

The Impact of Public Debt on Economic Growth in the Western Balkans

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Abstract This study aims to analyze the impact that public debt has on economic growth in the long run for six remaining countries of the Western Balkans that have not joined the European Union yet, also referred to as the Western Balkan 6 (WB6) by including even the effect of debt threshold and other determinant factors of debt efficiency. In the study, we examine and evaluate the direct effect that an increase in public debt has on the economic growth of the WB6, which is based on public expenditure to affect economic development during the economic transition.

This study also verifies whether increasing debt beyond the Maastricht treaty's threshold hinders economic growth. Empirical results of the models show that public debt has a positive impact on the economic growth of the WB6 countries, regardless of its level, and that the increase of corruption in the WB6 countries has a negative impact on their economic growth.

Moreover, from the model, the stock of public debt in these countries is negatively affected by the increase in the efficiency of good governance and positively affected by the level of public revenues. In conclusion, we can say that improving good governance and reducing corruption can serve to increase the efficiency of reallocation of public expenditures; this will lead in the long run to a reduction of the public debt stock in relation to the GDP for WB6 countries.

Keywords: Western Balkan countries, public debt, economic growth, panel analysis.

JEL Classification: H63, O40, O43, C33.

1. Introduction

The Western Balkan during the post-1990s period has been characterized as one of the most intense regions in Europe in terms of geopolitical developments.

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These changes have been accompanied by an economic transition, which has significantly affected the development performance of these countries and the differentiation in their level of development. Currently, the Western Balkan is divided into two groups of countries, those that are part of the European Union and six countries (Albania, Bosnia and Herzegovina, Kosovo, Montenegro, North Macedonia, and Serbia) that aspire to become part of the union, which are also object of this study (WB6).

Overall, WB6's economic growth has relied on privatizations or large public investments, but without providing the opportunity to create clear structural models of economic development. Supporting development in high public investment spending has thus led to a steady increase in public debt in these countries.

According to Tanzi and Schuknecht (1997), the continuous increase of the debt stock of countries comes as a result of increased government spending, which aims to increase the welfare of citizens, but in fact, the presence of corruption and lack of good governance can restrain the growth of welfare that comes as a result of increased public spending (Kaufman et al., 2005). On the contrary, even the latest global development, such as the global financial crisis of 2008 and the global economic crisis caused by the covid-19 pandemic, led to a substantial increase in public debt in the countries' economies under consideration of this study but not only.

The WB6 countries, like many other countries, have taken a series of fiscal measures to stimulate aggregate demand and curb rising unemployment. These policies have already brought several concerns to economic experts as, according to them, the increase in debt above the levels set by the Treaty of Maastricht¹ could lead to the risk of debt volatility and an increase in fiscal pressure and could have a negative impact of public debt on economic growth (Reinhart & Rogoff, 2010; Raskovic & Moerec, 2012). Alternatively, in the worst-case scenario, it could lead to the public debt trap (Padoan, Sila & Van den Noord, 2012), which can negatively impact economic growth (Kumar & Woo, 2010).

Nowadays, there is broad debate in the academic and political world about the impact of public debt on economic growth, and especially on its upper limit value. Policymakers are in favor of the fact that debt supports economic growth, while economists affirm that after a certain level, public debt can become an obstacle to the economic development of the country (Pattillo et al., 2002; Pattillo et al., 2004; Schclarek, 2004; Kumar & Woo, 2010; Herndon, Ash & Polin, 2013). Another vital debate is the structure of public debt, which is often complex and risky and can pose

¹ The Treaty on European Union, signed in Maastricht in February 1992 but ratified in October 1993, is an articulated and complex document which stipulates that EU membership must be accompanied by a level of convergence towards it by following the 5 main parameters, Nominal interest rate, inflation rate, exchange rate stability, balance deficit ratio in relation to GDP and public debt ratio in relation to GDP, for the latter it is determined that the maximum level of public debt in relation to GDP of a developing country such as the WB6 countries should not exceed 60% of GDP.

a significant risk to the country's financial stability. Various researchers argue that countries that cut public investment in infrastructure as part of fiscal regulations could end up reducing long-term economic growth (Indermit Gill & Brian Pinto, 2005).

Based on these facts, our primary objective in this paper is the empirical exploration of the impact of public debt on economic growth in WB6 countries and the factors that lead to the control of public debt in these countries. This analysis is also based on the assessments of the effects of debt after fleeing the upper limit set by Maastricht and the effect of good governance (assessed through the level of corruption and effectiveness) as two essential factors in determining debt efficiency. The study will also analyze the factors that affect the reduction of debt control for the WB6 countries, such as the level of revenue collected by the government or even the increase in the cost of debt.

This paper aims to analyze the effect of public debt on economic growth, including even other variables that are theoretically determinants of public debt efficiency. At the same time, a second empirical model will address the factors that keep public debt under control. The methodology used in this paper is based on empirical analysis using panel data with both fixed and random effects. The study's objective is to provide a more complete picture in support of fiscal policies based on increasing public debt to affect the country's economic growth.

This study is organized on a comprehensive literature review on the correlation between public debt and economic growth based mainly on previous empirical studies by various authors and focusing on other determinants of this correlation. Then methodological aspects applied in this study and the description of the data used in it, continuing with the results of empirical models and concluding with some final findings.

2. Literature review

One of the biggest and longest-running debates in the economic literature is that on the macroeconomic effects that public debt has on a country's economic growth (Buchanan, 1958; Meade, 1958; Modigliani, 1961; Barro, 1979; Reinhart & Rogoff, 2010; Minea & Parent, 2012; Panizza & Prebsbitero, 2013; Herndon, Ash and Pollin, 2013; Muço, Hoda and Kristiqi, 2018). This broad economic literature is divided into two lines of thought: conventional theory and debt neutrality theory (Elmendorf & Mankiw, 1999).

The second theory is based on Ricardian equivalence, i.e., debt has no real effects on a country's aggregate demand in the long run (Modigliani, 1961; Buchanan, 1958; Meade, 1958); it is seen as a timely tax transfer (Barro, 1979).

The conventional theory recognizes that there is a correlation between a country's public debt and economic growth. Regarding the correlation between public debt and economic growth, the economic literature is divided again; part of it argues that public debt at certain levels can stimulate economic growth, while the rest of the empirical

literature argues that high levels of debt have negative effects on economic growth (Pattillo et al., 2002; Pattillo et al., 2004; Schlarek, 2004; Kumar and Woo, 2010).

In their study, Reinhart and Rogoff (2010) show that increasing public debt inhibits the economic growth of a country. According to them, this correlation becomes evident only when the public debt exceeds 90% of GDP. The Harvard economists in their study are cautious in reaching this conclusion. They say that inhibition of a country's economic growth as a result of rising public debt can also be casual. So maybe 'it is not a public debt that inhibits economic growth.

Egert (2012) used the Reinhart and Rogoff variant to highlight the impact of public debt on economic growth and the breaking point where the debt level hinders economic growth. Egert concluded that the debt upper limit level cannot be generalized and is not the same in different countries. However, the author affirmed that in different countries, we have different sensitivity levels where a low debt change causes high inhibition of economic growth of a country.

Herndon, Ash, and Pollin (2013) reviewed the study of Reinhart and Rogoff (2010), highlighting several errors in calculating the average economic growth performed by these authors². In their study, Herndon, Ash, and Paul raised many questions about the results of Harvard economists, especially about the maximum limit where debt turns into an obstacle to economic growth (90%). However, in the end, the authors affirmed that public debt at high levels harms economic growth.

Panizza and Presbitero (2013) study the correlation that exists between public debt and economic growth in countries with developed economies, concluding that there is causality between the variables in question, there is also heterogeneity, and that this correlation, according to them, is as follows: an increase of 30 point percentage of debt is accompanied by a decrease of 0.5 point percentage of economic growth. Therefore, the authors affirm that public debt has a negative impact on the economic growth of developed countries, even though this impact is relatively low.

In another study, Panizza and Presbitero (2014) conclude that public debt has negative causal effects on the economic growth of countries, and these effects are the same for a country like Greece as well as for a country like Japan. So, the level of GDP does not affect the impact that public debt has on economic growth.

Minea & Parent (2012), to study the relationship between public debt and economic growth, used a statistical technique that allows gradual change in the public debt and economic growth relationship. These authors concluded that it is too complex to identify the maximum level of public debt sustainability through models that use series with exogenous limits.

Thus, most empirical studies confirm the negative correlation between public debt and economic growth. However, different economic researchers do not reach the same

² According to Herndon, Ash and Polin (2013) although the study of Reinhart and Rogoff had some errors in the page used in excel their method for calculating average economic growth is correct.

conclusion about the boundary where public debt turns from a “supporter” of economic growth to a “detractor” of the economic development of a country.

The reason is that public debt has a negative effect on economic growth, but this effect still depends on the cost of debt. So, its growth increases debt cost and thus undermines economic growth. Also, if public debt is spent to create jobs that stimulate consumption, then it can indeed be said that the reimbursement of capital and the cost of interest do not have the potential to jeopardize the economic situation of the country or even more to lead to higher taxes to pay this debt (Greiner and Fincke, 2009). Also, if the real debt interest rate is higher than the real GDP growth rate, this will increase the debt/GDP ratio. Conversely, if the real debt interest rate is lower than the real GDP growth rate, then the debt/GDP ratio will decrease over time.

3. Data and methodology

To calculate the impact that public debt has on the economic growth of WB6 countries, except for the direct analysis between public debt and economic growth, also the threshold analysis will be seen when the public debt is higher than the upper limit set by the treaty of Maastricht to verify whether the results achieved in Reinhart & Rogoff (2010) studies or that of Herndon, Ash and Pollin (2013) are the same for emerging economies as those of the WB6.

To conduct the study, the authors created a panel data with WB6 countries; Albania, Bosnia and Herzegovina, Kosovo, Montenegro, North Macedonia, and Serbia, which are in similar stages of economic development and at the same time aim to become part of the EU. The WB6 countries are classified in the group of middle-income and developing countries where according to the Maastricht treaty, they must have a level of public debt in relation to GDP below 60%.

WB6 countries, although at different levels, were affected by the global financial crisis of 2008, reaching the lowest levels of economic growth in 2009. The least affected countries by the financial crisis were Albania and Kosovo, which came mainly due to large public investments, especially in infrastructure. During the referring period, on average, Kosovo has the highest level of growth with 4.1%, while Serbia has the lowest one with 2.4%.

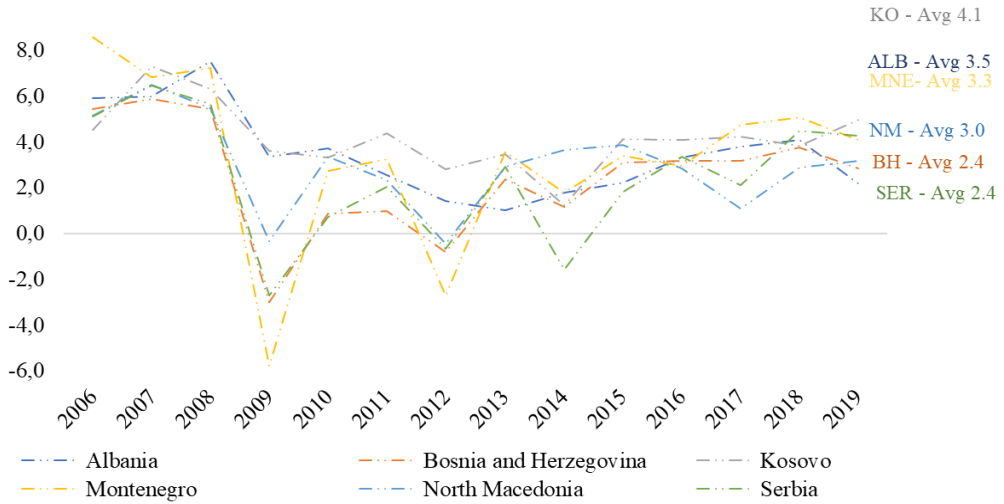


Figure 1. GDP annual growth (%) for WB6 countries

Source: World Bank, World Development Indicator 2021

In terms of public debt in all countries, there is an increasing trend during the period 2009 - 2016, while after this period, Serbia has taken a series of measures to reduce it. It is worth noting that Serbia, Albania, and Montenegro have had public debt rates above 60% for the period under review.

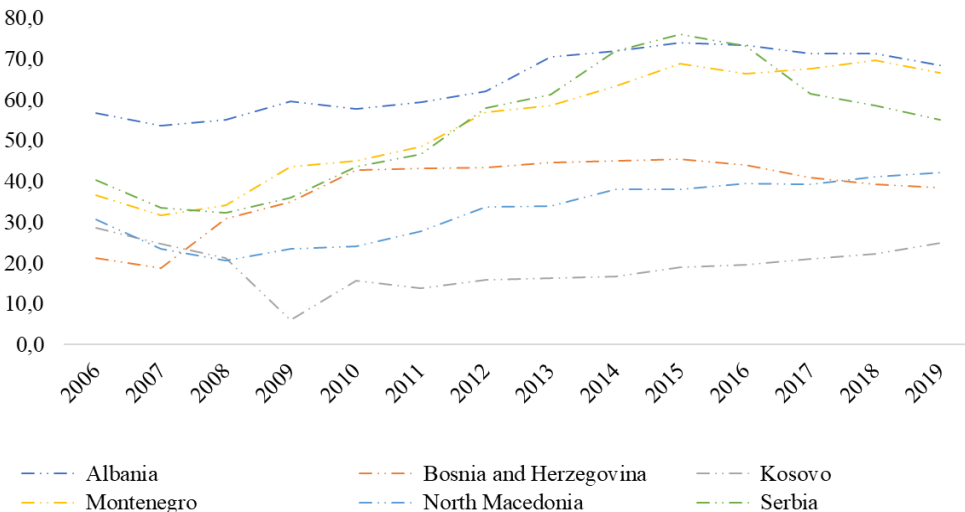


Figure 2. General government gross debt Percent of GDP for WB6 countries

Source: International Monetary Fund, World Economic Outlook 2021

Historical data for the countries considered start from 2006 to 2019 as the latest data available, creating 84 surveys. We avoided obtaining earlier data as for some of the countries (Montenegro and Kosovo) for some of the variables included in the model, there are missing data, so it is preferred to have a balanced data panel. The data considered are macro variables and are all sourced from the major international institutions, the World Bank and the International Monetary Fund, which is done to have homogenized data.

As dependent variables, this study uses annual GDP growth, while as independent variables are used ratio variables, dummy variables, and composite variables. More specifically, the independent variables consist of:

- General government gross debt Percent of GDP, i.e., the annual ratio between the debt stock and the level of GDP.
- the dummy variable which determines when the debt level is below the ceiling set by Maastricht (0) and when it is above this upper limit (1)
- two of the Worldwide Governance Indicators and published by the World Bank: Government Effectiveness³ and Control of Corruption, which are also included in the studies of Kurtz and Schrank (2007) or that of Setayesh and Daryaei (2017).

When estimating economic growth, corruption is included in the model, and as various studies prove it, public debt increases as a result of increased corruption (Dreher and Schneider, 2010; Kaufmann, 2010; Del Monte and Pagani, 2008; Abed and Davoodi, 2002; Tanzi e Davoodi, 2002; Friedman et al., 2000). So, the presence of corruption in the country made the debt effectiveness decrease and moreover tended to get higher debt rates.

The level of corruption, referring to the assessment based on the control of corruption, shows that it is at the same levels for WB6 countries, especially after 2015, where an increasing trend of this indicator is observed only for Montenegro.

³ Government Effectiveness captures perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies. Percentile rank indicates the country's rank among all countries covered by the aggregate indicator, with 0 corresponding to lowest rank, and 100 to highest rank. Percentile ranks have been adjusted to correct for changes over time in the composition of the countries covered by the WGI.

Control of Corruption captures perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests. Percentile rank indicates the country's rank among all countries covered by the aggregate indicator, with 0 corresponding to lowest rank, and 100 to highest rank. Percentile ranks have been adjusted to correct for changes over time in the composition of the countries covered by the WGI.

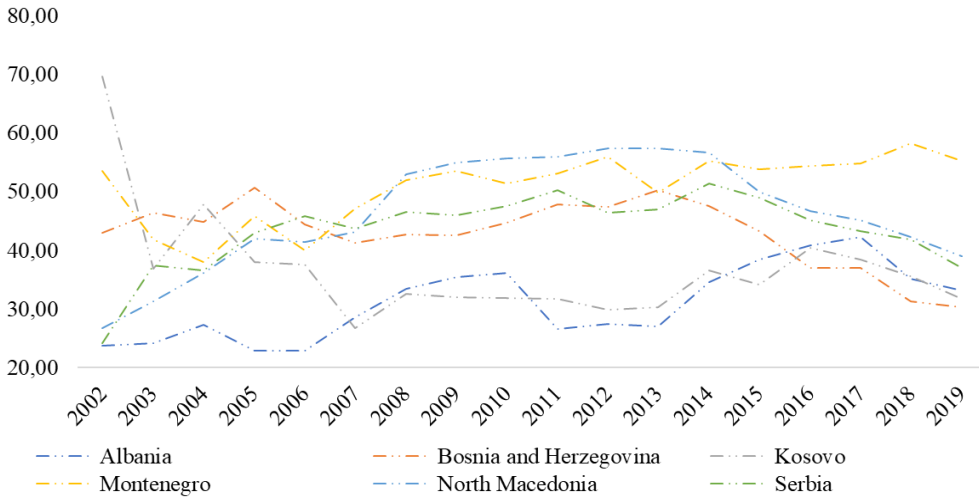


Figure 3. Control of Corruption: Percentile Rank for WB6 countries

Source: World Bank, World Development Indicator 2021

This study does not include other Worldwide Governance indicators or fiscal revenues in economic growth as the focus is to assess the impact that public debt has on economic growth and not on welfare or good governance in the complex. Moreover, to understand the debt behavior in the WB6 countries on which this study is focused. Also, in this model as independent variables, we have included General Government Revenue Percent of GDP and Total debt service (% of GNI) to see how the increase in debt costs affects the growth of debt or public revenue in the growth of debt.

In studies with similar variables, we could have problems with endogeneity, but given that our study is with panel data, it also includes fixed effects to solve the above problem.

4. Empirical Analysis

This study analyzes two different models which aim to give a clearer picture of the role of public debt in economic growth and other factors of debt efficiency and the impact of good governance, public revenues, and the cost of debt in increasing public debt stock. Both models are estimated with fixed effect and random effect.

Table 1. Results of model 1

Dep. Var:									
GDP_		Fixed-effects,				Random Effects (GLS)			
growth_									
annual									
	Coef.	Stan. Errors	t - ratio	P-value	Coef.	Stan. Errors	z	P-value	
Const	12.4410	2.59588	4.793	<0.0001***	7.47208	1.43448	5.209	<0.0001***	
Control_of_Corruption	-0.144270	0.0525569	-2.745	0.0076***	-0.0698859	0.0293007	-2.385	0.0171**	
General_gov_grossdebtP	0.0781822	0.0358514	2.181	0.0323**	0.0344885	0.0217234	2.288	0.0124**	
Dummy	1.19564	1.03927	1.150	0.2536	0.665320	0.942370	0.7060	0.4802	
Observation (groups)	84 (14)				84 (14)				
R-square LSDV	0.208173	R-Square cor.	0.158970		Sum Sq. Res.	458.6175	St. err. Reg.	2.379484	
F(8, 75)	2.464705	P-Crit. (F)	0.19881		Hannan-Quin	392.8719	P.Crit	1,07471e-073	
Stat. Durbin -Watson	1.675082				1.675082				

*: 10%, **: 5%, ***: 1%

Mean dependent var 3.127826, S.D. dependent var 2.493127, Sum squared resid 408.5048, S.E. of regression 2.333823, Akaike criterion 389.2434 Schwarz criterion 411.1207, Hannan-Quinn 398.0379, rho 0.123259, Joint test on named regressors - Test statistic: $F(3, 75) = 4.72545$ with $p\text{-value} = P(F(3, 75) > 4.72545) = 0.00448888$, Test for differing group intercepts - Null hypothesis: The groups have a common intercept, Test statistic: $F(5, 75) = 1.8401$ with $p\text{-value} = P(F(5, 75) > 1.8401) = 0.115239$

'Between' variance = 0 'Within' variance = 5.44673 theta used for quasi-demeaning = 0 Joint test on named regressors - Asymptotic est statistic: Chi-square(3) = 9.99246 with $p\text{-value} = 0.0186303$ Breusch-Pagan test - Null hypothesis: Variance of the unit-specific error = 0, Asymptotic test statistic: Chi-square(1) = 0.112265 with $p\text{-value} = 0.73758$. Hausman test - Null hypothesis: GLS estimates are consistent Asymptotic test statistic: Chi-square(3) = 9.10146 with $p\text{-value} = 0.0279719$

In the first model, the General Government Gross Debt positively impacts GDP growth for WB6 countries, while the Control of Percentile Corruption has a negative impact on GDP growth. Although we use different estimates (GLS and Fixed effect), the results are robust.

It is important to mention that the model results are coherent with the economic literature, which emphasize that the reduction of corruption leads to the economic

growth of countries (Kaufmann et al., 2010; Dixit, 2009; Olson et al., 2000; Herbst, 2000) as well as that, debt growth leads to economic growth as essentially debt is spent on various components of GDP, which directly affect economic growth. While the Dummy does not turn out to be significant, then, in the countries under consideration, the increase in debt above the Maastricht Treaty's level has no negative effects on economic growth, as defined in the study by Reinhart & Rogoff (2010).

Regarding the results, it can be concluded that the model is robust, F stat is significant, and $R^2 = 0.158$. As well as, the Hausman Test affirms that the GLS estimate is consistent. The model's low level of explanatory nature is strongly related to the fact that economic growth is influenced by several other factors, which are its constituent components. However, being as an integral component of GDP, it emerges as a necessity to be avoided in the inclusion of the model where it is intended precisely to address the effect of increasing debt.

Table 2. Results of the model 2

Dep. Var: Gen_gov_ gross_debt_P	Fixed-effects,				Random Effects (GLS)			
	Coef.	Stan. Errors	t - ratio	P-value	Coef.	Stan. Errors	z	P-value
Const	28.5824	19.4027	1.473	0.1449	23.9257	19.8711	1.204	0.2286
Gen_gov_rev_ Perc	-0.837071	0.449315	-1.863	0.0664*	-0.702134	0.407546	-1.723	0.0849*
Total_debt_ serv_of_GNI	0.854203	0.171586	4.978	<0.0001***	0.883148	0.165065	5.350	<0.0001***
Gov_ Effectiveness_ Perce	-0.783881	0.180159	-4.351	<0.0001***	-0.777614	0.175749	-4.425	<0.0001***
Observation (groups)	84 (14)				84 (14)			
R-square LSDV	0.877646	R-Square cor.		0.583992	Sum Sq. Res.	23530.60	St. err. Reg.	17.04410
F(8, 75)	67.24702	P-Crit. (F)		4.28e-31	Hannan- Quinn	723.6505	P.Crit	1.43478e-021
Stat. Durbin -Watson	0.770889				0.770889			

*: 10%, **: 5%, ***: 1%

Mean dependent var 43.63252, S.D. dependent var 18.33971, Sum squared resid 3415.707, S.E. of regression 6.748537, Log like lihood -274.8144, Akaike criterion 567.6288, Schwarz criterion 589.5061, Hannan-Quinn 576.4233, rho 0.582446, Joint test on named regressors - Test statistic: $F(3, 75) = 35.095$

with $p\text{-value} = P(F(3, 75) > 35.095) = 2.80055e-014$, Test for differing group intercepts - Null hypothesis: The groups have a common intercept, Test statistic: $F(5, 75) = 68.7439$ with $p\text{-value} = P(F(5, 75) > 68.7439) = 1.33826e-026$

Mean dependent var 43.63252, S.D. dependent var 18.33971, Log-likelihood -355.8709, Akaike criterion 719.7418, Schwarz criterion 729.4651, rho 0.582446. 'Between' variance = 472.776 'Within' variance = 45.5428 theta used for quasi-demeaning = 0.917334 Joint test on named regressors - Asymptotic test statistic: Chi-square (3) = 107.666 with $p\text{-value} = 3.48846e-023$. Breusch-Pagan test - Null hypothesis: Variance of the unit-specific error = 0 Asymptotic test statistic: Chi-square (1) = 330.554 with $p\text{-value} = 7.27956e-074$ Hausman test - Null hypothesis: GLS estimates are consistent Asymptotic test statistic: Chi-square (3) = 1.2155 with $p\text{-value} = 0.749289$

General Government Gross Debt is taken as a dependent variable in the second model. In contrast, as explanatory variables are chosen General Government Revenue, Total Debt Service of GNI and Government Effectiveness to verify whether public debt can be reduced by good governance and public revenues, as the level of debt costs.

In this model, we note that government effectiveness and general government revenue Perc have a negative sign and are significant, so good governance's efficiency positively impacts the public debt stock of the respective countries. As well as general government revenue Perc leads to the reduction of the debt stock, so the increase of the general government revenue Perc leads to the reduction of the public debt stock of the respective countries. At the same time, the total debt service of the GNI variable has a positive sign on the debt stock and is significant, indicating that the increase in the debt cost increases the debt stock itself.

Let us look at the importance of this model in the complex, even in this case. We can say that it is robust, F stat is significant, R2 in this model increases significantly (0.58), so that the model has a level of explanation over 50% and which can be considered as a good model to be supported for undertaking various policies which aim at debt reduction in these countries. Also, from the table data, we note that the Hausman Test also affirms that the GLS estimate is consistent.

5. Conclusions

This study aimed to draw some conclusions about the effects of public debt on economic growth for the 6 countries of the Western Balkans, relying on other variables that are determinants of public debt efficiency, as well as variables that affect the level of a country's debt. These two analyzes are based on two different models to give a more complete approach to the effects. From the results of this paper, it is concluded that:

- With the increase of General government gross debt, there is also an increase in the GDP of the countries under consideration, and also that the passage of the debt threshold level to 60% of GDP is not a statistically significant fact for these groups of countries. So in these places.

- While Control of Percentile Corruption has a negative impact on GDP growth, as is actually expected to happen, this is because reducing corruption is associated with economic growth.
- Government effectiveness and general government revenue Perc have a negative effect on the level of debt, so the efficiency of good governance has a positive impact on reducing the public debt stock of the respective countries. As well as general government revenue Perc leads to the reduction of the debt stock, so the increase of the general government revenue Perc leads to the reduction of the public debt stock of the respective countries.
- While the total debt service of the GNI variable has a positive sign on the debt stock and is significant, that indicates that the increase in the cost of debt increases the debt stock itself.

Although it should be noted that some of these countries are newly created countries, which affects the level and duration of data, this paper takes some concrete steps to analyze the effects of public debt on economic growth and determinants of its efficiency as well as debt level control components.

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