



The Relationship between Public Expenditures, Inflation and Economic Growth in the Southeastern European Economies

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ABSTRACT: Inflation and capital expenditures represent basic issues that are the subject of interest of macroeconomic policy makers in many countries around the world, in the direction of stimulating domestic demand, as well as dealing with the fiscal obligations of governments to reduce poverty rate and attain sustainability of economic growth. One of the most important instruments used by governments to achieve the previous goals is public expenditures, which represent the basic instrument of the fiscal policy of an economy. According to that, the good economic performance of the countries of Southeast Europe rests on the fulfilment of the predicted level of macroeconomic indicators.

The main goal of the study is to investigate the relationship between public expenditures, inflation and economic growth in 10 randomly selected Southeastern European countries (Albania, Bulgaria, Bosnia and Herzegovina, Cyprus, Greece, Croatia, North Macedonia, Romania, Serbia and Turkiye). Therefore, panel causality method has been employed using annual data for the period 2007- 2021 by obtaining the data from the World Bank Databases. From the obtained results, we have detected unidirectional causality running from the public expenditures to economic growth in the analysed period. On the other hand, it is not detected any causality running from inflation to public expenditures and vice versa, nor the causality running from inflation to economic growth and vice versa. The result implies that policymakers in these countries should increase capital public expenditure and productive economic activities in order to encourage economic development.

KEYWORDS: Public Expenditure, Inflation, Economic Growth, Panel Causality Test

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I. INTRODUCTION

Governments implement different instruments of fiscal and monetary policies to achieve main macroeconomic goals. The interaction of the monetary and fiscal policy comes to the fore especially when is desired to influence the economic cycle in order to achieve macroeconomic stability and the desired economic growth. Coordination stands out in terms of encouraging economic growth by regulating demand, as well as eliminating instabilities that arise in the system, and all in order to achieve price stability and internal and external balance. The importance of coordination is also influenced by the fact that monetary and fiscal policy can determine many different economic variables, such as the level and structure of savings, investments, production, employment and the balance of payments. The amount of taxes, the type of tax system, the size and structure of public expenditures, the budget surplus policy, respectively deficit, as well as the method of its financing, on the one hand, and changes in the amount of money in circulation, the level and structure of loans, as well as the price of loans, on the other hand, represent significant determinants not only of the price level and exchange rate, but also of the structure of production and the employment rate in a economy. Which type of monetary and fiscal policy will be applied to achieve economic goals may differ depending on the intended structure of the economy.

Namely, the fiscal policy of a Government refers to the use of public finance instruments - public revenues and public expenditures, to achieve the goals of macroeconomic stability of an economy. At the same time, the objectives of the fiscal policy are achieved by changes in the volume and structure of public expenditures, as well as changes in the structure of taxes and the amount of tax rates. In conditions of economic crisis, Governments focus on stimulating the economy through an increase in public expenditures in order to stabilize production and income during the economic cycle.

Given the fact that changes in public expenditures affect key macroeconomic indicators, such as economic growth and inflation, the role of government within an economy is the subject of significant debate in economic theory. The debate about the level of active influence of the state in the economic system is one of the basic issues of conflicting views between theorists from classical economic theory and theorists from Keynesian economic theory.

Classical economists observed the state as an unproductive factor that disrupts the economic activity of individual entrepreneurs. In accordance with the theory of non-reproductive public expenditures at the time, state activity, as a consumer sphere of material goods and services, had to be maximally limited. The doctrine of liberal capitalism, with its extremely negative attitude towards state intervention, that is, the state's interference in the economic flow of reproduction, actually aimed to reduce government expenditures to the lowest possible level.

The Keynesian economists argue about necessity of state intervention in the economy. During the period, it was determined that the process of economic depression will end, when the Government will implement a coordinated fiscal and monetary policy. In this process, a generally accepted position by the representatives of the Keynesian theory is the necessity of state intervention in the economy that will allow to achieve a level of full employment in the economy and an increased level of output. The Keynesian claim was adopted in a number of countries in the world regardless of the level of development, especially during the 1950s and 1960s, in countries that accepted the concept of the welfare state. As a result of the application of an expansive fiscal policy, a significant increase in the influence of the public sector within the economic system was determined.

Today, governments use a range of fiscal policy instruments such as taxes, government expenditures and transfer payments to achieve the expected level of economic growth. The relationship between government expenditure and economic growth can mainly be seen in two fundamental frameworks, Wagner's law and the Keynesian view. Wagner pointed out that especially in industrialized countries, public expenditure increases at a faster rate than the increase in total production. Namely, Wagner believes that social progress leads to increased state activity, which causes an increase in public expenditures. Due to the established causal relationship from national income to public expenditures, Wagner points out that the growth of the public sector will occur as a result of economic growth. According to this view, government expenditure is an endogenous factor driven by economic growth.

The second claim is based on the Keynesian model, according to which it is considered that public expenditures are an exogenous factor that has an accelerating effect on the effective demand in the national economy. The financing of public investments with public expenditures from the state budget affects the increase of national income and the level of employment within the chain of multiplication. According to Keynes, increased government expenditure causes an increase in economic growth by means of the multiplier mechanism. Therefore, he argues that the causality of the relationship between government expenditure and national income runs from public expenditure to national income. The conclusion is that the focus of both approaches is only on the unidirectional causal relationship between public expenditure and national income. The relationship between government expenditure and economic growth is particularly important for developing countries, most of which have experienced increasing levels of government expenditure over time.

Public expenditures affect changes in the inflation rate, as well as changes in economic growth in an economy. An increase in public expenditure will cause an increase in the demand for goods and services, which will lead to a general increase in the prices of goods and services in the economy. Given the fact that the growth in prices of goods and services is caused by the increase in demand for goods and services, the economy faces demand-side inflation. In this case, the government will adopt a restrictive fiscal policy aimed at limiting aggregate demand in order to eliminate or limit the inflationary gap. Measures to neutralize the pressure of excessive demand consist of reducing public expenditures, increasing taxes and reducing transfer expenditures, and the combined use of increasing net taxes and reducing public expenditures on goods and services. An increase or decrease in public expenditures in an economy will also affect macroeconomic indicators in that economy. Therefore, it is essential to determine the impact of public expenditures on inflation and economic growth, as one of the most significant macroeconomic indicators in an economy, which contributes to a significant volume of debates related to this issue in the economic literature.

II. LITERATURE REVIEW

Economic literature is abundant with empirical research studies regarding the relationship between public expenditures, inflation and economic growth, where the findings may vary according different characteristics such as: size of the country, the economic structure of the country, the empirical method, the pertinent period and the control variables employed in the analysis. Some of the studies analysed the relationship between public expenditures and economic growth, some others are focused on the relationship

between public expenditures and inflation and rest of the studies examined the relationship between public expenditures, inflation and economic growth.

Kolluri et al. (2000) investigated Wagner's law of public expenditure, which holds that economic growth is a fundamental factor in public sector growth, using time series data relating to the G7 industrialized countries in the period 1960 - 1993. Their findings suggest that there is a bidirectional causality relationship between public expenditures and economic growth in the long run.

Loizides and Vamvoukas (2005) conducted trivariate study on this subject with comparison of the size of public sector and real GDP per capita in three economies – Ireland, the United Kingdom and Greece. In their study have been used bivariate and trivariate tests of combined analysis in order to find possible causalities between employed variables. The results of their study indicated that the causality is running from public expenditure to growth of national income for all countries in short and long run; also increased national outcome causes growth in public spending in Greece and when inflation is embraced in the United Kingdom.

Saez and Alvarez-Garcia (2006) examined the impact of public expenditure on economic growth in the historical series of 15 European Union countries. Based on the results obtained by applying regression and panel techniques, authors confirmed that no clear connection was recorded between public expenditures and economic growth in the countries of the European Union in the period 1994-2012.

Huang (2006) conducted a test of Wagner's law on the example of two economies, China and Taiwan, using annual time series data for the period between 1979 and 2002. To determine the long-run relationship between government expenditure and economic growth, he used a robust estimation method known as the Bounds test proposed by Pesaran et al. (2001) and Toda and Yamamoto's (1995) Granger tests of non-causality. The obtained research results confirm that there is no long-term relationship between public expenditure and national output in China and Taiwan.

Mohammed et al. (2009) in their paper start from the idea of finding out whether there is a long-term relationship between several macroeconomic variables such as monetary supply, consumer price index, public expenditure and real GDP in Pakistan for the period 1977-2007. In their research, the authors used the Johnson cointegration test to determine whether there is a relationship between the variables in the long run, as well as the Granger causality test to determine bidirectional and unidirectional causality between the variables. The results confirmed that public expenditure and inflation are negatively correlated with output in the long run, while money supply has a positive impact on output in the long run.

The study by Bashir et al. (2011) aims to examine the factors affecting demand-side and supply-side inflation by applying economic and statistical methods, as well as to find causal relationships between certain macroeconomic indicators in Pakistan. The research is conducted on data from time series covering the period 1972 - 2010, where the forecasts in the short and long term are based on the use of Johansen's co-integration test and vector error correction, while causality is determined by the Granger causality test. The result of the study found that there is a bidirectional causality between output growth and inflation and a unidirectional causality from public expenditure to inflation and from economic growth to public expenditure.

The research conducted by Attari and Javed (2013) aimed to examine the relationship between inflation rate, economic growth and public expenditure in the case of Pakistan by covering time series data for the period 1980-2010. For this purpose, government expenditures were divided into two groups: government current expenditures and government expenditures for development. The obtained results from the econometric tests point out that there is unidirectional causality between government expenditures and economic growth, as well as between the inflation rate and economic growth.

The main objective of the study by Mehrara and Sujoodi (2015) is to investigate the relationship between inflation, money supply and government expenditure in Iran during the period 1959-2010 by applying a Bayesian econometric approach. The results of their study showed that the growth rate of government consumption, the growth rate of GDP and the exchange rate had no significant impact on inflation.

Dudzeviciute et al. (2018) conducted research with the aim of providing more authentic forecasts of the relationship between government spending and economic growth in the European Union (EU) in the period 1995-2015. The analysis found a unidirectional causal relationship from economic growth to public expenditure in France, Belgium, Germany, Portugal and Cyprus, a unidirectional causal relationship from public expenditure to economic growth in Sweden and Slovakia, and no causal relationship between public expenditure and economic growth in Poland.

Furhermore, Mandala (2020) attempted to estimate the long run and short run relationship between inflation, government expenditure, and economic growth in Indonesia covering the period 1981 to 2018 by applying Engel-Granger Cointegration Test and Error Correction Model (ECM). Their findings confirmed that current expenditures has no significant impact on economic growth, while development expenditures has significant and positive impact on economic growth.

Contrary to numerous studies, this aspect requires a more extensive analysis of the interdependence of the three key macroeconomic variables such as public expenditures, inflation and economic growth for each individual country covered in the analyzed panel. To address this objective, this study attempts to examine the

causal relationship between public expenditures, inflation, and economic growth in a panel of Southeast European countries.

III. METHODOLOGY AND RESULTS

Our research was conducted on a sample of 10 randomly selected countries from Southeast Europe (Albania, Bulgaria, Bosnia and Herzegovina, Cyprus, Greece, Croatia, North Macedonia, Romania, Serbia and Turkey), which were selected with the aim of investigating the relationship between public expenditures, inflation and economic growth. For that purpose, the panel causality method was employed using annual data on the time series covering the period from 2007 to 2021. In our empirical research, current government expenditures were treated as public expenditures. The determined general public expenditures reflect the different approaches of countries in providing public goods and services, as well as guaranteeing social protection. Data for total state expenditures per capita were obtained from the electronic distribution of data on the World Bank website, and their logarithm was used. The GDP growth rate was used as an indicator for economic growth, while the consumer price index was expressed through the inflation. Data for economic growth and inflation were also obtained from the pages for electronic distribution of data at the World Bank.

3.1. Panel Unit Root Tests

Testing for determining stationarity in time series studies is a common practice among empirical studies, for obtaining significant results when conducting econometric analysis. Testing for stationarity of panel time series is more recent, considering that significant developments in non-stationary panel models were recorded in the mid-1990s. Panel data applications were transformed from large N (number of cross sections) and small T (length of time series) micro panels to large N and large T macro panels. A number of different panel unit root tests have been distinguished in the literature, such as those of Harris and Tsavalis (1999), Breitung (2000), Choi (2001), Levin, Lin, and Chu (2002), ImPesaran and Shin (2003), Harris and Solis (2003).

On the other hand, a number of tests for the presence of serial error correlation in a panel data model with fixed effects have been proposed in the literature. Bhargava et al. (1982) simplify the Durbin-Watson type statistic to conduct a test with the OLS residuals of the fixed-effects model for serial independence. Baltagi and Lee (1991, 1995) apply LM statistics for first-order serial correlation. In contrast, Drucker (2003) based his research on the idea first proposed by Wooldridge (2002) and an easily implemented serial correlation test based on the OLS residuals of the first difference model.

In our research, the stationarity of the analyzed variables was investigated with the stationarity tests developed by Levin, Lin and Chu (LLC), Im, Pesaran and Shin (IPS), ADF and PP. These tests belong to the first generation of stationarity tests that are based on the assumption that the cross-sectional units are independent of the cross-section. All tests used showed that the series of public expenditure (PE), inflation (CPI) and economic growth (GDP) were stationary at the first difference, at the 5% significance level for the LLC, IPS, ADF and PP-Fisher tests. The summary results of the stationarity tests from the time series of data used in our research are shown in Table 1.

Table 1. Panel Unit Root Tests

Variables	Method	I(0) (w/constant)		I(1) (w/constant)	
		Statistic	Prob*	Statistic	Prob*
LPE	Levin, Lin and Chu t*	-0.12855	0.4489	-2.05197	0.0201*
	Im, Pesaran and Shin W-stat	-0.28084	0.3894	-2.39688	0.0083*
	ADF-Fisher Chi-square	19.2375	0.5064	37.3868	0.0105*
	PP-Fisher Chi-square	20.4015	0.4331	47.1119	0.0006*
GDP	Levin, Lin and Chu t*	-4.61599	0.0000*	-10.8312	0.0000*
	Im, Pesaran and Shin W-stat	-3.88291	0.0001*	-9.576	0.0000*
	ADF-Fisher Chi-square	51.2254	0.0001*	107.84	0.0000*
	PP-Fisher Chi-square	81.251	0.0000*	143.35	0.0000*
CPI	Levin, Lin and Chu t*	-2.2905	0.0110*	-15.0202	0.0000*
	Im, Pesaran and Shin W-stat	-0.8303	0.2032	-12.0071	0.0000*
	ADF-Fisher Chi-square	22.1584	0.3320	131.497	0.0000*
	PP-Fisher Chi-square	34.8556	0.0209*	144.811	0.0000*

Source: Authors compilation obtained by Eviews

* Levin, Lin and Chui Test – Null Hypothesis: Unit root (Common unit root process);

Im, Pesaran and Shin; ADF-Fisher and PP-Fisher – Null Hypothesis: Unit root (Individual unit root process)

3.2. Granger Causality Test

Although regression analysis is concerned with dependence to one variable with other variables, this does not necessarily mean that there is causality between them. In other words, the existence of a relationship between variables does not confirm causality or direction of influence. However, in regressions that include time series data, the situation is different, since time does not flow backwards. That is, if event A occurs before event B, then it is possible for A to cause it for B. However, it is not possible that event B is causing A.

In order to explain the Granger test we investigate the following relationship, if GDP causes public expenditures PE or public expenditures causes GDP. Granger causality test supposed that the relevant information to forecast the respective variables GDP and PE is contained in the time series on these variables.

$$Y = \sum_{i=1}^t \alpha_i X_{t-1} + \sum_{i=1}^t \beta_i Y_{t-1} + \mu \tag{1}$$

$$X = \sum_{i=1}^t \lambda_i X_{t-1} + \sum_{i=1}^t \beta_i \delta_{t-1} + \nu \tag{2}$$

There is an assumption that μ and ν are uncorrelated. There are two variables and dealt with bilateral causality. Equation 1 represent Y is related to its lag values and equation 2 which represent X is related to its lag values. Dumitrescu and Hurlin (2012) provide a natural extension of the Granger causality regression (1) designed to detect causality in panel data. The underlying regressions are:

$$\Delta LGE_{1t} = \alpha_{11} + \sum_{l=1}^{p1} \beta_{11l} \Delta LGE_{1t-l} + \sum_{l=1}^{p1} \delta_{11l} \Delta GDP_{1t-l} + \sum_{l=1}^{p1} \varphi_{11l} \Delta CPI_{1t-l} + \varepsilon_{11t} \tag{3}$$

$$\begin{aligned} \Delta LGE_{Nt} &= \alpha_{1N} + \sum_{l=1}^{p1} \beta_{1Nl} \Delta LGE_{Nt-l} + \sum_{l=1}^{p1} \delta_{1Nl} \Delta GDP_{Nt-l} + \sum_{l=1}^{p1} \varphi_{1Nl} \Delta CPI_{Nt-l} + \varepsilon_{1Nt} \\ \Delta GDP_{1t} &= \alpha_{21} + \sum_{l=1}^{p2} \beta_{21l} \Delta GDP_{1t-l} + \sum_{l=1}^{p2} \delta_{21l} \Delta LGE_{1t-l} + \sum_{l=1}^{p2} \varphi_{21l} \Delta CPI_{1t-l} + \varepsilon_{21t} \end{aligned} \tag{4}$$

$$\begin{aligned} \Delta GDP_{Nt} &= \alpha_{2N} + \sum_{l=1}^{p2} \beta_{2Nl} \Delta GDP_{Nt-l} + \sum_{l=1}^{p2} \delta_{2Nl} \Delta LGE_{Nt-l} + \sum_{l=1}^{p2} \varphi_{2Nl} \Delta CPI_{Nt-l} + \varepsilon_{2Nt} \\ \Delta CPI_{1t} &= \alpha_{31} + \sum_{l=1}^{p3} \beta_{31l} \Delta CPI_{1t-l} + \sum_{l=1}^{p3} \delta_{31l} \Delta GDP_{1t-l} + \sum_{l=1}^{p3} \varphi_{31l} \Delta LGE_{1t-l} + \varepsilon_{31t} \end{aligned} \tag{5}$$

$$\Delta CPI_{Nt} = \alpha_{3N} + \sum_{l=1}^{p3} \beta_{3Nl} \Delta CPI_{Nt-l} + \sum_{l=1}^{p3} \delta_{3Nl} \Delta GDP_{Nt-l} + \sum_{l=1}^{p3} \varphi_{3Nl} \Delta LGE_{Nt-l} + \varepsilon_{3Nt}$$

In the previous equations, “N” denotes the number of countries in the panel ($I = 1,2,3,\dots,N$), “t” the time period ($t = 1,2,3,\dots,T$) and “l” the length of lag. The error terms such as ε_{1Nt} , ε_{2Nt} , ε_{3Nt} are implied to be white noise (zero mean and constant variance).

The results of Granger causality test according to 2 lags are shown in Table 2.

Table 2. Granger Causality Test

Null Hypothesis:	Obs	F-Statistic	Prob.
ΔGDP does not Granger Cause ΔLPE	119	0.66443	0.5165
ΔLPE does not Granger Cause ΔGDP		4.4467	0.0138*
ΔCPI does not Granger Cause ΔLPE	119	0.1629	0.8499
ΔLPE does not Granger Cause ΔCPI		1.95866	0.1458
ΔCPI does not Granger Cause ΔGDP	130	2.23134	0.1116
ΔGDP does not Granger Cause ΔCPI		0.26977	0.764

Source: Authors compilation obtained by Eviews

The results indicate that the H0 hypothesis, which states that economic growth does not Granger cause public expenditures is accepted at the 5% significance level and H0 hypothesis, which states that public expenditures does not Granger cause economic growth is rejected at the 5% significance level. Therefore, the results prove that the relationship between GDP and government spending is unidirectional where causality runs from public expenditure to national income. On the other hand, it is detected no causality relationship or there is independence between the sets of inflation and public expenditures coefficients in either of regressions, as well as the independence or not statistically significant sets of inflation and economic growth coefficient in both of regressions.

IV. CONCLUSION

The issue of the influence of the state in the economy has been the subject of a serious debate in economic literature since the 19th century. While one group of theories, starting from the classical economic school, advocates the claim that the market is the most efficient allocator of the scarce and limited resources in the economy, that is, they strongly opposed the possibility of any state intervention in the economy, another group of theories that accepted the Keynesian point of view emphasized the necessity from the intervention of the state in the economy through coordinated management of monetary and fiscal policy. The determined imperfections of the market, both microeconomically and macroeconomically, justify the state's efforts to try to eliminate them by using a set of instruments, in order to steer the economy in the desired direction. Therefore, it is considered that in modern conditions, the state has an extremely significant role in the economic system of many countries around the world.

Governments effectively use a combination of monetary and fiscal policies to achieve their macroeconomic objectives. Public expenditures represent one of the basic instruments of fiscal policy used by governments to achieve macroeconomic goals. Changes in public expenditures initiate changes in demand and investment in the economy. On the other hand, changes in demand and investments in the economy cause changes in economic growth, through the influence of total output and inflation. The relationship between public sector expenditure and economic growth was explained in the context of the hypotheses put forward by Wagner and Keynes in the economic literature. While Wagner's law advocates the claim that government spending increases with economic growth, Keynesian theory emphasizes the importance of government spending in promoting economic growth. In addition, according to the Keynesian point of view, public expenditures affect the increase in demand for goods and services in the economy, which contributes to the increase in aggregate demand. An increase in the demand for goods and services causes an increase in the prices of goods and services or an increase in the rate of inflation in the economy. Namely, this type of inflation is known as demand-side inflation.

A change in public sector expenditure affects macroeconomic variables that are considered important such as economic growth and inflation. Therefore, in this study, how government expenditures affect these two macroeconomic variables in 10 randomly selected Southeastern European countries was analysed by panel causality method using annual data for the period 2007-2021. The obtained results from our research confirmed that there is a unidirectional causality relationship between public expenditures and economic growth. There is found no causality relationship or independence between the sets of inflation and public expenditures coefficients in either of regressions, as well as the independence or not statistically significant sets of inflation and economic growth coefficient in both of regressions. The empirical results strongly supported the Keynesian theory, stating that with any rise in public spending, there will be surge in the economic growth. Keynes argued that the involvement of the government through fiscal policy is essential for sustainable economic stability. Government spending can play an important role as a regulator that could be used to stimulate the economy. From a practical point of view, a few implications derived from the results of the studies. Policy makers can use this information to identify the likely effects and implications of increased capital public expenditure and productive economic activities in order to encourage economic development.

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