GDP per capita, consumption per capita and price level indices

Statistics Explained

Data from December 2018
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This article presents the most recent analysis of purchasing power parities and related economic indicators (gross domestic product (GDP) per capita , level of actual individual consumption (AIC) per capita, countries' price level indices) in the European Union (EU) and some other countries for 2014, 2015, 2016 and 2017, but focusing primarily on the latest reference year. The countries included in the comparison are the 28 EU Member States, three EFTA Member States (Iceland, Norway and Switzerland), five EU candidate countries (Montenegro, the former Yugoslav Republic of Macedonia, Albania, Serbia and Turkey) and one potential candidate (Bosnia and Herzegovina).

Overview

In 2017, Ireland recorded the second highest level of GDP per capita in the EU-28 , at 81 % above the EU average, with only Luxembourg at a higher level. Bulgaria was the Member State with the lowest GDP per capita, at 51 % below the EU average. Levels of actual individual consumption were somewhat more homogeneous, but still showed significant differences across Europe. Luxembourg recorded the highest level of AIC per capita in the EU-28 , at 32 % above the EU average, as well as the highest price level, at 40 % above the EU average.

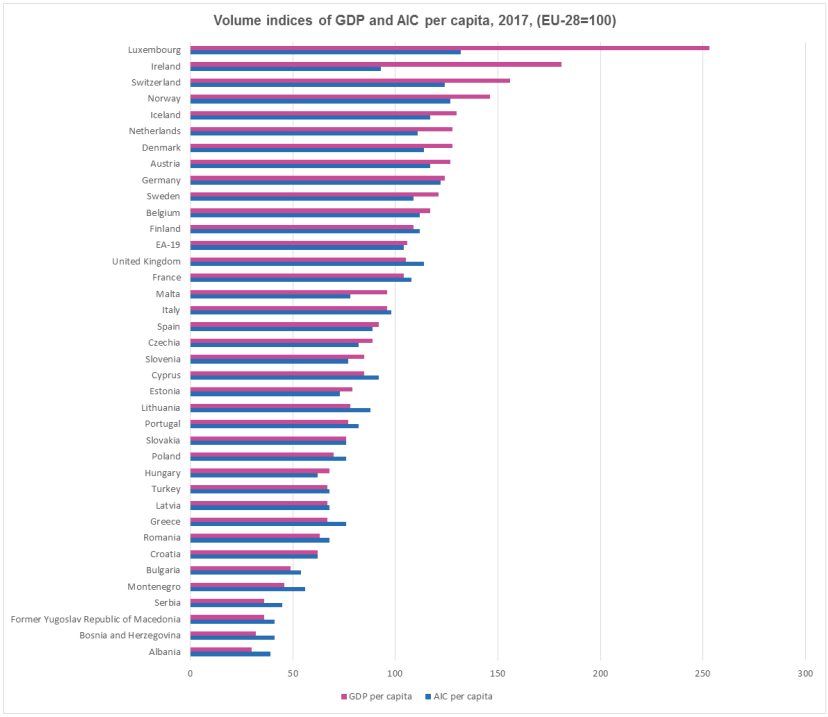

Figure 1: Volume indices of GDP and AIC per capita, 2017 (EU-28=100) - Source: Eurostat (prc_ppp_ind)

Relative volumes of GDP per capita

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.

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 comparison, being more than two and a half times above the EU-28 average. This is partly explained by the fact that a large number of foreign residents are employed in the country and thus contribute to its GDP, while they are not included in the resident population.

Volume indices per capita, 2014-2017, (EU-28=100)

	Gross domestic product				Actual individual consumption			
	2014	2015	2016	2017	2014	2015	2016	2017
Luxembourg	269	266	260	253	141	140	134	132
Ireland	136	178	177	181	94	94	94	93
Netherlands	131	130	128	128	116	115	111	111
Denmark	128	127	126	128	116	116	113	114
Austria	130	129	128	127	122	121	119	117
Germany	126	124	124	124	124	122	122	122
Sweden	124	125	122	121	113	113	110	109
Belgium	119	118	118	117	115	114	113	112
Finland	110	109	109	109	114	114	113	112
EA-19	107	106	106	106	105	105	105	104
United Kingdom	109	109	107	105	115	115	115	114
France	107	105	104	104	111	110	110	108
Italy	96	95	97	96	97	97	98	98
Malta	88	92	94	96	78	79	78	78
Spain	90	91	91	92	87	89	89	89
Czechia	86	87	88	89	78	78	79	82
Slovenia	82	82	83	85	76	76	76	77
Cyprus	81	82	84	85	91	91	92	92
Estonia	77	76	77	79	69	71	72	73
Lithuania	75	75	75	78	81	83	85	88
Portugal	77	77	77	77	81	82	82	82
Slovakia	77	77	77	76	76	76	76	76
Poland	67	69	68	70	74	74	74	76
Hungary	68	68	67	68	63	63	62	62
Greece	71	69	68	67	80	79	77	76
Latvia	63	64	64	67	65	66	65	68
Romania	55	56	59	63	56	58	65	68
Croatia	59	59	61	62	59	59	61	62
Bulgaria	47	47	48	49	51	53	53	54
Switzerland	165	165	160	156	131	131	126	124
Norway	176	156	145	146	135	130	127	127
Iceland	122	126	131	130	117	116	116	117
Turkey	64	67	66	67	63	67	67	68
Montenegro	41	42	44	46	52	54	56	56
Former Yugoslav Republic of Macedonia	36	36	37	36	40	41	42	41
Serbia	37	36	37	36	46	46	46	45
Albania	30	30	30	30	37	38	37	39
Bosnia and Herzegovina	30	30	31	32	41	41	41	41

Notes: countries are sorted according to their 2017 volume index per capita for GDP.

Source: Eurostat (online data code: prc_ppp_ind)

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Table 1: Volume indices per capita, 2014-2017 (EU-28=100) - Source: Eurostat (prc_ppp_ind)

Ireland comes out second among the EU Member States, at 81 % above the EU-28 average, followed by the Netherlands, Denmark, Austria, Germany and Sweden, with a GDP per capita more than 20 % above the average. The EFTA Member States Switzerland, Norway and Iceland have a level of GDP per capita of 56 %, 46 % and 30 % above the EU-28 average, respectively.

Belgium, Finland, the United Kingdom and France are the other EU Member States with a GDP per capita above the EU-28 average. Italy, Malta and Spain have a level of GDP per capita of less than 10 % below the EU-28 average. Czechia, Slovenia and Cyprus have a GDP per capita between 10 % and 20 % below the EU-28 average. The GDP per capita of Estonia, Lithuania, Portugal and Slovakia is less than 30 % below that average. Poland, Hungary, Greece, Latvia, Romania, Croatia and the candidate country Turkey have a GDP per capita of less than 40 % below the average. Bulgaria is placed at 51 % below the EU-28 average, followed by the candidate countries Montenegro, the former Yugoslav Republic of Macedonia and Serbia. The potential candidate country Bosnia and Herzegovina and the candidate country Albania have a GDP per capita at around 70 % below the EU-28 average.

Relative volumes of consumption per capita

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

Luxembourg is the country with the highest level of AIC per capita among all 37 countries included in this comparison at 32 % above the EU-28 average. It is followed by the EFTA countries Norway and Switzerland,

with AIC per capita at 27 % and 24 % above the EU-28 average, respectively. 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. Ireland, having the second highest level of GDP per capita in the EU-28, has an AIC per capita at 7 % below the EU-28 average.

Price levels in Europe

Table 2 shows countries' price levels to the right, with the EU-28 average at 100, for AIC only. It also shows the exchange rates applied in the calculation of the price level indices (see methodology described in *Data sources*). 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 people are familiar with than a price level indicator based on GDP.

Exchange rates and price level indices for AIC, 2014-2017, (EU-28=100)

	Exchange rates				Price level indices for AIC			
	2014	2015	2016	2017	2014	2015	2016	2017
Luxembourg	1	1	1	1	136	132	137	140
Denmark	7.4548	7.4587	7.4452	7.4386	139	135	140	139
Sweden	9.0985	9.3535	9.4689	9.6351	134	129	135	134
Ireland	1	1	1	1	125	122	126	129
Finland	1	1	1	1	123	120	123	123
United Kingdom	0.80612	0.72584	0.81948	0.87667	124	135	124	118
Netherlands	1	1	1	1	112	110	114	115
Austria	1	1	1	1	109	107	110	113
Belgium	1	1	1	1	109	106	110	112
France	1	1	1	1	106	104	106	107
Germany	1	1	1	1	101	100	103	104
EA-19	1	1	1	1	101	99	102	103
Italy	1	1	1	1	103	100	101	102
Spain	1	1	1	1	93	90	93	94
Cyprus	1	1	1	1	92	89	90	91
Portugal	1	1	1	1	80	79	82	84
Greece	1	1	1	1	84	81	82	83
Slovenia	1	1	1	1	81	80	82	83
Malta	1	1	1	1	81	80	81	82
Estonia	1	1	1	1	70	69	71	74
Latvia	1	1	1	1	66	64	67	68
Slovakia	1	1	1	1	63	62	64	65
Croatia	7.6344	7.6137	7.5333	7.4637	62	61	61	63
Czechia	27.536	27.279	27.034	26.326	58	58	61	62
Lithuania	3.4528	1	1	1	57	56	58	60
Hungary	308.71	310	311.44	309.19	53	53	56	59
Poland	4.1843	4.1841	4.3632	4.257	53	51	51	53
Romania	4.4437	4.4454	4.4904	4.5688	48	47	47	48
Bulgaria	1.9558	1.9558	1.9558	1.9558	43	42	43	45
Iceland	154.86	146.3	133.59	120.54	123	132	154	172
Switzerland	1.2146	1.0679	1.0902	1.1117	153	167	170	167
Norway	8.3544	8.9496	9.2906	9.327	157	152	155	157
Montenegro	1	1	1	1	49	48	49	50
Serbia	117.306	120.7328	123.1179	121.3367	45	43	44	46
Turkey	2.9065	3.0255	3.3433	4.1206	52	50	50	45
Albania	139.97	139.74	137.36	134.15	41	40	43	44
Former Yugoslav Republic of Macedonia	61.6244	61.611	61.5955	61.5747	42	41	42	43
Bosnia and Herzegovina	1.95583	1.95583	1.95583	1.95583	48	47	48	48
					Variation coefficients			
EA-19					23.0	22.8	22.9	22.7
EU-28					32.2	32.4	32.2	31.1
All 37					39.7	41.1	41.5	41.5

Notes: countries are sorted according to their 2017 price level index for AIC.

Source: Eurostat (online data code: prc_ppp_ind)

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Table 2:Exchange rates and price level indices for AIC, 2014-2017 (EU-28=100) - Source: Eurostat (prc_ppp_ind)

Luxembourg has the highest price levels among the Member States, 40 % above the EU-28 average. However, EFTA Member States Iceland, Switzerland and Norway have higher price levels, at 72 %, 67 % and 57 % above the EU-28 average, respectively. The EU Member States Denmark, Sweden, Ireland and Finland have price levels more than 20 % above the EU-28 average. The United Kingdom, the Netherlands, Austria, Belgium, France, Germany and Italy are the other EU Member States with price levels above the EU-28 average.

Spain and Cyprus have price levels less than 10 % below the EU-28 average, followed by Portugal, Greece,

Slovenia and Malta at less than 20 % below the EU-28 average. Estonia has a price level situated at 26 % below the EU-28 average, followed by Latvia, Slovakia, Croatia and Czechia with price levels less than 40 % below that average. The EU Member States Lithuania, Hungary and Poland have price levels between 40 % and 50 % below the EU-28 average, followed by the candidate country Montenegro at 50 % below that average. The Member States Romania and Bulgaria, the candidate countries Serbia, Turkey, Albania, the former Yugoslav Republic of Macedonia and the potential candidate country Bosnia-Herzegovina all have price levels more than 50 % below the EU-28 average.

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 2014 and 2017 can be at least partly explained by fluctuations of country's currencies against the Euro. In 2017, the national currency of Iceland showed the largest appreciations against the Euro; the same country shows the largest increase of price levels between 2014 and 2017. The national currency of Turkey showed a large depreciation in 2017; the same country shows the largest decrease of price levels between 2014 and 2017.

The last three rows in Table 2 show the coefficients of variation of the price levels for three groups of countries: the euro area (EA-19), the EU Member States (EU-28) 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, firstly, 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. Secondly, over this four-year period, price levels are very slightly converging within EA-19 and EU-28, and very slightly diverging for all 37 countries.

Data sources

The data in this article are produced by the Eurostat - OECD Purchasing power parities programme. The full methodology used in the programme is described in the Eurostat-OECD Methodological manual on purchasing power parities .

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 EU-28 total.

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 ESA 2010 Regulation 549/2013 of 21 May 2013. Thus, the 2014 and 2015 results presented in this publication should be regarded as final, while the 2016 and 2017 results are still preliminary.

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.

The indices of relative volumes of GDP and AIC per capita published in this article have been adjusted for price level differences, and are expressed in relation to the European Union average (EU-28=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 EU-28 as a whole. The price level adjustment factors, referred to as purchasing power parities, can

also be used in comparison of countries' price levels.

Price level indices (PLIs) 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. They are presented relative 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.

Volume and price level indices are not intended to rank countries strictly. In fact, they only provide an indication of the order of magnitude of the volume or price level in one country in relation to others, particularly when countries are clustered around a very narrow range of outcomes. The level of uncertainty associated with the basic price and national accounts data, and the methods used for compiling PPPs imply that differences between countries that have indices within a close range should not be over-interpreted.

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.

Context

GDP per capita volume indices (on a regional basis - see GDP at regional level) are used in the allocation of Structural Funds within the EU. Regions where real GDP per capita is less than 75 % of the EU average (taken over a period of three years) are eligible for support from the Structural Funds.

Eurostat is co-operating closely with other international institutions in the production and dissemination of PPPs. It co-operates with the OECD to produce PPP statistics for the OECD countries and with the World Bank and the International Monetary Fund (IMF) to produce global PPP data. See external links below.

Other articles

- Comparative price levels for food, beverages and tobacco
- Comparative price levels of consumer goods and services
- Comparative price levels for investment
- GDP at regional level
- National accounts and GDP

Main tables

- Purchasing power parities (PPPs) , see:

Comparative price levels (tec00120)

Price and volume convergence between EU Member States (tec00121)

GDP per capita in PPS (tec00114)

Database

- Purchasing power parities (prc_ppp) , see:

Purchasing power parities (PPPs), price level indices and real expenditures for ESA2010 aggregates (prc_ppp_ind)

Convergence indicators (prc_ppp_conv)

Dedicated section

- Purchasing power parities (PPPs)

Methodology

- Eurostat-OECD Methodological manual on purchasing power parities
- Purchasing power parities (ESMS metadata file — prc_ppp_esms)

Legislation

- Regulation (EC) No 1445/2007 of 11 December 2007 establishing common rules for the provision of basic information on Purchasing Power Parities and for their calculation and dissemination
- Regulation (EU) No 549/2013 (ESA 2010 Regulation) of 21 May 2013 on the European system of national and regional accounts in the European Union

External links

- OECD - Purchasing Power Parities (PPP)
- World Bank - International Comparison Programme (ICP)