

# Analysis of Purchasing Power Parities in Romania in the context of EU integration

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*Purchasing power parity (PPP) is a useful tool for international comparison of prices between countries, in order to analyze the degree of economic development. On this line, purchasing power parities are indicators that express the main macroeconomic aggregates, in a common currency for all the countries subject to international comparisons. This material analyzes the evolution of PPP in Romania for a time interval of 10 years (2004-2013). The purpose of research is to analyze the purchasing power at national level, in the context of integration in European Union (EU). The period before and after Romania's integration in the EU, has an important role to establish the positioning of our country in terms of purchasing power, compared to the other EU countries. The main conclusion of the paper is that Romania is the country with one of the lowest purchasing power parities compared to other EU countries, along with Bulgaria, which joined the EU in the same year (2007). Given that PPP cannot establish a hierarchy of countries, the research takes into account other important indicators such as: Harmonised Indices of Consumer Prices, GDP and inflation rate.*

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## INTRODUCTION

Purchasing power as a concept has a long history, rise with the need to compare price levels between different countries in order to analyze the degree of economic development. The current meaning is known only since twentieth century when it was introduced in 1918 by the economist Gustav Cassel. The Swedish economist theory, starts from the premise of equality of prices in different countries, expressed in the same currency of payment.

Theory is both a way of determining the exchange rate. Although international studies do not support the validity of the method, the purchasing power parity theory supports the idea that on long-term and very long term international exchange through exports/imports are supported. This idea leads to the conclusion of price leveling worldwide, with the expansion of trade between countries.

Purchasing power parities are helpful tools used internationally to study the differences in prices between countries, helping to analyze the level of development of these countries. They work like currency conversion rates to express costs, in currencies of countries, analyzed in an artificial common currency, thus eliminating the impact of price differences between countries. (Eurostat, 2014)

Eurostat method of calculating purchasing power parity, does not reflect the actual growth recorded in the analyzed economies, it only works as instruments of comparison to a reference system (EU with 28 countries included representing the basis of comparison = 100).

## THEORETICAL CONSIDERATION

Purchasing power parity (PPP) helps expressing the number of foreign currency units required to buy the same volume of goods and services that can be purchased with a unit of that country currency, used as a basis for comparison.

In purchasing power parity calculation there are used two different methodologies for calculations:

A. Expression of macroeconomic aggregates in comparable volume aggregates. In particular, purchasing power parities are used to compare the gross

domestic product (GDP), one of the most important macroeconomic aggregates, in different countries, without being distorted the price levels in these countries.

B. Analysis of relative price levels between countries. In this regard, PPP is divided by the nominal exchange rate to achieve a price level index. That expresses the price level of a country in relation to the other countries analyzed. (Eurostat, 2014)

PPP is a useful tool for converting analyzed macroeconomic indicators of analyzed countries expressed in a currency, so comparisons between countries included in the analysis, becomes relevant. Comparisons of results are as volumes, price component being removed.

The implementation of this calculation tool, gives the advantage to compare informations on the price level between countries, having in the same time, the disadvantage of being unable to provide an effective measure of the price level nationwide. The products and services of consumption baskets, reflect differences in tastes, traditions and cultures of the countries, but the final utility given by the use of them is the same.

PPP used in the analysis is according to Eurostat methodology, which calculates the geometric mean of direct and indirect Fisher indices, between all countries subjected to analysis, method that yields some of the most accurate data. However, the resulting information cannot be used to obtain a strict hierarchy of countries, due to the existence of a certain margin of error. PPP provides only an approximation of the degree of relative size of GDP and the price level in a country compared to other countries. The margin of error depends on the quality of data analyzed and the relevance of selected goods and services for prices gathering.

In this respect, in the present analysis will be included also, other relevant indicators for international comparisons of economies size for the analyzed countries, such as GDP, Harmonised Index of Consumer Prices (HICP) and inflation rate. GDP is the most common instrument used for measuring the economy of a state, in order to analyze its convergence with the EU. Inclusion of GDP in this analysis, gives us a frame of reference of our country compared to average of EU developed countries. Harmonised Index of Consumer Prices and

also inflation rate, allows international comparisons of inflation rates, in the households in EU.

### **Compared evolution of purchasing power parity – results and discussions**

Gross Domestic Product (GDP) is a macroeconomic indicator that reflects the sum of the market value of all goods and services for final consumption. It reflects the final outcome of the production activity of resident producer units. It is one of the most used tool, for assessing growth and economic development of a country.

GDP per capita is an indicator used in comparison analyzes for living standards and in the context of EU integration, it examines the degree of convergence in the Union. Our country joined the EU in 2007, along with Bulgaria. For 2007 Romania registered a GDP per capita in PPP by 43 points, standing at almost half the baseline level of the EU (28 member states) of 100, close to Bulgaria with 40 points. These figures place our country in the penultimate place, and Bulgaria last place. The most prosperous country of the EU in 2007 was Luxembourg, the indicator was with 174 points above the EU average, followed by the Netherlands, where GDP per capita was 32 points ahead of the EU average. 13 countries had GDP per capita in PPP higher than the EU average, namely: Belgium, Denmark, Germany, Ireland, Spain, France, Italy, Austria, Finland, Sweden and Great Britain, together with the two countries above: Luxembourg and the Netherlands.

Also, the Czech Republic, Greece, Cyprus, Malta, Portugal and Slovenia recorded GDP per capita in PPP between 70 and 100 points, lower than the EU average. Countries close to the level of our country, under 70 points were: Croatia, Latvia, Lithuania, Hungary, Poland and Slovakia. Of these, only Croatia has joined the EU in 2013, all other countries have joined the EU in 2004. In this context the comparison of PPP in our country with the countries that joined the Union in the same period is relevant, having in mind the similar conditions in which economic indicators in these countries have evolved.

**Table 1**

**GDP/Capita in PPP for countries that joined the EU in 2004, 2007 and 2013**

Country / Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
<b>Bulgaria</b>	35	37	38	40	43	44	44	46	47	47
<b>Croatia</b>	58	59	60	62	65	63	60	60	61	61
<b>Latvia</b>	47	50	53	57	58	54	55	60	64	67
<b>Lithuania</b>	52	55	58	62	64	58	62	67	72	74
<b>Hungary</b>	63	63	63	61	64	65	66	67	67	67
<b>Poland</b>	51	51	52	54	56	60	63	65	67	68
<b>Romania</b>	35	35	39	43	49	50	51	51	53	54
<b>Slovakia</b>	57	60	63	68	72	73	74	75	76	76

Source: <http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home/>

According to the table above, all the countries that joined the EU after 2004, shows similar levels of development, in terms of GDP per capita in PPP. Given that PPP cannot be used to express a hierarchy of countries, being only a comparison tools between countries in a single year, from the above table it can be seen a convergence of development levels, countries which joined in 2004, 2007 or even 2013 looks closer to the EU average, despite setbacks occurred during the economic crisis. Our country also confirm this, we can notice in 2004, 2005 and 2006 (Romania's EU pre-accession period) a difference of up to 65 points from GDP per capita in PPP at EU level and in the near future after accession to the EU a lower difference from the UE average, 51 points in 2008, 50 in 2009 and 2013 this difference reached 66 points.

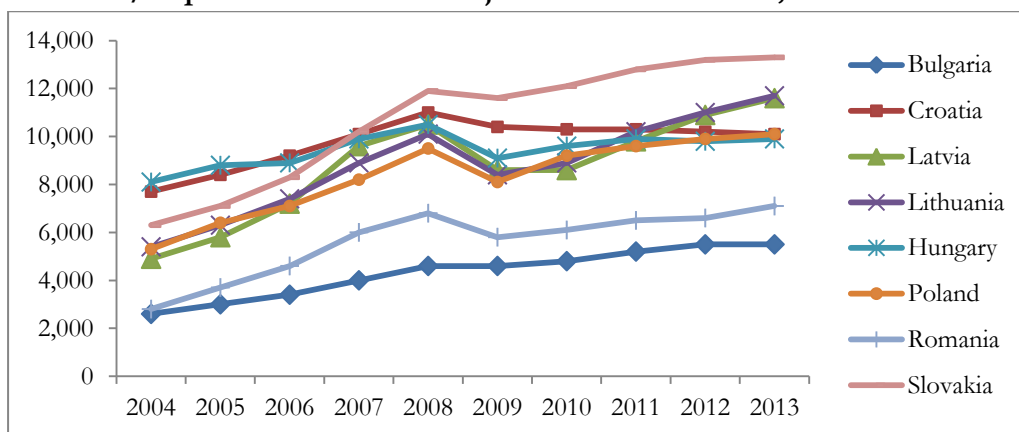
For other countries developed economically, over the average GDP per capita in PPP of 100 points, we can see a slight increase indicator evolving from year to year or at most. One of the main factors affecting this trend is worldwide economic crisis that occurred in recent years.

For an overview of the evolution in terms of PPP in Romania in the context of EU integration, in this analysis will be brought into question other relevant indicators, such as Harmonised Index of Consumer Prices, Gross Domestic Product and inflation rate.

GDP is an important indicator reflecting the end result of the production activity of resident producer units. It is one of the most used tools for assessing growth and economic development of a country

**Figure 1**

**GDP/Capita for countries that joined the EU in 2004, 2007 and 2013**



Source: <http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home/>

The above chart highlights the evolution of the 8 countries that joined the EU after 2004 in terms of GDP per capita in the period 2004-2013. It can be seen that 2009 was a watershed year for all 8 countries, the main factor is the economic crisis, GDP declines compared to 2008 only in Bulgaria it was stable. In the cases of Croatia, Latvia, Lithuania and Hungary were registered increases GDP per capita in the period 2004-2008, the indicator decreased in 2009 compared to 2008, followed by increases in 2010-2013. The same conclusion can be extracted for Slovakia also, the difference from the above countries is that the decrease was very small in 2009 compared to 2008, which demonstrates that they've mobilized well the economic crisis. Poland is the country that recorded a sinuous GDP per capita in the analyzed period, with growth until 2008, followed by decreases and

increases again until 2013. And in Romania have felt the economic crisis in GDP per capita, Romania registering growth until 2009, followed by a decrease in GDP in 2009 compared to previous years and then slow growth was recorded until 2013.

Like PPP, HICP have appeared from the need of international comparability of prices in different countries. They are international indicators calculated with a smoothed approach at EU level to assess price stability. Also, besides the possibility of comparison at international level, HICP aim is to formulate and implement monetary policies at national and European level. For the 28 EU countries Eurostat calculates the HICP for 12 categories of food goods, non-food goods and services in the consumption basket of a household. National Institute of Statistics sent to Eurostat data recorded for the 12 categories and representative basket of consumer goods and indices are calculated according to Eurostat methodology.

The below table highlights the evolution of the HICP, calculated according to Eurostat methodology. As can be seen, for all 8 countries analyzed between 2004 and 2013, there were price increases. In 2007, the country with the lowest HICP was Poland, followed by Croatia, Slovakia and Lithuania. Romania ranked 5, followed by Hungary, Bulgaria and Latvia. In 2013 the situation has changed in the following sense: from 101.3 HICP in Poland in 2007, in 2013 HICP reached 125.5; country with the lowest HICP is Slovakia, followed closely by Croatia and Poland. Ranked 4 in 2013 was Lithuania with HICP 139.75; followed by Hungary, Bulgaria, Latvia and Romania ranked last. Our country has the highest HICP recorded in 2013 of the 8 countries that joined the EU after 2004, which we classify as the country with the highest prices relative to the level of economic development.

Table 2

## HICP for countries that joined the EU in 2004, 2007 and 2013

Country / Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
<b>Bulgaria</b>	94.3	100	107.42	115.55	129.36	132.56	136.58	141.21	144.58	145.14
<b>Croatia</b>	97.09	100	103.29	106.04	112.19	114.68	115.93	118.49	122.46	125.31
<b>Latvia</b>	93.55	100	106.57	117.32	135.21	139.62	137.91	143.73	147.02	147.03
<b>Lithuania</b>	97.41	100	103.79	109.83	122.01	127.09	128.6	133.9	138.14	139.75
<b>Hungary</b>	96.63	100	104.03	112.28	119.05	123.85	129.7	134.79	142.42	144.85
<b>Poland</b>	97.9	100	101.3	103.9	108.3	112.6	115.6	120.1	124.5	125.5
<b>Romania</b>	91.68	100	106.6	111.84	120.69	127.43	135.17	143.04	147.88	152.61
<b>Slovakia</b>	97.28	100	104.26	106.23	110.41	111.43	112.21	116.79	121.16	122.93

Source: <http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home/>

In direct relation to the HICP is inflation rate. This characterizes the evolution of the price level from one period of time to another. Inflation rate is an indicator calculated nationally by the National Institute of Statistics to track evolution of consumer prices for a consumer basket, based on the most representative of a household goods and services. Eurostat also publishes the inflation rate in EU countries, to ensure comparability between countries.

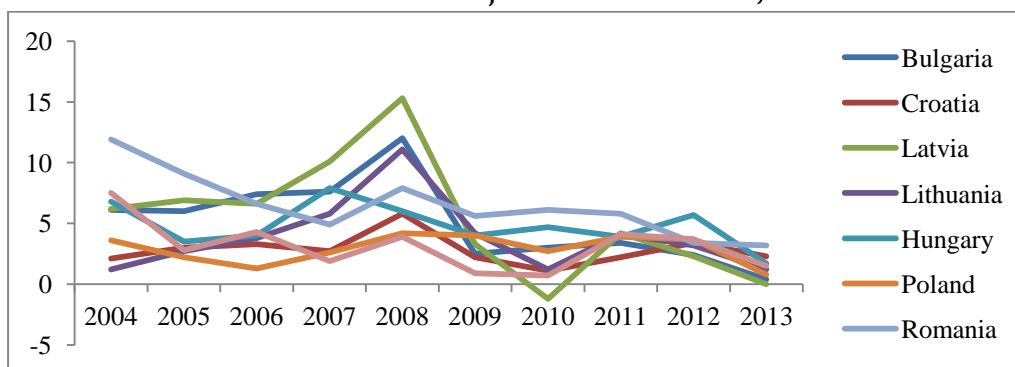
The below chart highlights the evolution of the 8 countries that joined the EU after 2004 in terms of inflationary in the period 2004-2013. It can be seen that all they have encountered problems with high rates of inflation in the analyzed period, especially until the accession to the EU, and then observe a decrease in the inflation rate. If Croatia and Poland in the period 2004-2013 inflation rate



decreased, only registering growth in 2008 compared to 2007, in Croatia inflation in 2008 was 5.8; and in Poland 4.2. Regarding Bulgaria, Lithuania and Hungary inflation rate increases in 2006-2008, in the context of the decline of this indicator in the 8 years analyzed.

Figure 2

#### Inflation rate for countries that joined the EU in 2004, 2007 and 2013



Source: <http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home/>

During the period 2004-2013 the country with the highest rate of inflation was Bulgaria, 12 percent in 2012. Latvia is the country which recorded increases in inflation in the early period, until 2008, reaching 15.3 percent, followed by indicator declines in recent years analyzed, in 2013. Latvia has ended the year with an inflation rate of 0%. Amid declining inflation rate between 2004 and 2013, Slovakia recorded growth in 2008, 3.9% in 2012, 3.7%. Our country is one of the countries with the highest inflation rate in the analysis, in 2004 the inflation rate was 11.9 % in 2007 to 4.9 % and in 2013 Romania ended the year with an inflation rate of 3.2%; having the highest inflation rate among all countries surveyed.

### CONCLUSIONS

Romania is among the least developed countries of the EU. The conclusion is drawn from the analysis some of the most important macroeconomic indicators characterizing the evolution of a country. Our country ended 2013 second lowest GDP/capita in PPP of all EU countries, the latter being occupied by neighboring Bulgaria. Analysis of Romania in terms of GDP/capita in EUR show an increase

in GDP in the period 2004-2008, a decrease of this indicator in 2009 compared to 2008, with the advent of the economic crisis, followed by an increase of the indicator in 2010-2013. In terms of GDP/capita Romania ended 2013 second lowest in the EU, followed also of Bulgaria. In late 2013 Romania recorded the highest HICP of the 8 countries that joined the EU after 2004. Romania has also had the highest inflation rate of 3.2% from the 8 countries that joined the EU after 2004. In these circumstances, the Central Bank policies targeting inflation and economic growth are important for better stability of the economy of our country and also for convergence towards the EU average.

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