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ANALYSIS OF THE EVOLUTION OF THE GROSS DOMESTIC PRODUCT OF ROMANIA USING DEFLATED DATA

Case
Study

Keywords

*Gross Domestic Product,
Growth rate,
Constant prices,
Purchasing power parity,
Deflated data*

JEL Classification

E31, O11, O47

Abstract

This paper treats the evolution of Romanian economy, measured through the value of the Gross Domestic Product, altered by deflation methods. The authors assume that deflation will ensure the comparable character of data included in the study, for time and space-oriented analyses. The analysis approached the following topics: the GDP of Romania during the last ten years, the annual growth rate, the evolutions in constant price, the evolution of the indicator related to agriculture, constructions, industrial production, contribution of public administration and services. Also, the evolution of the GDP per capita is evaluated. The research instruments used include graphical presentations, commented and discussed in detail by the authors. The complexity of the analyses makes possible to better understand the status and evolutions of Romania, from the economic viewpoint, across the considered time interval. The deflation is based on the inflation (price index) and assures the possibility to compare the Gross Domestic Product obtained by Romania during a period.

INTRODUCTION

In terms of macroeconomic indicators in Romania, they are characterized by a stable situation with a low level of inflation and external deficits, but with a high level of risk.

Economic growth is an important one, due mainly to fiscal easing and improving labor market conditions, resulting in gradual increase labor demand and changes made through wage policy, which had the effect of rapid increases wages. While the creation of new jobs was found at a level below expectations as a sign of rigidity that characterized the labor market in particular in view of differences existing skills on the labor market over the number and specificity of available jobs.

In terms of sustainable economic growth in Romania, this requires measures in order to ensure that the objectives in the area of taxation, improving the efficiency of expenditure and increase tax collection. Romania must improve living standards while carrying out fiscal targets and structural reforms mainly in the energy, transport and public administration, as fiscal objectives, financial sector stability, with rising standards of living is Romania's priorities in the coming period of time.

Accelerate the implementation of structural reforms is important for sustaining growth. The government has made some progress on this agenda in recent years, on governance of state enterprises and reforms in the energy sector; However, Romania does not occupy a leading place among EU member states. Key areas for reform include public expenditure management, fiscal management, energy, transport, health, property registration and cadaster, and public sector enterprises. World Bank Supports Romania's structural reform agenda through a series of development policy loan, aimed at boosting economic growth and enhancing the efficiency of fiscal policy.

Useful observations are drawn from each section of the analysis. Thus, it is outlined the importance and potential of agriculture, together with the need for further action in this field. Also, the overall GDP growth emphasizes the position of Romania in the EU, included in the category of "economic tigers". The constructions sector strives to recover from the peak in 2008 and subsequent downfall during the economic crisis. Also, the manufacturing sector records steady growth. At the same time, only after deflation can we compare our national growth with the level registered by other countries from the European Union or at a larger, international level. Starting from the Gross Domestic Product, we can calculate the level of GDP per capita. By using this indicator, calculated as the basis of deflated GDP,

the national comparison in time and international comparison become more relevant.

LITERATURE REVIEW

Anghelache (2013, 2014, and 2015) realizes a thorough study of the Romanian economy, including the GDP and inflation evolutions analysis. Koulakiotis, Lyroudi and Papasyriopoulos (2012) approach the relation between GDP and inflation. Grabara, Brezeanu and Paun (2016) develop on the correlation between the public deficit and debt indicators and the GDP. Simionescu (2014) proposes some models for modeling and forecasting the GDP rate in the Romanian Economy. Schonauer(Sacală 2015) researches the regional GDP and unemployment rate during the interval 2000-2012. Necşulescu and Şerbănescu (2014) approach the GDP of Romania through econometric instruments. Anghelache (2013) presents an analysis on the main indicator of the Romanian Economy, a study further developed by Manole, Kot, Popovici and Nita (2016), Anghelache, Anghel and Sacala (2014). Anghel, Diaconu and Sacala (2015) analyse the GDP dynamics by categories of uses. Prodan, Grigorescu and Moscu (2014) have studied the behavior of the national economy of Romania during the recent crisis. Dârzan, Ionescu and Cristian (2013) evaluate the impact of EU accession on Romania's economic evolution. Macchiarelli (2013) studies the similarity between GDP and inflationist cycles. Lahiri and Sheng (2010) approach a subject in GDP and inflation forecasts, on the same major topic have developed Kapetanios, Marcellino and Papailias (2016), also Giordani and Sonderlind (2000). Kitov analyzes the situation of the United States economy from the viewpoint of inflation, increase of GDP and evolution of the population. Franco, and Mapa (2014) propose a model that allows the study of GDP and inflation correlation approaches. Abo-Zaid and Tuzemen (2012) realize a study on long term about inflation targets. Clark and Doh (2011) develop on the trend inflation.

RESEARCH METHODOLOGY AND DATA

Among the challenges to accelerate growth in the country we include uncertainty in the Eurozone markets and exports, political developments in the context of local and parliamentary elections and the absorption of EU funds.

One of the key priorities of Romania continues to be improving the skills of the population to achieve the objectives of the European strategy 2020 to bring the level of achievement of the education

school population at current levels found in most European countries. A national education law in force since early 2011 promotes changes in virtually all areas of education.

Another priority is reforming the health sector, focusing on promoting cost-effective outpatient and primary care services, hospital infrastructure streamlining and reducing inefficiency and waste in this sector.

Romania's agriculture has an important role in the European Union economy; however, the sector requires further development. Romania has the highest proportion of rural population in the EU (45%), the highest incidence of poverty in rural areas (70%), and one of the biggest differences in the standard of living and social conditions between rural and urban. According to European Strategy 2020 Romania was committed to reducing the population at risk of poverty 580,000 people and attain an employment rate of 70% by 2020. By 2013, it was achieved only a third of the target of poverty. One in five Romanian has an income at poverty level, and much of the income poverty is persistent, meaning that three-quarters of the poor were poor for at least three years. A third of the population is characterized by material deprivation in the sense of not being able to get items deemed necessary to lead a proper life.

The recorded value of gross domestic product (GDP) in Romania was 177.95 billion US dollars in 2015. The share value of Romania's gross domestic product is about 0.3% of the world economy. The gross domestic product in Romania has averaged 88.89 billion dollars from 1990 to 2015, reaching a peak of 208.18 billion dollars in 2008 and a minimum of 25.10 billion dollars in 1992 (as seen in Figure No. 1).

In the period under review, GDP grew on average by 2.75%, the annual rate, with a maximum value of 10.7% in the second quarter of 2008 and a minimum of -8.3% Checkin second quarter of 2009. In terms of the evolution of GDP in 2015, it increased by 4.3% per year, increasing an important contribution to household consumption had a population with an increase of 9.5% and fixed investment by an increase of 2.3%. A negative influence was registered in the exports increased by 5.5%, but was dwarfed by the volume of imports which grew by 9.7%. On the expenditure side, household consumption is the main component of gross domestic product and accounts for 63% of total use, followed by gross fixed capital formation by 22%, while government spending by 14%. With annual growth rates of GDP in Romania at constant levels above 6 percent until 2008, its economy is aptly called the "Tiger of Eastern Europe." However, macroeconomic gains have recently begun to stimulate the creation of a middle class and combating poverty widespread. At

the same time, the GDP has contracted by 7.1% in 2009 and 0.8% in 2010, but was registered accelerated growth in 2013, due to the large volume of exports of industrial and agricultural output excellent (as seen in Figure No.2).

GDP in constant prices in Romania increased to 35905.30 million in 2015 (Q4) compared to the same quarter of 2014, ie 35354.90 million lei. The gross domestic product at constant prices in Romania stood on average at 26.85562 billion lei from 1995 to 2015, reaching a peak of 35905.30 million lei in the last quarter of 2015 and a minimum level of 19749.20 million in 1999 (Q2) (as seen in Figure No.3).

By sectors of national economy, gross domestic product in agriculture in Romania has reached a level 2738.40 million in the last three months of 2015 compared to the value recorded in the same period of 2015 2719.10 million lei. The average value of gross domestic product from agriculture in Romania was 2692.37 million lei from 1996 to 2015, with a maximum recorded 3357.80 million lei in the third quarter of 2004 and a minimum registered 1880.50 million RON in 2007 (Q3) (as seen in Figure No.4).

Construction of the gross domestic product registered in Romania had a decrease to 2452.20 million during the last three months of 2015 compared with the previous year, from 2624.20 million. Average value for the past twenty years was 1848.96 million lei, with a maximum level of 3468.60 million lei recorded in the third quarter of 2008 and a minimum of RON 955.50 million in 1997 (H2) (as seen in Figure No. 5).

The contribution of manufacturing in Romania increased to 7990.30 million during the last three months of 2015 to 7760.80 million lei in the same period of 2014, recording an average of 6492.11 million lei from 1996 to 2015. The highest level touched the contribution of manufacturing to gross domestic product in this period was 7766.40 million lei in the first three months of 2011, while the lowest level was 4750.70 million lei in the third quarter of 1999 (as seen in Figure No. 6).

Government contribution to gross domestic product in Romania increased to 1461.80 million in the first quarter of 2015 to 1448.70 million lei in the last quarter of 2014. GDP in public administration in Romania recorded an average of 1663.37 million, from 1996 to 2015, reaching a peak of 2026.70 million lei in the first quarter of 2003 and a minimum of RON 1403.90 million in the fourth quarter of 2013 (as seen in Figure No.7).

The contribution of services to GDP in Romania obtaining increased to 8591.60 million during the first three months of 2015 to 8191.30 million lei in the last quarter of 2014. The average gross domestic product of service in Romania has reached a level of 5501.39 million lei from 1996 to 2015, reaching a peak in this period of 8591.60

million lei in the first quarter of 2013 and a minimum of RON 3400.90 million in the first quarter of 1995 (as seen in Figure No. 8).

GDP per capita in Romania has reached a level of US \$ 9,526.59 in 2015, equivalent to 75% compared to the global average. GDP per capita in Romania, recorded an average value of 7003.24 USD from 1996 to 2015, with a maximum of 9526.59 USD in 2015 and a minimum of \$ 4,779.72 in 1999.

GDP per capita calculation is performed by dividing the value of inflation-adjusted value of GDP at the country's total population. (as seen in Figure No. 9).

GDP per capita in Romania recorded a level of 19925.54 dollars in 2015, when adjusted by purchasing power parity (PPP), equivalent to 112% of the average in the world; GDP per capita (PPP) in Romania, recorded an average of 13540.23 USD from 1996 to 2015, reaching a peak of 19925.54 USD in 2015 and a record low of 9997.13 USD in 1999. (as seen in Figure No. 10).

CONCLUSION

In this paper, the authors have analyzed the main evolutions of the Gross Domestic Product of Romania, across a significant time interval.

In terms of the evolution of Romanian gross domestic product from 1990 to the present can outline several periods of the economy. In the past 25 years Romania's GDP grew on average 4.5 times.

There were identified several key factors that can contribute to the economic growth of Romania. One of them is the accelerated implementation of structural reforms. Fiscal reform and improvement of the conditions of the labor market is expected to successfully contribute to the increase of the living standard and subsequently to a more significant economic growth. Structural reforms are recommended to be pursued in the energy, transport and public administration fields.

The education level of the population, viewed through the perspective of European strategy for 2020, is appreciated as an objective of capital importance for Romania. Reforms and developments in agriculture can help develop the living standard and also can sustain the economic growth.

The analysis of GDP evolution outlined that the indicator increased, across the interval, by an average 2.75% per year. In the last year, 2015, the indicator grew by an index that is above the average value. One of the main factors that contributed to this evolution is the household consumption. The net export presents a less than favorable situation, due to the fact that the increase of imports surpasses the growth of exports.

Also, a favorable factor for the evolution of the Romanian economy in the near future is the increase of the GDP in the last quarter of 2015, compared to the corresponding value in 2014. This value (Q4 2015) represents a peak during the considered interval. GDP per capita in Romania has reached a level of US \$ 9,526.59 in 2015, equivalent to 75% compared to the global average.

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Figures



Figure No. 1. GDP evolution in Romania between 1996-2015; Source: National Institute of Statistics, Romania, data have been adjusted by the authors



Figure No. 2. The annual GDP growth rate in Romania between 1996-2015; Source: National Institute of Statistics, Romania, data have been adjusted by the authors

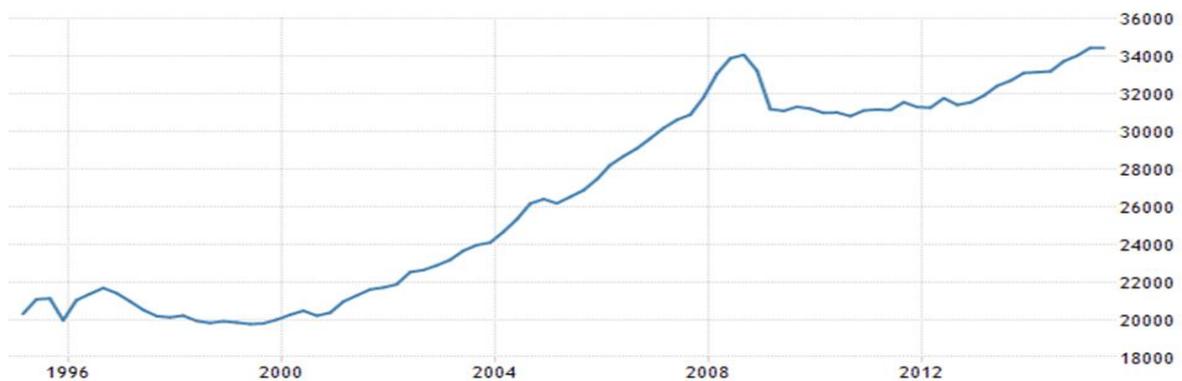


Figure No. 3. GDP in constant prices in the period 1995-2015; Source: National Institute of Statistics, Romania, data have been adjusted by the authors

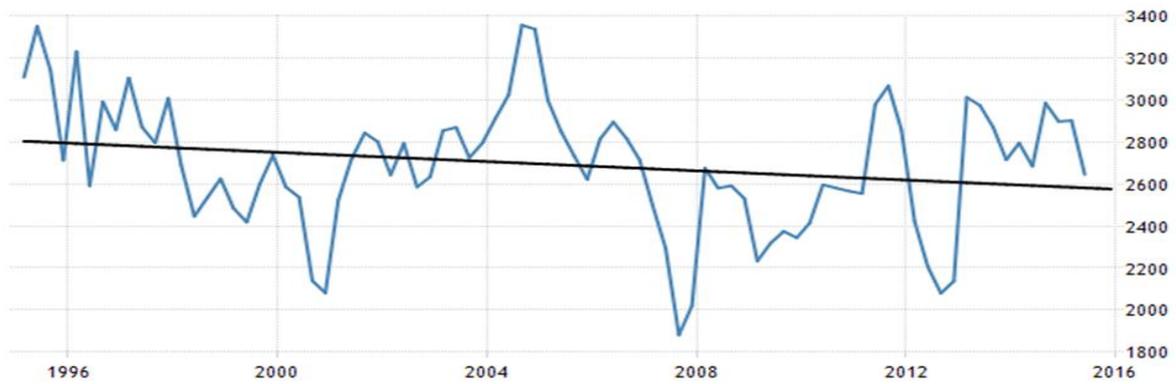


Figure No. 4. GDP evolution in agriculture in Romania during 1995-2015; Source: National Institute of Statistics, Romania, data have been adjusted by the authors



Figure No. 5. GDP evolution in constructions in Romania during 1995-2015; Source: National Institute of Statistics, Romania, data have been adjusted by the authors

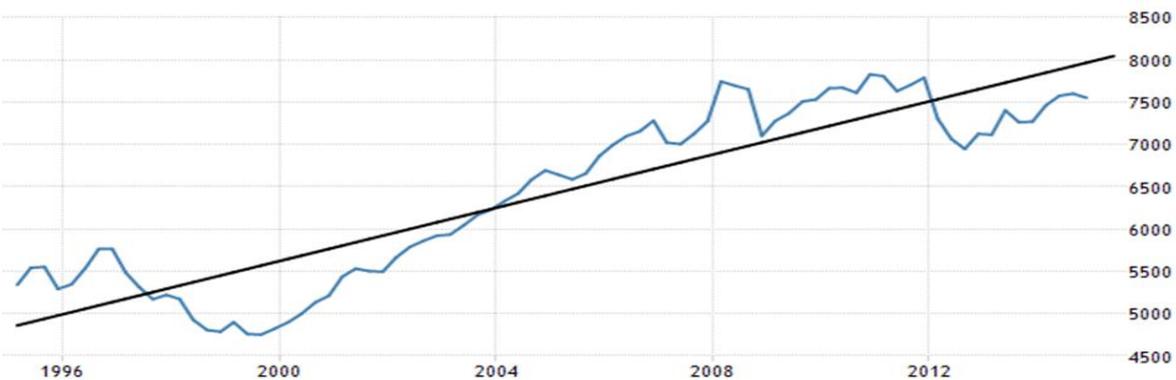


Figure No. 6. . GDP evolution in industrial production in Romania during 1995-2015; Source: National Institute of Statistics, Romania, data have been adjusted by the authors



Figure No. 7. Evolution of public administration contribution to GDP between 1995-2015; Source: National Institute of Statistics, Romania, data have been adjusted by the authors

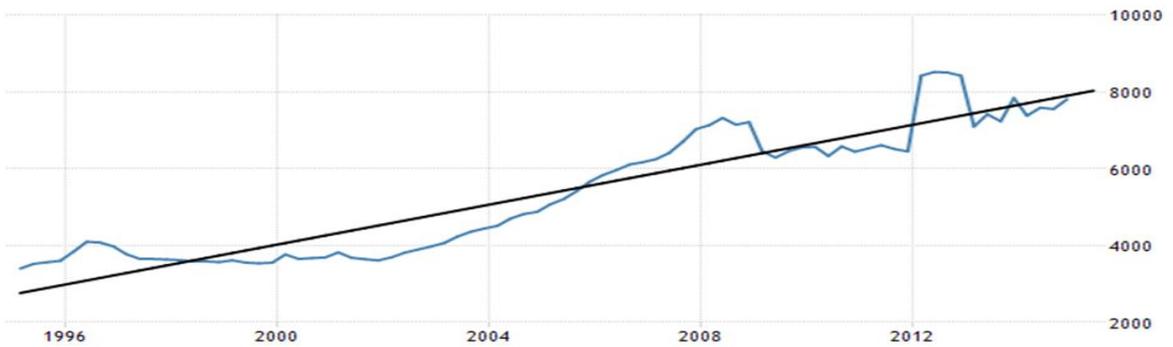


Figure No.8. The evolution of services contribution to GDP in the period 1995-2015; Source: National Institute of Statistics, Romania, data have been adjusted by the authors



Figure No.9. Evolution of GDP per capita between 1995-2015; Source: National Institute of Statistics, Romania, data have been adjusted by the authors

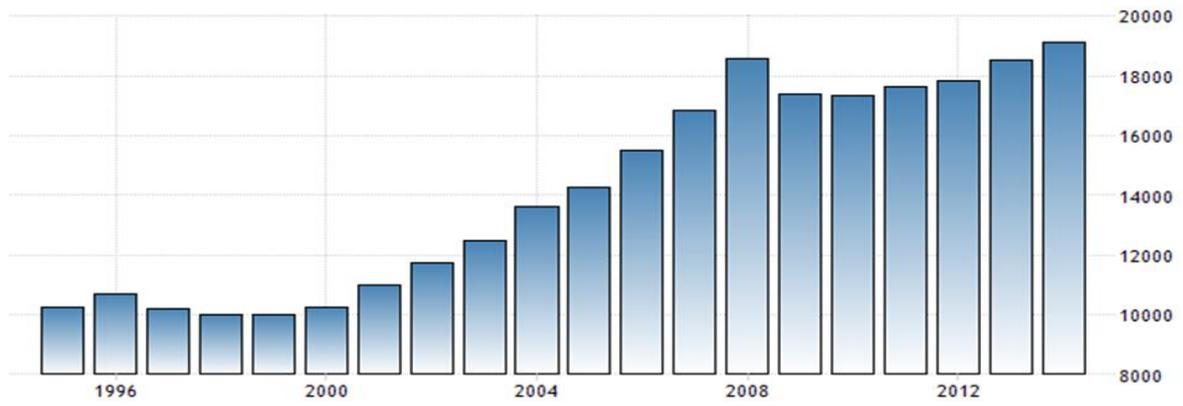


Figure No.10. Evolution of GDP per capita in PPP between 1995-2015; Source: National Institute of Statistics, Romania, data have been adjusted by the authors