

EMPIRICAL ANALYSIS OF THE IMPACT OF TAX REVENUES ON ECONOMIC GROWTH

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Abstract

The main objective of this article was to analyze the relationship between total revenues, social contributions and total gross expenses in Romania. The analysis covers the period 1995 to 2022 and is based on data collected from official sources. The study aimed to highlight the long-term dynamics and short-term adjustments between the key economic variables under analysis, thus providing insight into how fiscal policies can influence budgetary stability. Thus, in order to analyze the long-term interdependencies and short-term adjustments between total revenues, social contributions and total gross expenses, we proceeded to identify the cointegration relationships between the variables. The results showed that although there is an adjustment process, it is not instantaneous. Any short-term deviation of one of the key variables causes a series of adjustments in the other variables to restore the long-term balance, thus confirming the existence of structural links between these variables, while also providing a clear perspective on how these relationships manifests and stabilizes over time.

Keywords: fiscal policy, total gross expenses, social contributions, tax revenues.

Classification JEL: H20, M40, M41

1. Introduction

The relationship between fiscal policy and economic growth is a central area of study in modern economics. In a globalized economy, where nation states must manage their resources in an efficient way to ensure economic development and the well-being of citizens, understanding how the various components of fiscal policy interact with the economy is essential.

Romania has gone through, in the last decades, a series of significant economic transformations, which culminated in the transition from a centralized economy to a market economy. The study of the relationships between fiscal revenues (VE), social contributions (CO) and total gross expenses (CH) becomes essential to understand how the fiscal policies adopted influenced Romania's economic growth.

The data used in this study were collected from the World Bank and Eurostat databases, they cover the period 1995 and 2022, providing an overview of Romania's economic evolution in recent decades.

2. Literature review

Numerous empirical studies have examined the relationship between the total tax burden and economic growth, using various methodologies, covering different time periods, and focusing on various countries or regions. However, no clear consensus has been reached regarding the nature and significance of this relationship. This is not surprising given that the relationship between tax burden and GDP growth is complex and multidimensional. While some studies suggest a positive association, indicating that higher tax revenues can support public investment and thus stimulate economic growth, other studies emphasize the importance of efficient management of public spending and avoiding an excessive tax burden, especially on labor and capital, which could slow down private sector activity.

For example, Engen and Skinner (1992) analyzed data from 107 countries for the period 1970-1985 and found that an increase in taxation and total gross balanced budget spending reduces output growth rates. Similarly, an econometric study conducted by Folster and Henrekson (2001) on a sample of developed countries for the period 1970-1995 found that both taxation and public spending are negatively associated with economic growth.

In contrast, studies such as the one by Kalas et al. (2017), who analyzed the relationship between taxes and economic growth in the United States from 1996 to 2016, found a strong positive relationship between tax revenues and economic growth. A positive impact of taxation on economic growth was also identified by Gashi et al. (2018), who applied regression analysis on time series data from 2007-2015 for Kosovo.

Most research has shown that fiscal policy is a key driver of both short-term and long-term economic growth. There is also a significant relationship between total gross expenditure, tax revenue and economic growth in most countries. Empirical evidence suggests that although the relationship between fiscal policy and economic activity may sometimes be weak, it nevertheless remains vital (Halkos and Paizanos, 2015). Other studies have found a positive causal relationship between fiscal policy and economic growth (Benos, 2009; Ozer and Karagol, 2018; Boiciuc and Orțan, 2020).

Easterly and Rebelo (1993) emphasized the importance of fiscal policy in economic growth, particularly in terms of business and revenues taxes in poor and developed countries. Ocran (2011) argued the significant positive effect of public spending and taxes on economic growth. Other studies have confirmed the positive effect of public spending and the negative effect of tax revenues on economic growth (Almasaeed and Tsaregorodtsev, 2018). Engen and Skinner (1992) found a strong negative impact of public spending and taxation on economic growth. Specifically, public spending has a positive effect on growth, while tax revenues limit this growth.

The relationship between gross total expenditure and economic growth is subject to long-term changes, and can function as both a cause and an effect. While some studies indicate that increasing public spending over time is a driver of economic growth (Angelopoulos and Philippopoulos, 2007), other research suggests a weaker relationship (Auteri and Costantini, 2004; Zulfiqar, 2018).

The role of total gross expenditure in stimulating economic growth is the subject of some debate in both developed and developing countries (Lindaue and Velenchik, 1992). Research has produced conflicting results; for example, some studies show that the effect of public spending on economic growth is insignificant (Alesina and Perotti, 1998; Lee et al., 2019), while others suggest that public spending has a positive impact on economic growth in the short and long term (Dudzeviciute et al., 2018; Nguyen, 2019).

Studies have distinguished between the effect of public spending on economic growth over time, demonstrating a positive relationship in the long run (Oladele et al., 2017; Yoong et al., 2020) and a significant negative relationship in the short run (Lin, 1994). Gebreegziabher (2018) confirms that total spending positively affected economic growth in both the short and long term.

3. Research methodology

Descriptive analysis provides an overview of the distribution and main characteristics of the analyzed variables. This is an essential step in data exploration, including the following elements.

Measures of Central Tendency - The mean indicates the average value for each variable and provides a reference point for the distribution of the data. The median is the value in the middle of the distribution and is useful for seeing if there are skews from the mean.

Extremes (Maximum and Minimum): - The maximum and minimum values of each variable indicate the range of variation, helping to understand the limits of the fluctuations of the recorded values.

Dispersion of data:- The standard deviation indicates the level of variation from the mean of each variable and gives an idea of the stability of the data. The measure of skewness (Skewness) shows whether the distribution is skewed to the left or the right, while the measure of flattening (Kurtosis) indicates how flat or sharp the distribution is relative to a normal distribution.

Normality of distribution:

The normality test, such as Jarque-Bera, checks whether the data follows a normal distribution. The probability associated with this test helps assess normality, and higher values of the probability suggest a distribution close to normal.

Sum and Sum of Squares of Deviations:

These values summarize the total and variance of the data for each variable, providing additional information about the structure of the data set.

Number of observations: - The total number of observations for each variable indicates the sample size.

Table no 1. Descriptive statistical analysis of indicators

	VE	CO	CH
Mean	16.73855	9.778571	106.0922
Median	17.08437	9.750000	105.6777
Maximum	18.91831	11.80000	114.0835
Minimum	14.18429	7.200000	100.4217
Std. Dev	1.213450	1.325353	3.500756
Skewness	-0.642096	-0.236482	0.424493
Kurtosis	2.588639	1.942652	2.909022
Jarque-Bera	2.121428	1.565291	0.850563
Probability	0.346208	0.457195	0.653586
Sum	468.6795	273.8000	2970.581
Sum Sq. Dev.	39.75642	47.42714	330.8929
Observations	28	28	28

Source: Own adaptation based on the research methodology

Table no. 1 presents the descriptive statistics of the three variables: fiscal revenues, social contributions and total gross expenses.

The mean of fiscal revenues is 16.73855, and the median is 17.08437, indicating a balanced distribution. Values are well distributed around the mean, with moderate variability. The range varies between a low of 14.18429 and a high of 18.91831, indicating a moderate range of fluctuations in fiscal revenues over the period under review. The standard deviation of 1.213450 indicates that the variation in the data is concentrated around the mean, showing a relative stability of fiscal revenues over time. The coefficient of asymmetry (skewness) is -0.642096, which shows a slight negative skewness, with values lower than the average. Although most incomes are close to the average, there are some periods when revenues were lower. The kurtosis of 2.588639 shows that the distribution is nearly normal, being slightly flatter than a normal distribution. The Jarque-Bera test indicates a probability of 0.346208, the distribution of tax revenues does not deviate significantly from normality.

The mean and median for social contributions are almost identical (9.778571 and 9.75), also showing a balanced distribution. The range between the low of 7.2 and the high of 11.8 reflects moderate variability, similar to fiscal revenues. The standard deviation of 1.325353 indicates that variations in social contributions are moderate and relatively stable over time. The skewness coefficient of -0.236482 shows a slight negative skewness, which means that there were some periods when social contributions were lower than the average, but the deviations are not

significant. The kurtosis of 1.942652 suggests that the distribution is slightly flatter than a normal distribution, indicating greater variability at the extremes. The Jarque-Bera test shows a probability of 0.457195, which confirms that the distribution of social contributions is relatively normal.

The average for total gross expenses is 106.0922, higher than for the other variables. The median of 105.6777 is very close to the mean, having a symmetrical distribution of values. The range of values between 100.4217 and 114.0835 suggests greater variability in public spending compared to revenues and social contributions. The standard deviation of 3.500756 confirms this greater variability in total gross expenditures, reflecting greater fluctuations in these expenditures according to budgetary needs and economic priorities. The skewness coefficient of 0.424493 indicates a slight positive skewness, suggesting that there were periods when public spending was significantly higher than the average. The kurtosis of 2.909022 indicates a near-normal distribution, and the Jarque-Bera test, with a probability of 0.653586, confirms that the distribution of total gross expenditure is near-normal.

Overall, the three variables show moderate variability and a relatively balanced distribution close to normality. Tax revenue and total gross expenditure have a slight positive skew, while social contributions show a slight negative skew.

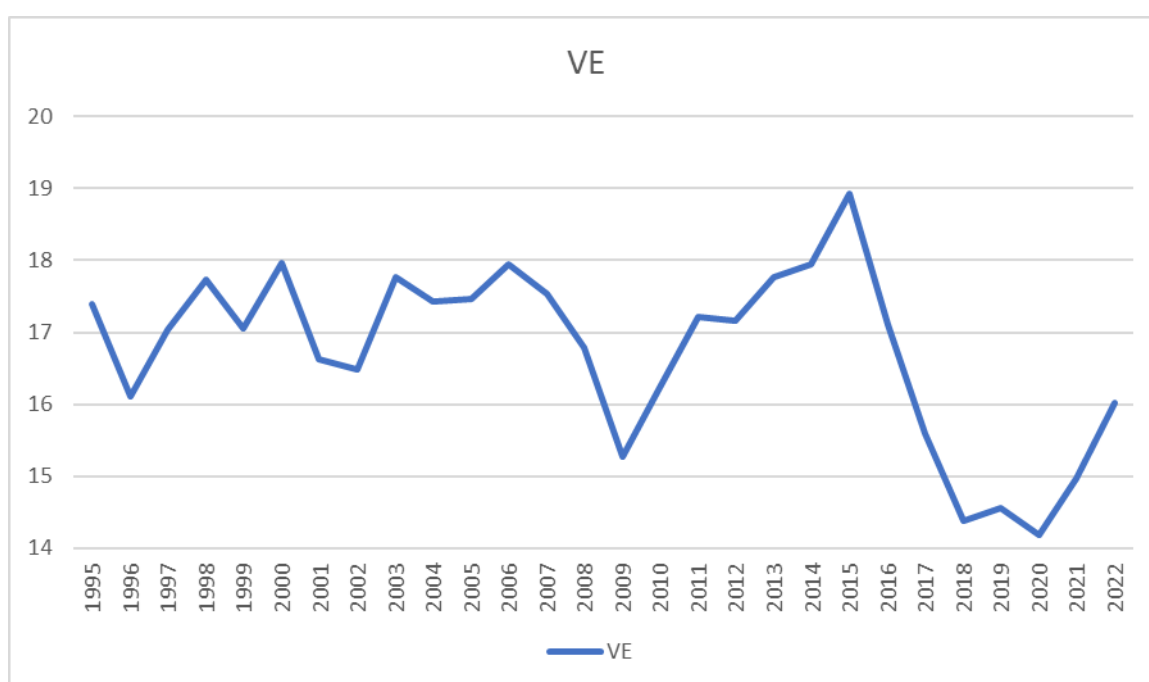


Figure no.1 Evolution of tax revenues (% of GDP) in Romania

Source: Own adaptation based on the research methodology

Figure no. 1 presents the evolution of tax revenues as a percentage of GDP in Romania between 1995 and 2022, providing insight into how economic and fiscal changes have influenced the state's ability to collect revenues over two decades. In the first period, between 1995 and 1999, we observe a steep increase in tax revenues, which suggests a strengthening of fiscal policies. This period was characterized by a series of post-transition economic reforms, given Romania's context, when the economy was moving towards a free market structure and trying to attract investment.

After 1999, tax revenues begin to decline gradually, indicating a weakening of fiscal discipline. This decline continues until around 2008-2009, when revenues reach a low point corresponding to the global financial crisis. The crisis had an impact on Romania's economy, with decreases in budget revenues as economic activity contracted and tax revenues decreased.

In the post-crisis period, although there is a slight recovery, tax revenues remain volatile, signaling a period of economic instability and repeated attempts to adjust fiscal policies. Only since

2016 is there a continuous recovery in tax revenues, which indicates a more solid economic recovery.

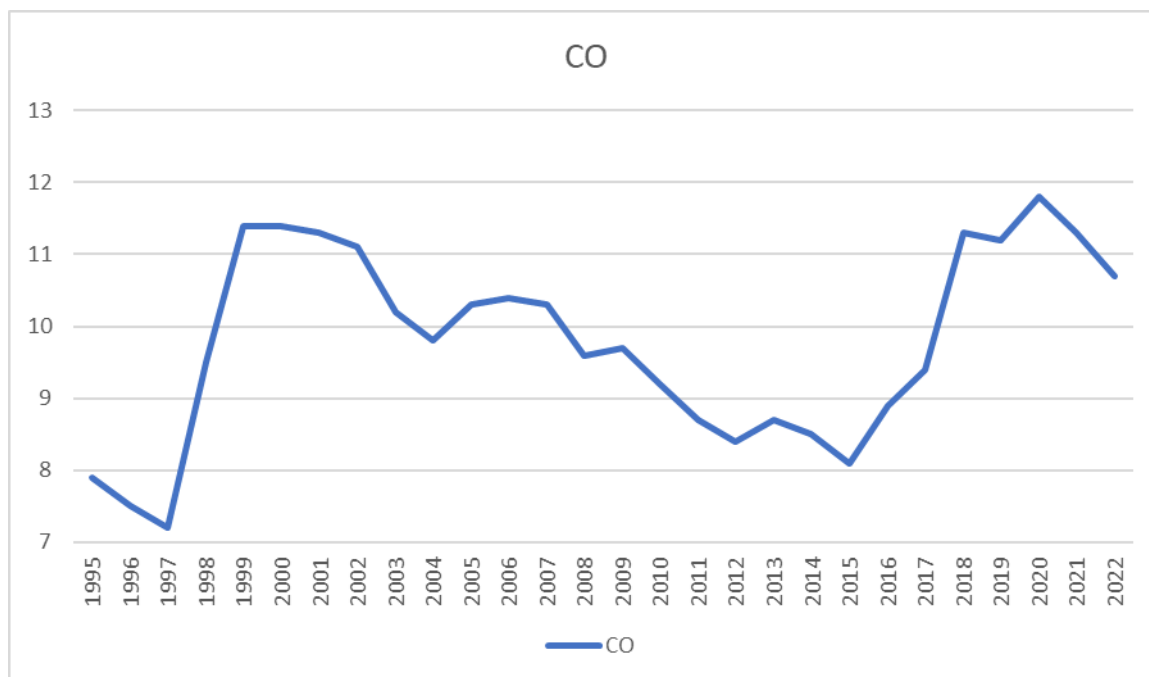


Figure no.2 Evolution of social contributions (% of GDP) in Romania

Source: Own adaptation based on the research methodology

Figure no. 2 illustrates the evolution of social contributions as a percentage of GDP in Romania between 1996 and 2022. In the first period, between 1996 and 1998, an increase in social contributions is observed, reaching a maximum of approximately 12% of GDP. This increase is explained by measures to strengthen the social security system and the implementation of some post-transition structural reforms, against the background of the modernization of Romania's economy and the change in the legislation on social contributions. In the following years, between 1999 and 2004, social contributions begin to decline gradually, stabilizing around 10-11% of GDP. This period reflects a slowdown in economic growth.

Between 2008 and 2010, the impact of the global financial crisis is evident, with social contributions as a percentage of GDP falling to a low of around 8%. This decrease is explained by the loss of jobs, the decrease in income, and implicitly the reduction of the sums collected for the social insurance funds. With the economic recovery, social contributions gradually return to an upward slope after 2010, but this period is characterized by fluctuations, indicating economic volatility in the post-crisis recovery.

A turning point occurs around 2016, when social contributions begin to rise rapidly, reaching a new high around 2019-2020, crossing the 11% of GDP threshold. This increase reflects reforms in the social contribution system, an improvement in the collection rate and an increase in employment. However, after 2020, a slight decrease is observed, indicating an effect of the COVID-19 pandemic on the economy, with the reduction of economic activities and implicitly a decrease in income from social contributions.

The long-term evolution shows a general trend of increasing the share of social contributions in GDP, but marked by volatility and sensitivity to external and internal economic events.

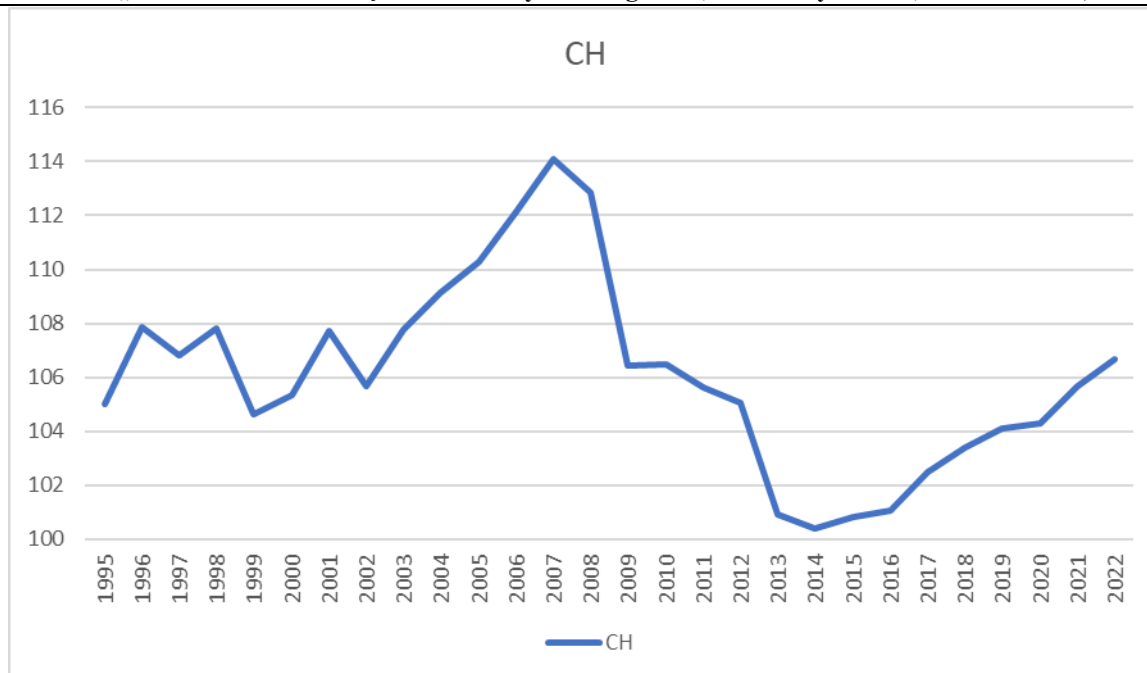


Figure no.3 Evolution of total gross expenditure (% of GDP) in Romania

Source: Own adaptation based on the research methodology

Figure no. 3 presented illustrates the evolution of total gross expenditure as a percentage of GDP in Romania between 1995 and 2022. It reflects the fluctuations of government expenditure in relation to GDP, indicating periods of budgetary consolidation but also of economic crisis.

Since 1996, total expenditure as a percentage of GDP fluctuates slightly around 106-110% until 2006. This relative stability may suggest a prudent fiscal policy, with no major increases or decreases in government spending during this pre- accession to the European Union, when Romania implemented various fiscal and economic reforms.

Between 2006 and 2008, expenditure as a percentage of GDP increases significantly, peaking around 2008 at around 115% of GDP. This increase can be explained by the budget expansion and the increase in total gross expenditure, probably in the context of economic growth and preparations for full integration into the European Union.

The year 2008, however, marks the climax before the global financial crisis, which will deeply affect Romania's economy.

After 2008, there is a sharp decline in total gross expenditure as a percentage of GDP, reaching a low around 2014-2015 at around 102%. This is the period when the austerity measures implemented following the global financial crisis and the sovereign debt crisis in Europe have significantly reduced expenditure. The government was forced to cut spending to adjust the budget deficit and stabilize the public debt.

As of 2016, total gross expenditure is starting to rise again, reflecting the economic recovery and a gradual return to higher spending as a percentage of GDP. This period is characterized by steady growth until around 2020, when total gross expenditure again reaches around 110%. This growth reflects the response to the economic challenges arising from the COVID-19 pandemic.

After 2020 total gross expenditure as a percentage of GDP declines slightly due to the recovery of the economy and the necessary post-pandemic budget adjustment as the government seeks to stabilize public finances and reduce pressures on the deficit.

The chart shows how Romania's total gross spending as a percentage of GDP has been marked by two major economic crises: the 2008 financial crisis and the 2020 pandemic.

In times of crisis, the government increased expenditure to stimulate the economy and mitigate the negative effects on the population, but in times of economic stability, it tried to implement fiscal consolidation measures to reduce expenditure and the budget deficit.

4. Conclusions

This analysis had as its main objective the investigation of the relationships between tax revenues, social contributions and total gross expenses in Romania, during the period 1995-2022. Our analysis provided a detailed insight into how these fundamental economic variables interact, both in the short and long term, contributing to a better understanding of fiscal dynamics in Romania.

The analysis revealed that social contributions (CO) have a relatively small and constant impact on tax revenues in the short term, but in the long term their influence increases progressively.

Total gross expenditure has had an increasingly important role in determining long-term tax revenues, directly influencing their variation.

Although in the short run tax revenues respond quickly to changes in total gross expenditure, this reactivity is not always sufficient to prevent the accumulation of deficits in the long run.

The study demonstrated how economic crises, such as the one in 2008-2009, strongly influenced fiscal revenues and total gross expenditure in Romania. During such periods, the government adopted quick adjustment measures, such as tax increases and spending cuts, to maintain fiscal stability. These measures, although effective in the short term, had contractionary effects on the economy, underscoring the need for countercyclical fiscal policies to support the economy in times of crisis

The analysis emphasizes the interdependence between tax revenues, social contributions and public expenditures and reveals that effective fiscal policies must be oriented towards maintaining the balance between these variables, especially in times of crisis.

The results suggest the need for a prudent and anticipatory fiscal management that harmoniously coordinates fiscal revenues, social contributions and public expenditures. In the long term, fiscal policies must focus on economic stability and reducing fiscal fluctuations. In this regard, structural fiscal reforms should be prioritized to ensure efficient tax collection and to balance public spending so that a healthy public budget is maintained.

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