53
BA	0.9373	1.0182	1.0135	1.9558	1.9558	1.9558	48	52	52
RS	39.3657	42.5955	45.9862	79.9764	81.4672	93.9366	49	52	49
AL	53.6630	55.4332	57.0100	123.6200	122.7000	132.0400	43	45	43
Coefficients of variation of PLIs									
EA16							0.189	0.183	0.178
EU27							0.304	0.281	0.301
All 37 countries							0.376	0.343	0.361

Source: Eurostat (online data code: [prc_ppp_ind](#))

Exchange rates are crucial in determining comparative price levels, and exchange rate movements consequently often have a big impact on the development of price levels over time, as we have seen in the case of Iceland. In

fact, several of the major price level changes observed between 2007 and 2009 can be at least partly explained by exchange rate movements. Looking at the development of the comparative price levels over time, we find that the United

Kingdom shows a development similar to that of Iceland, with a remarkable depreciation of the currency. However, these year-on-year changes are much less substantial in the case of the United Kingdom. Other countries with a large exchange rate effect include Sweden, Hungary, Poland, Romania, Turkey and Serbia.

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 rudimentary price convergence indicator.

These figures tell us two things. First, and unsurprisingly, the price dispersion is much more pronounced in the EU as a whole, and in the 37-country group, than in the euro area. Second, while price levels are indeed converging within the euro area, this seems not to be the case in the EU as a whole, or in the complete group of countries.

Box 2: Regular annual PPP revisions at Eurostat

PPPs are established on an annual basis. According to the regular publication calendar, PPPs are released as preliminary estimates 12 months after the end of the reference year 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, partly based on projections, is published 5 months after the end of the reference year. This regular PPP revision and release calendar is in line with the data delivery timetable for national accounts data as given in the ESA95 regulation⁽¹⁾. Thus, the 2007 results presented in this publication should be regarded as final, while the 2008 and 2009 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

Methodological Notes

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 for 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.

Country abbreviations

EU member states

BE	Belgium	LU	Luxembourg
BG	Bulgaria	HU	Hungary
CZ	Czech Republic	MT	Malta
DK	Denmark	NL	Netherlands
DE	Germany	AT	Austria
EE	Estonia	PL	Poland
IE	Ireland	PT	Portugal
EL	Greece	RO	Romania
ES	Spain	SI	Slovenia
FR	France	SK	Slovakia
IT	Italy	FI	Finland
CY	Cyprus	SE	Sweden
LV	Latvia	UK	United Kingdom
LT	Lithuania		

EA16 Euro area

**MK: Provisional code which does not prejudice 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 UN*

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 by 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 cause 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 to reflect only differences in the volumes purchased in countries. PPP and real expenditures provide the price and volume measures required for international comparisons.

Candidate countries

HR	Croatia
MK*	former Yugoslav Republic of Macedonia
TR	Turkey

EFTA countries

CH	Switzerland
IS	Iceland
NO	Norway

Western Balkan countries

AL	Albania
BA	Bosnia and Herzegovina
ME	Montenegro
RS	Serbia

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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