



**DEVELOPMENT MEASURES OF FISCAL POLICY IN THE  
REPUBLIC OF SERBIA AND THE EUROPEAN UNION  
- A COMPARATIVE ANALYSIS**

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**Abstract:** Regardless of the fact that, historically speaking, fiscal policy was generally viewed as stabilizing, its flexibility in modern conditions can also have a developmental effect on the specific national economy. In this paper, it will be discussed in detail about the development impact of short-term and long-term development measures of the fiscal policy of the EU countries and the Republic of Serbia. Special attention will be paid to the impact of fiscal policy on innovation and productivity, as well as the impact on economic growth and the increase in social standards. The mechanisms by which the fiscal policy positively affects the encouraging of research and development, the motivation for innovative entrepreneurship, the stimulation of state investments and the inflow of foreign direct investments, strongly influence the increase of national productivity, innovation, competitiveness and, in the last instance, economic development.

**Keywords:** fiscal policy, economic development, investments, innovations, productivity, The Republic of Serbia, The European Union

**JEL classification:** H30, E62, O40

## Introduction

The basic role of fiscal policy in the most developed economies is to maintain full employment and stabilize growth, while in underdeveloped economies fiscal policy is used to create an environment for dynamic economic growth. The effectiveness of fiscal policy varies among countries depending on political and administrative

factors, factors resulting from the limitations of natural and economic resources, and the factors of economic growth and development. Due to the fact that these factors condition the performance of fiscal policy and thereby determine its effectiveness in achieving the set goals, the effectiveness of fiscal policy in developing countries is undoubtedly lower than that in developed countries.

There are empirical links between economic development and fiscal policy. The most relevant one indicates that the relative size of government (the size of public expenditure) increases as the economy develops. It is a phenomenon known as the Wagner's law (*Mourmouras & Rangazas, 2009*). Low-income countries have higher tax rates and higher levels of public expenditure than high-income countries at a similar stage of their historical economic development.

The paper analyzes the development use of public revenues and public expenditures in the Republic of Serbia and the European Union. The developmental use of public revenue instruments requires adequate planning, transparency, accountability and efficient management of funds. Also, it is necessary to ensure that public revenues are distributed in a way that best suits the needs of society and long-term development goals. In the case of the Republic of Serbia, examining the development use of public expenditures is essential for achieving sustainable economic growth, reducing inequality and improving the living conditions of citizens. Through careful planning, transparency, accountability and focus on key sectors, Serbia can achieve its development goals, reduce inequalities and improve the quality of life of its citizens. Investing in infrastructure, education, research and development, supporting small and medium-sized enterprises and creating a favorable business environment that will attract foreign investment is the key for development.

The paper will study the impact of fiscal policy on investments, but also on innovation, productivity and employment. Last but not least, the paper will attempt to answer the question of whether there is and what is the effect of public revenues and public expenditures on the economic growth of the Republic of Serbia and the European Union.

## **1. The role of fiscal instruments in encouraging economic development**

Government spending is an important instrument of fiscal policy in developing countries, that is, in countries with a low and lower average level of national income and its contribution is manifold. As stated by the authors *Shen et al. (2018)*, expansionary fiscal policy has positive implications both in terms of responding to cyclical economic trends and in promoting economic growth and development. Despite its importance, little effort has been made to studying the effects of fiscal policy in these underdeveloped countries.

*Mourmouras & Rangazas* (2009) show, in their study, how the government uses fiscal policy instruments to implement structural changes in order to stimulate economic development. Namely, in their model, the government chooses the income tax rate and decides how much of the tax revenue it will spend, how much it will redistribute to the development of the private sector, and what part it will invest in public infrastructure. The authors define two sectors in their model: traditional (agriculture) and modern, based on the complex of technical and technological progress (industry). Through fiscal policy instruments, the government exerts influence on sectors in different ways. These authors conclude that rising tax rates are a consequence of the structural transformation from traditional agriculture to modern industry. Increasing tax rates is probably an ineffective measure, because higher tax rates reduce the tax base, encouraging workers to stay in the traditional sector. In other words, in the early stages of economic development, when the traditional sector is large, an increase in the tax rate is more expensive, because it causes larger reductions in the tax base. Accordingly, it can be claimed that reducing the tax rate in developing countries that have low and medium levels of national income, in total terms and per capita, would stimulate economic development in the medium and long term.

The most developed economies in the world have a long history of using fiscal policy to promote economic growth. To solve the problem of inequality has traditionally been one of the key strategic goals of fiscal policy in developed economies. These economies tend to use progressive taxation to redistribute resources from the rich to the poor through transfers and subsidies. The governments of these countries have actively sought to redistribute public revenues in order to achieve a more equitable distribution of income among their populations (Heshmati et al., 2014). Growing income inequality is becoming a socio-economic challenge faced by all countries of the world. Among the leading determinants of growing inequality are globalization and technological progress, which favors highly qualified workers and marginalizes workers with low qualifications. Heshmati et al. (2014) state that the tax system of the European Union countries has had a significant impact on reducing inequality, especially in Belgium, Germany, Great Britain and Ireland. A certain number of authors (Immervoll & Richardson, 2011; Jara & Tumino, 2013) point out that taxes and benefits have significantly reduced inequality in developed European countries. The relevant economic literature states that the advanced economies have tended to increase tax revenues by imposing higher marginal tax rates on the highest income categories of the population. Capital and wealth taxes are widely used in the most developed countries to promote equity.

In recent years in the USA and some countries of the European Union, there have been debates about taxation and economic growth. There are views that say that without higher tax revenues, their economies will not be able to sustain the economic growth needed to absorb the high level of excess unemployment and

contribute to the reduction of inequality. Taxation is considered to provide an essential source of revenue that is used to create jobs in the public sector and pay for services provided to its citizens. In turn, providing a sufficient level of public revenue through the taxation system can help maintain high rates of economic growth. Contrary to these claims, the opponents of high tax rates claim that high taxes are precisely what governments must avoid to make economic growth sustainable, because more taxes and higher tax rates would lead to a slowdown in the pace of economic growth and development (*Baliamoune-Lutz, 2015*).

## **2. The impact of fiscal policy on investments**

The literature on endogenous economic growth has focused on capital accumulation which is the driver of economic growth. Any economic policy that affects private investment has effects on economic growth. The effects can be permanent or temporary, depending on the specific assumptions about the production technology. Two fiscal policy instruments affect private rates of return on investment, capital taxation and public investment in infrastructure.

In the conditions of globalization, governments around the world use fiscal policy instruments and measures, offering various fiscal incentives that should encourage domestic and foreign private investments in order to stimulate economic growth. Public investments are mostly directly focused on production, or on state investments in infrastructure, thereby making a direct contribution to economic growth and the development of the national economy. The growing participation of the public sector does not necessarily lead to lower economic growth, because a significant part of tax revenues is used for investments in infrastructure. Increasing investments in public infrastructure will increase economic growth in the short term, while in the medium and long term it will have positive implications for economic development. Empirical evidence suggests that public investments are susceptible to diminishing returns, so diminishing returns imply that economic growth rates fall during development. However, the diminishing returns of a given unit of public investment can be compensated by appearing in the amount of new investments.

Government spending is an important fiscal policy instrument for countries of all income levels. Development requirements give public investment in countries with low and lower middle national income a prominent role in promoting economic growth. The effects of public investments can serve as a short-term demand stimulus, but also as an engine of long-term economic growth and development. The governments of the world's highly developed countries increase investments in scientific research, upgrade the country's capacity for industrialization, improve the allocative efficiency of scientific and technological entrepreneurship resources through the allocation of financial resources, etc. The government reduces the operating costs of high-tech companies and reduces risks by

implementing a policy of tax incentives. Fiscal policy mainly determines the amount of public procurement, tax expenditures, fiscal investments and financing, subsidies, social insurance, etc. In this way, the government encourages entrepreneurs to start a business in the field of technology, capital or labor intensity, with a special emphasis on top entrepreneurial activities in the field of high technology.

Governments pay particular attention to the sustainability of public debt. Increasing the investment financed by public debt may not pay off or even have negative effects on the economy, unless the long-term benefits of growth outweigh the costs of financing. FDI remains the main source of external financing for developing countries and economies in transition. In addition to the financial resources they bring with them, FDI plays an extremely important role in modernizing the national economy and encouraging economic growth and development. FDI has many other positive effects on the country that attracts foreign capital, among which the introduction of new production processes, managerial skills, transfer of technology and knowledge, as well as the encouragement of international financial integration in developing countries (*Lee & Chang, 2009*).

An increase in public expenditures through investment in infrastructure and lower tax rates encourage the inflow of FDI, which is confirmed by the research of a number of authors (*Culahovic, 2000; Göndör & Nistor, 2012; Jensen, 2012*).

Technology transfer in developing economies requires better institutions, infrastructure and education. The usual tax incentives aimed at attracting FDI are largely ineffective and require significant financial resources. Good institutions can be a more effective way to attract FDI. Moreover, these countries need to strengthen their capacity to absorb the technologies from abroad by improving their institutional environment, improving infrastructure and strengthening their human capital base (*IMF, 2016*).

### **3. The impact of fiscal policy on innovation, productivity and employment**

Fiscal incentives to encourage entrepreneurship, innovation, research and development offer a wide range of instruments to economic policy makers, enabling their flexible application to realize different goals. They may be aimed at specific types of research and development activities (including innovation activities which do not belong to scientific research), they may differ depending on the size of the company, region or sector, and they may be implemented in different ways. Research and development activities stimulate innovation. In turn, innovation affects productivity, while productivity shapes competitiveness and growth. Research and development improve a technology transfer and can influence productivity growth by facilitating the absorption of new technologies (*Santos-Paulino et al., 2014*).

Governments use the tax system to promote *R&D*, but the impression is that fiscal incentives are simply ineffective in increasing private expenditure on *R&D*. Despite different empirical evidence, there is a clear tendency for governments to increasingly use tax incentives for *R&D* as a fiscal policy instrument to support business *R&D*. By granting tax cuts depending on the volume or increase of a company's *R&D* expenditure, governments co-finance private research and development. For a long time, a key objective of tax credits for research and development was to raise business expenditure on *R&D*.

Fiscal policies have been mobilized across the globe to support structural change in national innovation systems. In recent years, fiscal incentives have increasingly focused on other economic policy objectives, including supporting small and medium-sized enterprises, strengthening links between industry and science, and promoting research and development activities in certain specific areas of business. The studies on the effects of tax incentives on innovation success and improving firm performance find positive effects on the firm's ability to introduce new products and new processes. The significant effects of fiscal incentives on innovative entrepreneurship are reflected in the introduction of new products and processes, an increase in the market share of new products, an increase in the share of sales, the application of patents, etc. (*Cappelen et al., 2008*).

In the conditions of globalization of the world economy, fiscal stimulation of research activities within companies in a certain country does not necessarily encourage innovation and increase productivity in that country. Especially large multinational corporations optimize their innovation processes on a global scale and transfer the results of *R&D* worldwide for the commercialization of knowledge in the locations where their branches are located. *Cappelen et al. (2008)* proved that fiscal incentives contribute to increasing the rate of innovation in firms. Namely, there is the development of new production processes and new products for the company. At the same time, companies that cooperate with other companies in their *R&D* activities are more inclined to innovate.

A lot of evidence suggests that the entry of new firms is important for innovation and productivity growth (*IMF, 2016*). New firms are particularly relevant for expanding technological frontiers, as they tend to engage in more radical innovation, while existing firms, seeking to maintain their market positions, tend to focus more on innovation to improve the existing products and processes. Competition from new firms also raises productivity and encourages innovation by the existing firms, especially in high-tech industries.

In the first two decades of the 21<sup>st</sup> century, the role of fiscal policy in stimulating economic growth and development, diversifying economies, reducing poverty, and stimulating employment is again relevant. For some countries, reducing the high level of social inequality is a challenge of particular importance, especially when considering the growth pattern whose effect is quite debatable in

terms of direct benefits through employment and provision of basic means of living. This requires greater reliance on the fiscal system as a means of achieving inclusive and sustainable growth and development. The global financial crisis has left its mark on the conditions prevailing on the labor market in many, primarily developed, economies. Unemployment has increased significantly. The years of crisis posed a challenge to economic policymakers in solving the unemployment issue. Fiscal policy was aimed at stimulating job creation by stimulating aggregate demand.

The implications of fiscal policy measures on the level of employment, branch and sector distribution of total employment in the economy, as well as on the level of wages in the public and private sectors, have been addressed by many authors. The existing evidence on the impact of fiscal measures has primarily focused on the consumer behavior and income generation through the impact on aggregate demand. In most countries, an increased government spending or a stimulation of additional consumer spending on various goods and services (as a result of reduced the consumption of goods due to crisis disturbances) had implications for the generation of additional employment (*Chaloupka et al., 2019; Mounsey et al., 2020*). The increase in aggregate demand, caused by the government's expansive fiscal policy, increases the demand for labor and, accordingly, contributes to an increase in wages and employment levels.

As a consequence of the restrictive fiscal policy, the increase in taxes affects certain industries, whose sales will decrease and cause significant job losses for workers who produce, distribute and sell the products of a specific industry branch. However, job losses in the taxed industry will be offset by gains in other industries. The consumers who spend less on taxed products will spend more on other goods and services, which will lead to an increase in employment in some other economic activities (*Chaloupka et al., 2019*).

The theoretical model provided by *Gomes (2010)* has an important policy implication: wages in the public sector should follow wages in the private sector throughout the business cycle. Otherwise, the vulnerability of unemployment is greater due to the fluctuation of the share of the unemployed looking for jobs in the public sector.

An interesting study is provided by *Bova et al. (2015)*. Okun's coefficients show great heterogeneity among countries over time. We do not find the influence of certain fiscal instruments on Okun's coefficient, which indicates a correlation between the rate of (un)employment and the level of production, i.e. output. In other words, this coefficient suggests that an increase or decrease in total consumption or some components of consumption and an increase or decrease in tax rates would not change the way employment responds to output. In contrast, these authors discovered that fiscal consolidation has a significant, positive, and strong effect on Okun's coefficient, suggesting that an increase in tax revenues or a decrease in public spending increases the effect of employment on output.

## 4. Effectiveness of fiscal policy development measures of the Republic of Serbia and the EU

### 4.1. Conceptual framework, data and research methodology

Public revenues and public expenditures have a direct impact on GDP and GDP growth. Public revenue is used to finance public expenditure, but it can also affect other aspects of economy. The relationship between public revenues, public expenditures, GDP and GDP growth is complex. Understanding this relationship enables economic policy makers to make decisions and shape effective fiscal policies that support economic stability and sustainable growth.

What follows is an attempt to answer the question whether there is and what is the effect of public revenues and public expenditures on the economic growth of the Republic of Serbia and the European Union. The following hypotheses are defined in the paper:

*Hypothesis 1: There is a statistically significant effect of public revenues on the economic growth of the Republic of Serbia.*

*Hypothesis 2: There is a statistically significant effect of public expenditures on the economic growth of the Republic of Serbia.*

Additionally, the following hypotheses will be tested in the paper:

*Hypothesis 3: In the EU countries and in the Republic of Serbia, there are statistically significant effects of public revenues on economic growth.*

*Hypothesis 4: In the EU countries and in the Republic of Serbia, there are statistically significant effects of public expenditures on economic growth.*

In order to examine the effectiveness of fiscal policy development measures in the Republic of Serbia, the effects of public revenues and public expenditures on GDP and the GDP growth rate in the Republic of Serbia were examined. Therefore, the research used data for the period from 2011 to 2022. Data for GDP, GDP growth rate, public revenues and public expenditures were taken from the Eurostat database.

The paper will evaluate two regression equations: one that examines whether the share of public revenues in GDP is a predictor of the GDP growth rate and the other that examines whether the share of public expenditures in GDP is a predictor of the GDP growth rate:

$$BDPS_t = c + JPu_t + \varepsilon \quad (1)$$

$$BDPS_t = c + JRu_t + \varepsilon \quad (2)$$

where  $BDPS_t$  – growth rate in the Republic of Serbia in period  $t$ ,  $JPu_t$  – share of public revenues in GDP in the Republic of Serbia in period  $t$ ,  $JRu_t$  – share of



public expenditures in GDP in the Republic of Serbia in the period  $t$ ,  $c$  – constant,  $\varepsilon$  – residual,  $t = 2011, \dots, 2022$ .

A one-factor analysis of variance (ANOVA) was conducted to determine whether there are statistically significant differences in the average values of the share of public revenues in GDP, the share of public expenditures in GDP and the output gap between EU countries and Serbia. One-factor analysis of variance is based on the comparison of variances between different groups with that variability within each group (Palant, 2009). This analysis implies that there is only one independent variable (factor) divided into 3 or more groups, and that there is one continuous dependent variable (Field, 2009).

#### 4. 2. Research results

Table 3 shows descriptive statistics (arithmetic mean, standard deviation, minimum and maximum) for gross domestic product (GDP), public revenues, public expenditures and GDP growth rate in the Republic of Serbia in the period from 2011 to 2022.

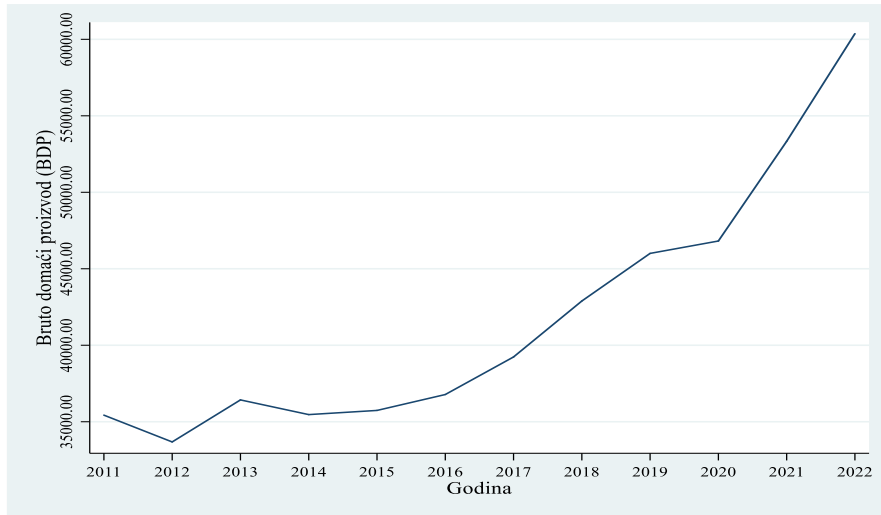
**Table 3. Descriptive statistics**

<b>A variable</b>	<b>Number of observations</b>	<b>Arithmetic mean</b>	<b>Standard deviation</b>	<b>Minimum</b>	<b>Maximum</b>
GDP	12	41847.51	8343.08	33679.30	60367.90
Public revenue	12	18278.61	6911.23	11455.65	34327.50
Public expenditure	12	19748.75	7410.14	12830.06	36796.47
GDP (%)	12	2.29	2.56	-1.60	7.50

*Source:* Authors in Stata 15.1

It can be noticed that the GDP showed growth during the observed period. However, there were also several years in which there was a decrease or a slight increase. The years 2012 and 2014 stand out as years with a decrease in GDP, while the years 2017 and 2021 were marked by a significant increase in GDP (Graph 1).

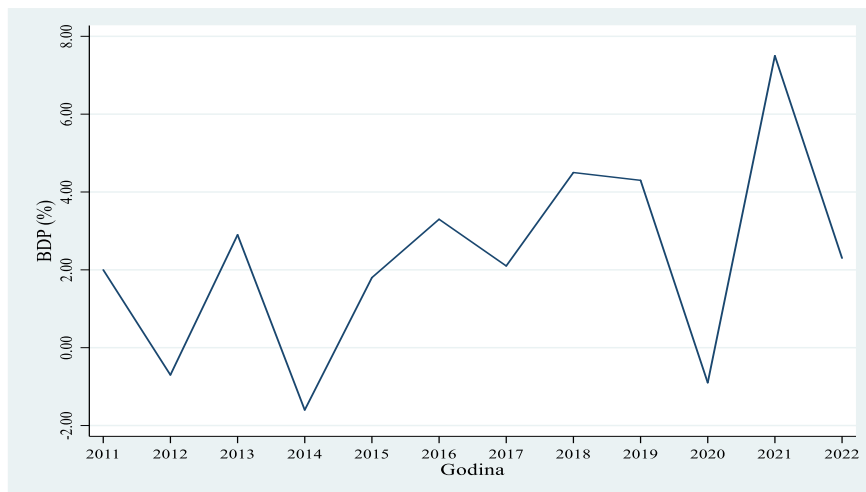
**Graph 1. Gross domestic product (GDP) in the Republic of Serbia from 2011 to 2022**



*Source: Authors in Stata 15.1*

In the observed period, only in three years (2012, 2014 and 2020) Serbia had a negative GDP growth rate. Like many other countries, the Republic of Serbia has experienced the negative impact of the COVID-19 pandemic. This can be seen in the negative GDP growth rate in 2020 (-0.90%). However, in 2021, GDP growth (7.50%) was recorded, which may be a consequence of economic recovery after the easing of measures, Government support or other factors of recovery from the COVID-19 crisis (graph 2).

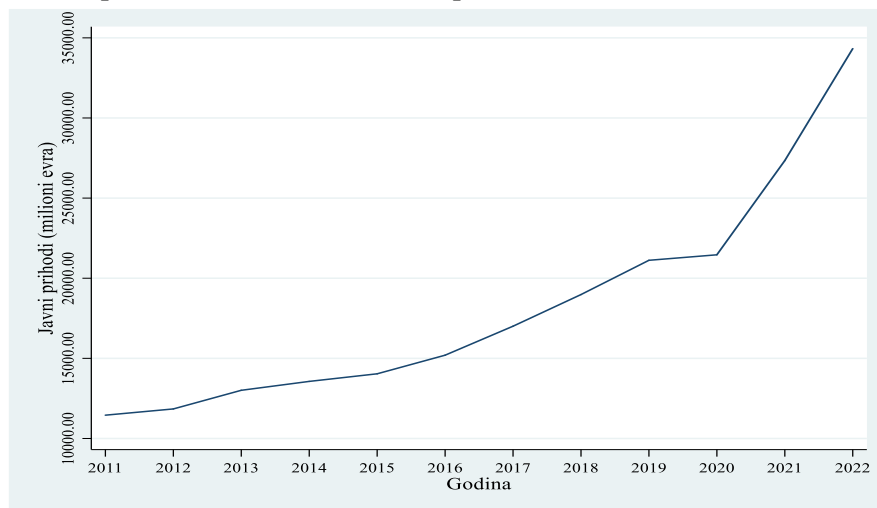
**Graph 2. GDP growth (%) in the Republic of Serbia from 2011 to 2022**



*Source: Authors in Stata 15.1*

In the observed period, public revenues in the Republic of Serbia recorded growth in all years except for 2020, when there was a slight decrease in public revenues (Graph 3). During the analyzed period, the values of public revenues generally increased, which was especially pronounced in 2016. After 2016, growth continued, but at a somewhat more moderate pace. There is only one year with a decline in public revenues, and that is 2020. This may be related to the global COVID-19 pandemic that has had a significant impact on economies around the world. In the last years of the analyzed period (2021 and 2022), public revenues increased sharply. This may indicate post-pandemic recovery and increased economic activity.

**Graph 3. Public revenues in the Republic of Serbia from 2011 to 2022**



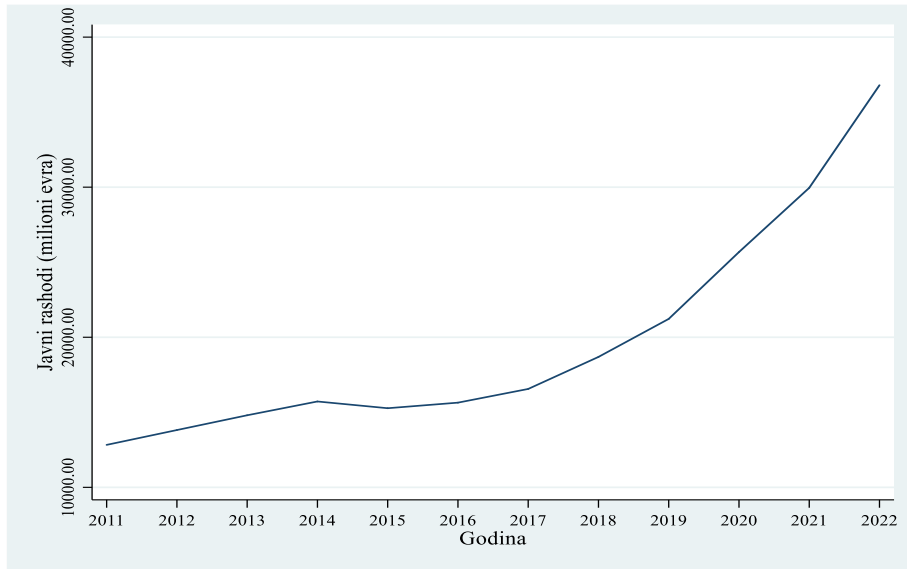
Source: Authors in Stata 15.1

We can conclude that there is a general trend of public expenditure growth in the Republic of Serbia during the observed period, although there were minor fluctuations and declines in certain years. Also, it can be observed that public revenues are higher than public expenditures only in 2017 and 2018.

Pearson's correlation coefficient was used to determine the direction and strength of the relationship between the variables of GDP growth rate, share of public revenues in GDP and share of public expenditures in GDP. The results showed that there is a positive mean correlation between the GDP growth rate and the share of public revenues in GDP, which is not statistically significant,  $p = 0.42$ ,  $p > 0.05$  (Table 4). The results showed that there is a positive weak correlation between the GDP growth rate and the share of public expenditures in GDP, which is not statistically significant,  $p = 0.19$ ,  $p > 0.05$  (Table 4). Also, the results showed that there is a positive strong

statistically significant correlation between the share of public revenues in GDP and the share of public expenditures in GDP,  $r = 0.91$ ,  $p < 0.01$  (Table 4).

**Graph 4. Public expenditures in the Republic of Serbia from 2011 to 2022**



Source: Author in Stata 15.1

**Table 4. Pearson correlation coefficient**

	GDP (%)	Public revenue (% GDP)	Public expenditure (% GDP)
GDP (%)	1		
Public revenue (% GDP)	0.42	1	
Public expenditure (% GDP)	0.19	0.91***	1

\*\*\*  $p < 0.01$ ; \*\*  $p < 0.05$ ; \*  $p < 0.10$

Source: Author in Stata 15.1

Due to the fact that there is a high correlation between the share of public revenues in GDP and the share of public expenditures in GDP, there is a problem in the model that includes the share of public revenues in GDP and the share of public expenditures in GDP as an independent variable multi collinearity.

The evaluated model from the equation (1) showed the problem of serial correlation. Therefore, the dependent variable is included in the estimated model as an independent variable with a delay of one period ( $t-1$  period). The results of the

regression analysis showed that the GDP growth rate in period  $t-1$  and the share of public revenues in GDP in period  $t$  are statistically significant predictors of the GDP growth rate. The share of public revenues in GDP is a statistically significant positive predictor of GDP growth rate ( $p < 0.05$ ). This means that with an increase in the share of public revenues in GDP, the rate of GDP growth also increases, while other conditions remain unchanged. The results of the regression analysis showed that the share of public expenditures in GDP is not a statistically significant positive predictor of GDP growth rate ( $p > 0.05$ ).

**Table 5. Results of regression analysis**

Independent variable Model (1)	Dependent variable: GDP Model (2)	Dependent variable: GDP
C	-11.20** (4.37)	-0.74 (5.00)
GDP <sub>t-1</sub>	-0.75** (0.26)	-
JPu <sub>t</sub>	0.35** (0.11)	-
JRu <sub>t</sub>	-	0.07 (0.11)
Adj. R <sup>2</sup>	51.49	3.62
F	0.023	0.38
Breusch-Pagan / Cook-Weisberg test	0.18	0.08
Durbin-Watson d-statistic	2.12	2.01
Breusch-Godfrey LM test	0.14	0.14

\*\*\*  $p < 0.01$ ; \*\*  $p < 0.05$ ; \*  $p < 0.10$

Source: Author in Stata 15.1

In order for the results of the regression analysis to be valid, it is necessary that the model fulfills certain assumptions such as multicollinearity, the independence of observations, serial correlation, the homoscedasticity of residuals and model stability for Model (1) and Model (2). The variance inflation factor (VIF) was used to determine whether the assumption of no multicollinearity in the model was met. Due to the fact that the VIF for all variables is less than 5, the assumption of the absence of multicollinearity in the model is fulfilled. The *Breusch-Pagan / Cook-Weisberg* test was used to test the null hypothesis that the variance is constant, that is, that the residuals are homoscedastic. The results show that the residuals are homoscedastic ( $p > 0.05$ ), so the assumption is met. The *Breusch-Godfrey LM* serial correlation test was used to examine whether there was serial correlation in

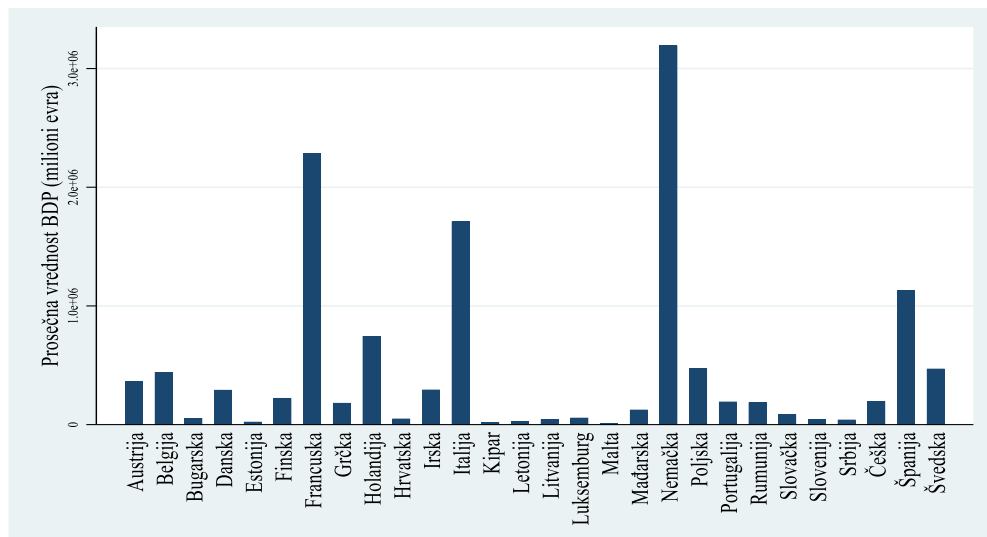
the model. The test results showed that there is no serial correlation in the model ( $p > 0.05$ ). *The Shapiro - Wilk* test of normality of the distribution of the residuals showed that the empirical distribution of the random error can be approximated by a normal distribution ( $p > 0.05$ ). *The recursive CUSUM* test shows the stability of the model.

These results do not take into account all the factors that can affect the GDP growth rate. Other factors such as political stability, foreign trade, structural reforms, investments and other economic factors can have a significant impact on the GDP growth rate, but are not included in this model.

One-factor analysis of variance was used to examine whether there are statistically significant differences in the average values of GDP, public revenues, public expenditures, GDP growth rate, share of public revenues in GDP, share of public expenditures in GDP and production gap between the EU countries and Serbia.

The results showed that there are statistically significant differences in GDP,  $F = 847.67$ ,  $p < 0.001$ . *Post hoc* comparisons were performed using *Tukey's HSD* test and the results showed that there are statistically significant differences in GDP between Serbia and Austria, Belgium, Denmark, Finland, France, Greece, the Netherlands, Ireland, Italy, Germany, Poland, Portugal, Romania, the Czech Republic, Spain, Sweden, where the average GDP of Serbia is lower than the average GDP of the mentioned countries (Graph 5).

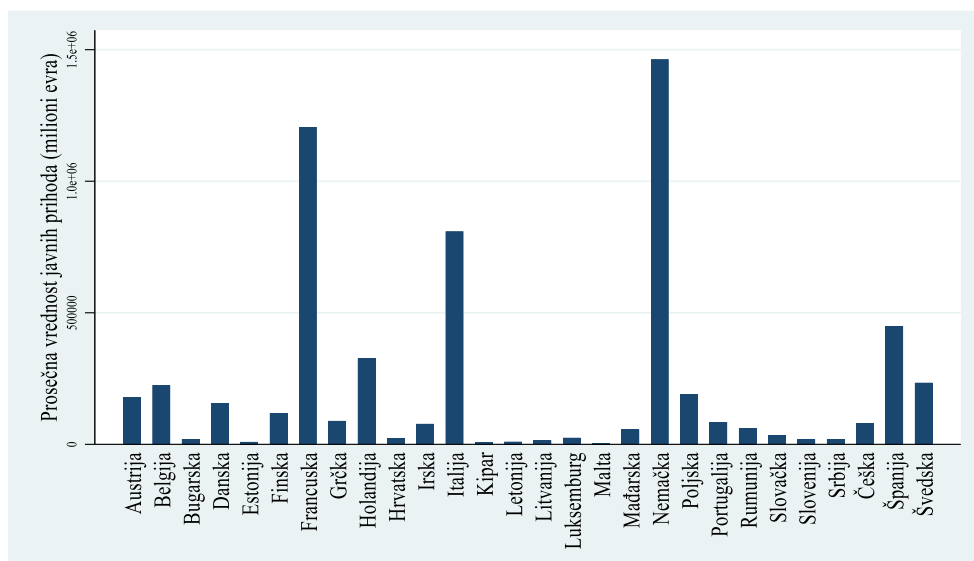
**Graph 5. Average value of GDP for the EU countries and the Republic of Serbia**



Source: Author in Stata 15.1

The results showed that there are statistically significant differences in public revenues,  $F = 714.46$ ,  $p < 0.001$ . *Post hoc* comparisons were performed using *Tukey's HSD* test and the results showed that there are statistically significant differences in public revenues between Serbia and Austria, Belgium, Denmark, Finland, France, the Netherlands, Italy, Germany, Poland, Spain, Sweden, where the average public revenues of Serbia are lower than the average public revenues of the mentioned countries (Graph 6).

**Graph 6. Average value of public revenues for the EU countries and the Republic of Serbia**

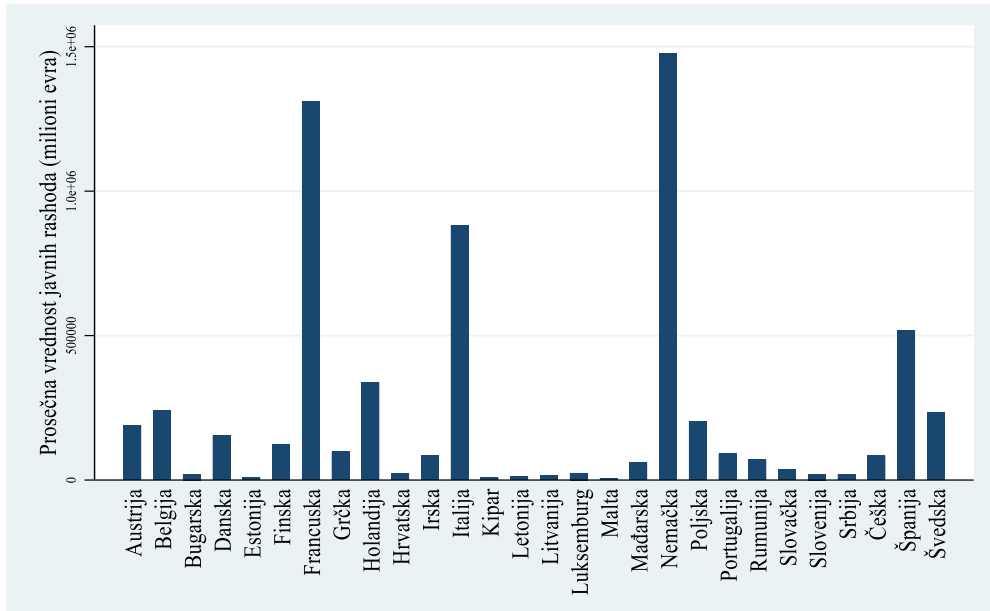


Source: Authors in Stata 15.1

The results also showed that there are statistically significant differences in public expenditures,  $F = 541.76$ ,  $p < 0.001$ . *Post hoc* comparisons were performed using *Tukey's HSD* test and the results showed that there are statistically significant differences in public expenditures between Serbia and Austria, Belgium, Denmark, Finland, France, the Netherlands, Italy, Germany, Poland, Spain, Sweden, where the average public expenditures of Serbia are lower than the average public expenditures of the mentioned countries (Chart 7).

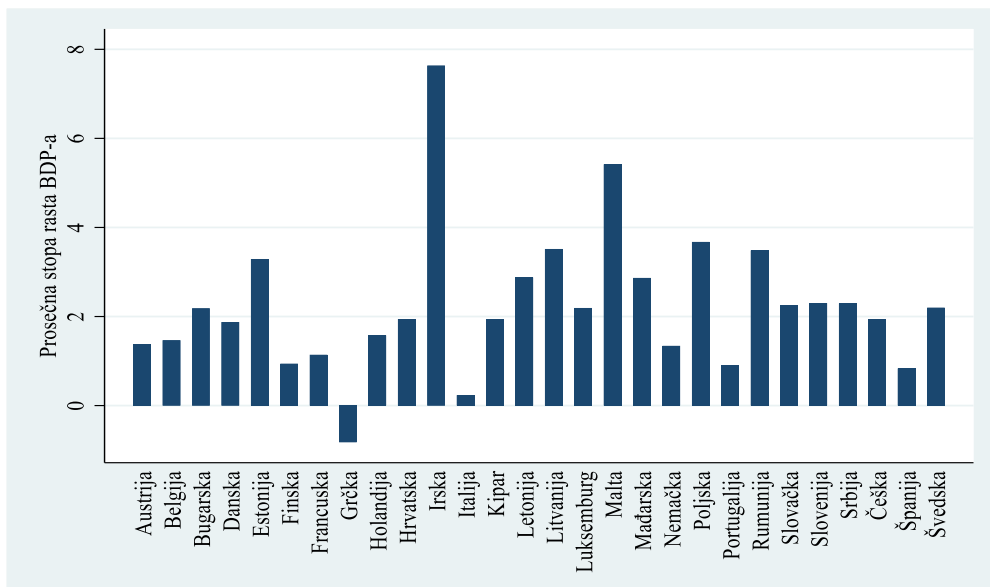
The results of the analysis showed that there are no statistically significant differences in public expenditures between Serbia and the EU countries,  $F = 541.76$ ,  $p > 0.05$  (Graph 8).

**Graph 7. Average value of public expenditures for the EU countries and the Republic of Serbia**



Source: Authors in Stata 15.1

**Graph 8. Average GDP growth rate for the EU countries and the Republic of Serbia**



Source: Authors in Stata 15.1



Comparing the results obtained on the effects of the share of public revenues in GDP on economic growth in the EU countries and the Republic of Serbia, it can be concluded that there are statistically significant effects in the EU countries in both the long and short term, but there are also statistically significant effects in the Republic of Serbia on economic growth. Therefore, Hypothesis 3 is confirmed. Furthermore, there are statistically significant negative effects of public expenditures on economic growth in both the long and short term in the EU countries, while there are no statistically significant effects in the Republic of Serbia. Accordingly, Hypothesis 4 is partially confirmed.

## **Conclusion**

The relationship between public revenues, public expenditures and GDP growth is crucial for understanding and analyzing macroeconomic trends. Public revenues represent all monetary revenues that the state or the public sector achieves, including taxes, fees, customs duties and other revenues. On the other hand, public expenditures include all costs incurred by the state, such as investments in infrastructure, social benefits, salaries of public sector employees, etc.

Fiscal policy through state expenditures and taxes has a significant impact on the dynamics of real GDP. This is due to the balance between the productive and unproductive public spending, the quality of fiscal institutions and the level of redistribution of GDP through the budget system. Simply, fiscal policy essentially affects the macroeconomic process and the level of economic growth in modern conditions (Chugunov et al., 2021).

Special emphasis in this paper is placed on the impact of fiscal policy in the context of the development of the national economy. Fiscal policy development measures are aimed at promoting economic growth and development and imply quantitative and qualitative changes in the economy, which are aimed at the realization of various goals. In terms of education and R&D, fiscal policy can be directed at supporting the key factors of human capital development, technological progress and innovation. In the context of supporting the development of entrepreneurship, the government applies fiscal measures such as tax breaks, subsidies or favorable credit conditions, in order to support the development of the sector of small and medium enterprises.

The empirical research carried out in the paper dealt with the analysis of the effectiveness of fiscal policy development measures in the European Union and the Republic of Serbia.

In order to examine the effectiveness of fiscal policy development measures in the EU and the Republic of Serbia, the effects of public revenues and public expenditures on economic growth in the EU countries were examined, using the data for the period from 2011 to 2022. The GDP growth rate was used as a measure

of economic growth in the EU countries and in the Republic of Serbia. In the case of the EU countries, descriptive statistics and the ARLD model were used for data analysis, while in the case of the Republic of Serbia, descriptive statistics, Pearson's correlation coefficient and regression analysis were used.

The results of the panel ARLD model showed that there is a statistically significant positive effect of public revenues on GDP in the long run in the EU countries. This means that with an increase in public revenues, the GDP in the EU countries increases in the long term. Also, there is a statistically significant negative effect of public expenditures on GDP in the long term in the EU countries. This means that with an increase in public expenditures, GDP in the EU countries decreases in the long term. In the short term, there is a statistically significant positive effect of public expenditure on GDP in the EU countries. This means that with an increase in public expenditures, GDP increases in the short term in the EU countries.

The results of the panel ARLD model showed that there is a statistically significant positive effect of the share of public revenues in GDP on the long-term GDP growth rate in the EU countries. This means that with an increase in the share of public revenues in GDP, the growth rate of GDP in the EU countries increases in the long term. The results also showed that there is a statistically significant negative effect of the share of public expenditures in GDP on the long-term GDP growth rate in the EU countries. This means that with an increase in the share of public expenditures in GDP, the rate of GDP growth in the EU countries decreases in the long term. The results of the panel ARLD model showed that there is a statistically significant positive effect of the share of public revenues in GDP on the GDP growth rate in the short term in the EU countries. This means that with an increase in the share of public revenues in GDP, the growth rate of GDP in the EU countries increases in the short term. The results also showed that there is a statistically significant negative effect of the share of public expenditures in GDP on the GDP growth rate in the short term in the EU countries. This means that with an increase in the share of public expenditures in GDP, the rate of GDP growth in the EU countries decreases in the short term.

Based on the results of the ARLD model, public revenue has a positive effect on GDP or GDP growth rate. Therefore, there is a statistically significant effect of public revenues on the economic growth of the EU countries. Furthermore, public expenditure has a negative effect on GDP or GDP growth rate in both the short and long term. Therefore, there is a statistically significant effect of public expenditures on the economic growth of these countries.

The results of the regression analysis showed that the share of public revenues in GDP is a statistically significant positive predictor of GDP growth rate in the Republic of Serbia. This means that with an increase in the share of public revenues in GDP, the rate of GDP growth also increases. Therefore, there is a statistically significant effect of public revenues on the economic growth of the

Republic of Serbia. The results of the regression analysis showed that the share of public expenditures in GDP is not a statistically significant positive predictor of GDP growth rate. Therefore, there is no statistically significant effect of public expenditures on the economic growth of the Republic of Serbia.

Using one-factor analysis of variance, it was examined whether there are statistically significant differences in the average values of GDP, public revenues, public expenditures, GDP growth rate, between the EU countries and Serbia. The results showed that there are statistically significant differences in the average values of GDP, public revenues and public expenditures.

Finally, the results obtained on the effects of the share of public revenues in GDP on economic growth in the EU countries and the Republic of Serbia, were compared. According to the obtained results, it can be concluded that in the EU countries there are statistically significant effects of public revenues in both the long and short term, but also in the Republic of Serbia there are statistically significant effects on economic growth. What is more, it was determined that there are statistically significant negative effects of public expenditures on economic growth in both the long and short term in the EU countries, while there are no statistically significant effects in the Republic of Serbia.

The obtained results do not take into account all the factors that can affect the GDP growth rate. Other factors such as political stability, foreign trade, structural reforms, investments and other economic factors can have a significant impact on the GDP growth rate, but they are not included in the observed models.

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## **RAZVOJNE MERE FISKALNE POLITIKE U REPUBLICI SRBIJI I EVROPSKOJ UNIJI – KOMPARATIVNA ANALIZA**

**Rezime:** Bez obzira na činjenicu da je, istorijski gledano, fiskalna politika uglavnom posmatrana stabilizaciono, njena fleksibilnost u savremenim uslovima može i te kako delovati razvojno na konkretnu nacionalnu ekonomiju. Rad će se detaljnije baviti razvojnim uticajem kratkoročnih i dugoročnih razvojnih mera fiskalne politike zemalja EU i Republike Srbije. Posebna pažnja će biti posvećena uticaju fiskalne politike na inovacije i produktivnost, ali i uticaju na sam privredni rast i povećanje društvenog standarda. Mehanizmi kojima fiskalna politika pozitivno utiče na podsticanje istraživanja i razvoja, podsticanje inovativnog preduzetništva, podsticanje državnih investicija i priliv starnih direktnih investicija, snažno utiču na povećanje nacionalne produktivnosti, inovativnosti, konkurentnosti i, u krajnjoj instanci, na privredni razvoj.

**Cljučne reči:** fiskalna politika, privredni razvoj, investicije, inovacije, produktivnost, Republika Srbija, Evropska unija

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