

## Substantial cross-European differences in GDP per capita

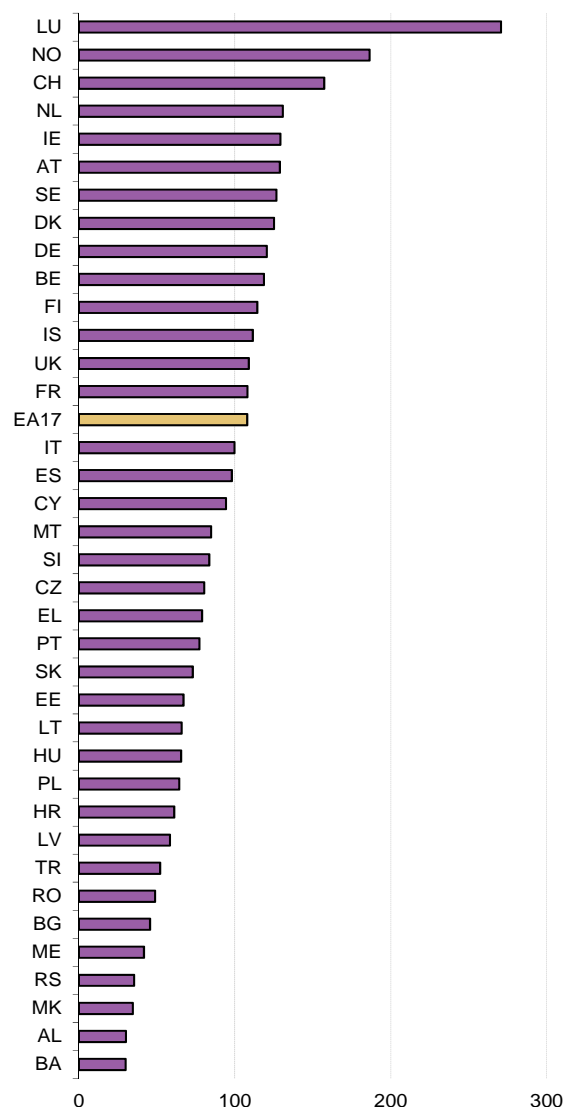
Consumption and price levels varied by more than three to one

**In 2011, Bulgaria was the country with the lowest level of Gross Domestic Product (GDP) per capita among all EU Member States, at less than 50 % of the EU average. The Netherlands was 31 % above that average; only Luxembourg recorded a higher level of GDP per capita. Levels of Actual Individual Consumption (AIC) were somewhat more homogeneous, but still showed substantial differences across Europe. The highest price level among the EU Member States was observed in Denmark at 47 % above EU27 average.**

These are some of the findings of Eurostat's most recent analysis of purchasing power parities and related economic indicators, covering the years 2009, 2010 and 2011. This report will primarily focus on the latest reference year.

The country groups included in the comparison are the 27 EU Member States, three EFTA Member States (Iceland, Norway, and Switzerland), acceding state Croatia, four EU Candidate Countries (the former Yugoslav Republic of Macedonia, Montenegro, Serbia and Turkey) and two potential candidate countries (Albania, Bosnia and Herzegovina).

Volume indices of GDP per capita 2011, EU27=100



For explanation of the country codes, see methodological notes

Source: Eurostat (online data code: [prc\\_ppp\\_ind](#))

In international comparisons of national accounts data, like GDP per capita, 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 capita published in this report 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 capita 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' 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 price level of a given country relative to, for instance, the EU27 total.

## **GDP per capita across the EU varied by six to one in 2011**

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

The dispersion in GDP per capita across the EU Member States is quite remarkable. Luxembourg has by far the highest GDP per capita among all the 37 countries included in this analysis, being more than two and a half times above the EU27 average, and 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 capita 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 comes out second among the EU Member States, at 31 % above the EU27 average, however the EFTA Member States Norway and Switzerland have a higher level of GDP per capita. Ireland shows a stable volume index among the top EU Member States. In 2011, Austria has the same position as Ireland, experiencing a continuous increase in its GDP per capita.

Other EU Member States with a GDP per capita of more than 20 % above the EU27 average are Sweden and Denmark. Germany and Belgium are at the same level of about 20 % above the average, followed by Finland and EFTA Member State Iceland. The United Kingdom and France show a GDP per capita level of nearly 10 % above the EU27 average.

Italy and Spain are at a GDP per capita level around the EU27 average, being about 5 % higher than Cyprus. Malta, Slovenia and the Czech Republic are all clustered between 15 and 20 % below the EU27 average, followed by Greece, whose GDP per capita has decreased significantly due to the economic crisis. Portugal and Slovakia have GDP per capita levels around 25 % of the EU27 average. Estonia, Lithuania, Hungary and Poland are all very close to around 35 % below the EU27 average. Croatia – the acceding state – has a slightly higher volume index than Latvia, both around 40 % below the EU27 average. Candidate country Turkey has a higher level of GDP per capita than EU Member States Romania and Bulgaria, at around half the EU27 average. The other candidate countries –

Montenegro, Serbia and the former Yugoslav Republic of Macedonia - are about 60 % or more below the EU27 average. Finally, two potential candidate countries - Albania and Bosnia and Herzegovina - both have GDP per capita of 70 % below the EU27 average.

The changes in GDP per capita can be partially explained also by the adjustments in population figures resulting from the Census carried out in most of the countries in 2011.

**Table 1: Volume indices per capita, 2009-2011 (EU27=100)**

	Gross domestic product			Actual individual consumption		
	2009	2010	2011	2009	2010	2011
LU	255	267	271	144	141	140
NL	132	131	131	118	114	113
IE	130	129	129	103	103	101
AT	125	127	129	116	118	119
SE	120	124	127	116	114	116
DK	123	128	125	116	116	113
DE	115	119	121	115	117	120
BE	118	119	119	109	111	111
FI	114	113	114	110	111	112
UK	111	111	109	121	120	118
FR	109	108	108	113	113	113
<b>EA17</b>	<b>109</b>	<b>108</b>	<b>108</b>	<b>107</b>	<b>107</b>	<b>107</b>
IT	104	101	100	103	102	101
ES	103	99	98	96	95	94
CY	100	97	94	102	99	98
MT	83	85	85	85	83	84
SI	87	84	84	81	80	81
CZ	83	80	80	73	71	71
EL	94	87	79	104	97	91
PT	80	80	77	83	84	81
SK	73	73	73	72	71	70
EE	63	63	67	58	56	58
LT*	55	57	66	63	61	70
HU	65	65	66	62	60	61
PL	61	63	64	64	67	69
LV	54	54	58	52	53	57
RO	47	47	49	46	46	47
BG	44	44	46	43	43	45
NO	177	181	186	134	136	135
CH	150	154	157	128	129	130
IS	120	112	111	111	106	107
HR	62	59	61	58	57	59
TR	46	50	52	51	54	57
ME	41	42	42	50	52	53
MK	36	36	35	41	40	40
RS	36	35	35	44	44	43
AL**	28	27	30	32	30	34
BA	31	30	30	37	36	36

\* 2011 population figures adjusted on the basis of the 2011 Census. Therefore the per capita indices for 2011 are not entirely comparable with previous years due to this break in time series.

\*\* Figures for all years based on Eurostat estimate of GDP.

Source: Eurostat (online data code: [prc\\_ppp\\_ind](#))

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## Consumption level in Luxembourg more than three times that of Bulgaria

While GDP per capita is mainly an indicator of the level of economic activity, Actual Individual Consumption (AIC) per capita is an alternative indicator better adapted to describe the material welfare situation of households.

Countries' volume indices of AIC per capita can be found in the right-hand part of table 1. Generally, levels of AIC per capita are more homogeneous than GDP but still there are substantial differences across the EU Member States. To illustrate this, in 2011, eight countries are clustered in the range between 98 and 113 % of the EU27 average, while the levels of GDP per capita for those countries vary between 94 and 131 %.

Luxembourg is the country with the highest level of AIC per capita in the EU, 40 % above the average of the EU27. 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 cross-border workers contribute to GDP in Luxembourg while their consumption expenditure is recorded in the national accounts of the country of their residence.

The EU Member State with the second highest AIC per capita is Germany at 20 % above the average, around the same as its GDP per capita. Ireland's AIC per capita is only marginally above the average EU27 level, while GDP per capita is 29 % higher than the average.

### Box 2: Household Final Consumption Expenditure and Actual Individual Consumption

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.

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## Price levels varied by more than three to one within the EU

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' price levels to the right, with the EU27 average at 100, for AIC only. It also shows the exchange rates applied in the calculation of the price level indices (cf. box 1). In the following, we will restrict our discussion to the 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 has the highest price level among the Member States, 47 % above the EU27 average. However, EFTA Member States Switzerland and Norway have higher price levels which in 2011 exceeded the overall EU27 level by more than 60 %. Other countries with price levels more than 20 % higher than the EU27 average are Luxembourg, Sweden and Finland. Ireland, Belgium, the EFTA Member State Iceland,

France, the Netherlands and Austria all have price levels between 10 and 20 % above the average. Italy, the United Kingdom and Germany have price levels of up to 5 % above the EU27 average.

Spain, Greece and Cyprus have price levels of less than 10 % below the EU27 average, followed by Portugal and Slovenia being at the same level of 15 % below the EU27 average.

At the lower end of the table, we find several countries with price levels clustered between 25 and 50 % below the EU average: Malta, the Czech Republic, Estonia and acceding state Croatia. Latvia, Slovakia, Lithuania, Hungary, the candidate country Turkey, Poland and Romania also fall within this range.

The lowest price levels – half the EU average and below – are found in Montenegro, Bosnia and Herzegovina, Serbia, Bulgaria, Albania and in the former Yugoslav Republic of Macedonia.

Table 2: Exchange rates and price level indices (EU27=100) for AIC

	Exchange rates			Price level indices		
	2009	2010	2011	2009	2010	2011
DK	7.4462	7.4473	7.4506	146	145	147
LU	1.0000	1.0000	1.0000	132	134	135
SE	10.6191	9.5373	9.0298	112	126	132
FI	1.0000	1.0000	1.0000	123	124	126
IE	1.0000	1.0000	1.0000	130	122	119
BE	1.0000	1.0000	1.0000	117	115	115
FR	1.0000	1.0000	1.0000	113	112	111
NL	1.0000	1.0000	1.0000	109	110	110
AT	1.0000	1.0000	1.0000	112	109	110
IT	1.0000	1.0000	1.0000	106	104	105
<b>EA17</b>	<b>1.0000</b>	<b>1.0000</b>	<b>1.0000</b>	<b>106</b>	<b>105</b>	<b>104</b>
UK	0.8909	0.8578	0.8679	98	102	103
DE	1.0000	1.0000	1.0000	106	104	102
ES	1.0000	1.0000	1.0000	97	96	96
EL	1.0000	1.0000	1.0000	93	93	92
CY	1.0000	1.0000	1.0000	91	91	91
PT	1.0000	1.0000	1.0000	87	86	85
SI	1.0000	1.0000	1.0000	86	86	85
MT	1.0000	1.0000	1.0000	73	73	73
CZ	26.4350	25.2840	24.5900	68	70	71
EE	15.6466	15.6466	1.0000	70	69	71
LV	0.7057	0.7087	0.7063	68	66	67
SK	1.0000	1.0000	1.0000	67	66	67
LT	3.4528	3.4528	3.4528	61	59	60
HU	280.3300	275.4800	279.3700	58	59	59
PL	4.3276	3.9947	4.1206	54	56	55
RO	4.2399	4.2122	4.2391	51	52	53
BG	1.9558	1.9558	1.9558	45	45	44
CH	1.5100	1.3803	1.2326	140	151	165
NO	8.7278	8.0043	7.7934	144	156	162
IS	172.6700	161.8900	161.4200	99	110	113
HR	7.3400	7.2891	7.4390	71	71	69
TR	2.1631	1.9965	2.3378	57	63	57
ME	1.0000	1.0000	1.0000	52	51	51
RS	93.9366	102.9022	101.9572	49	47	51
MK	61.2815	61.5192	61.4800	40	40	42
BA	1.9558	1.9558	1.9558	52	52	51
AL	132.0400	137.7664	140.9200	43	42	43
<b>Coefficients of variation of PLIs</b>						
EA17				0.193	0.191	0.191
EU27				0.295	0.294	0.298
All 37 countries				0.352	0.362	0.374

Source: Eurostat (online data code : [prc\\_ppp\\_ind](#))

Exchange rates are crucial in determining price levels, and exchange rate movements consequently often have a big impact on the development of price levels over time. In fact, several of the major price level changes observed between 2009 and 2011 can be at least partly explained by fluctuations of country's currencies against the euro. In 2011, the national currencies of Switzerland, Sweden, the Czech Republic and Norway continued to appreciate against the euro. The most significant depreciations were observed in Turkey and Poland. However, these movements have been less substantial between 2010 and 2011 than between 2009 and 2010. The Icelandic króna, for which significant depreciation was reported in recent years, shows currently a relatively stable development.

The last three rows in table 2 show the coefficients of variation of the price levels for three groups of countries: the euro area (EA17), 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 that first, and unsurprisingly, the price dispersion is much less pronounced in the euro area than in the EU as a whole and in the 37-country group, which can be partially impacted by the volatility of exchange rates. Second, while price levels are marginally 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 3: 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 6 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<sup>(1)</sup>. Thus, the 2009 results presented in this publication should be regarded as final, while the 2010 and 2011 results are still preliminary.

<sup>(1)</sup> 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 euro and in the United Kingdom it is 2.20 pound sterling, the PPP for hamburgers between France and the United Kingdom is 2.84 euro to 2.20 pounds or 1.29 euro to the pound. In other words, for every pound spent on hamburgers in the United Kingdom, 1.29 euro would have to be spent in France in order to obtain the same quantity and quality – or volume – of hamburgers.

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		

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.

#### EFTA countries

IS*	Iceland
NO	Norway
CH	Switzerland

#### Acceding state and candidate countries

ME	Montenegro
HR	Croatia (acceding state)
MK**	former Yugoslav Republic of Macedonia
RS	Serbia
TR	Turkey

#### Potential candidate countries

AL	Albania
BA	Bosnia and Herzegovina

\* also a candidate country

\*\*MK: 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 UN

## Further information

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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](http://epp.eurostat.ec.europa.eu/portal/page/portal/purchasing_power_parities/data/database)

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