

# The Role of Public Debt in Economic Growth: An Empirical Analysis Evidence for Western Balkans and European Countries

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*Abstract:* - Public debt was often considered as a supplementary source of public finances. In six Western Balkan states, a fixed regression model was employed to gauge the effect of public debt on economic growing using panel data. Findings demonstrate that public debt significantly affects economic growth. It was found too that direct foreign investments have a substantial influence into the economic growth. As an option for financing, state governments use external and internal public debt, which is often part of the debate approximately how much public debt should be used. Use of public debt varies from country to country and depends on economic growth and budgetary factors and economic and social demands. Reviewing the literature, it can be observed impact of public debt on overall economy and its growth and this was too used by states as an opportunity for economic growth. This is also reflected in the case of our study where we analyzed the data for EU member countries and Great Britain compared to the Western Balkans countries. During the research it is observed influence of public debt in economic growth on these countries and as such many states have exceeded the limits of the use of public debt based on legal frameworks, with the sole purpose of financing public demands and influence of economic growth. Public debt in this paper identifies the affiliation with economic growth through the specification of linear and non-linear time series models using the panel model for the years 2012-2021 for 35 countries in total. Also, the regression analysis shows us a support and correlation among public debt versus economic growth of countries part of this study. This is observed in developed countries, which have a higher potential and possibility of financing economic activity through public debt, while the Western Balkans countries are often challenged with the possibilities of financing from public debt. As variables we have GDP, Foreign Direct Investments and Inflation.

*Key-Words:* - Public debt, GDP, FDI, inflation, economic growth

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## 1 Introduction

Quality of services in the hotel industry is an important factor for successful business Public debt as a term is used very often and heard very often in everyday life. Public debt is among the “pushers” of economic growth and as the increase of the welfare of citizens through the financing of public projects. Public debt in any country today is a determining and economic driving factor, but on the other hand, each country must know how and how much to introduce public debt, domestically or abroad? States use different methods to assess the

sustainability of public debt by strengthening fiscal discipline as the main pillar of economic policies in the country. This paper tries to find the connection among public debt and GDP, by using independent and dependent variables, and also uses Foreign Direct Investment (FDI), inflation and growth rates as supporting variables. Given that we will examine the role of public debt in the Western Balkans countries and the European Union region countries this is a very significant and vital topic to evaluate. This study alsAo tries to discover the liaison amongst public debt and economic growth, together by analyzing independent & dependent

variables, by using also a supporting variable. Investigation on the dynamics of public debt in the country (Kosovo) related to other states in this region and the European Union countries, and also threshold level of public debt in relation to GDP and economic growth among thirty-five countries, six of The Western Balkans (WB) and 29 from the European Union for a period of time 2012-2021 will be analyzed in this paper.

Different academics identify the threshold level, inflation foreign direct investment, and public debt as the main determinants of economic development, [1]. Finds in their study that “developing economies issue 23% of their local currency (LC) public debt linked to inflation. Issuance of LC debt is countercyclical, increases in periods of nominal exchange rate depreciation and replaces foreign currency (FC) and non-indexed local currency debt”, [2]. In their study finds that: “a higher level of public debt rises the inflation reaction whereas a weaker tax response to debt decreases the inflation answer to shock”. Some studies have shown that public debts, regardless of whether they are internal or external debts, up to a certain level, positively stimulate economic growth.

## 2 Literature and Development of Hypotheses

### 2.1 Literature Review

Each country aims to meet the minimum living standards of its citizens in terms of investment, employment that stimulates economic growth, where governments must take measures that result in increased spending. This is one of the main reasons governments borrow to cover these expenses. The need to cover expenses also arises when it is not possible to collect public revenues in time in relation to public expenses. This presents another problem called the budget deficit, which is even more of a motive for the government to go into public loaning/debt, [3]. Describes public debt as: “Debt is the sum of money hired/borrowed by one party to another and the obligation to repay it. The total debt in the country consists of private and public debts, but each country must take in consideration the average influence of the increase in GDP per capita of the government debt”. There is an ongoing discussion regarding the influence of percentage growth, [4]. Claim that: “a ratio of public debt on GDP above 90% is associated with a lower rate of economic growth, [6]. High amounts of governmental/ public debt, especially countries

with lower domestic income, will affect their economic growth and for countries with high debts, if the debt is doubled, the growth per capita will decrease by 1%, [5]. On the arguments about the threshold, [6]. Created by analysis of 18 OECD countries from 2010 to 2018, argues that: “the threshold level at 85% of debt to GDP, which if surpassed, leads to a decrease of the upcoming economic growth and that after the threshold, a 10% increase in the government debt-to-GDP ratio will reduce annual economic growth by 0.17 – 0.18% over the next 5-year period”.

Reinhart and Rogoff were corrected by others regarding the threshold level such as, [7]. Who disagree with the presence of the 90% threshold in debt, claiming that there isn't proper cohesion beyond the threshold level and this was also supported by, [8]. Explaining that: “the threshold level of 90% in a debt versus GDP ratio is higher than 90% and moves to a new level that goes around 115% of debt in GDP ratio and states that above. at that level, public debt can harm economic growth”, while, [9]. Find that unlike Reinhart and Rogoff, they propose that economic downturns have a tendency to cause debt growth and not the other way around. Other authors such as, [10]. Based on the analysis of six countries, found that the expansion of debt even beyond these borders could promote economic growth in more or less countries, although it deters growth uniform at low levels of debt in same countries. Meanwhile, [11]. In their study, analyzing 71 developing countries, found that value of border debt at 51.65 %, which is considerably lower comparing to earlier literature, and that the debt takes an adverse and by statistics noteworthy effect on economic growth at a high amount of public debt, while it has an irrelevant impact on reduced public debt.

But, there are some authors who give the right to the analyzes of Reinhart and Rogoff concerning the threshold level of debt in GDP such as, [12]. Finding almost the same results based on panel data of 38 countries and showing almost similar level. threshold at the 90% point in relation to GDP and that does not harm economic growth. Other authors such as, [13]. Who analyzed the growth countries of the Eurozone by considering 5 year annual data of governmental debt overlap so they concluded that: “after the 90 – 100% debt/GDP ratio there is a negative effect of public debt on economic growth”. The threshold level in level of 90% was also supported by, [14], and, [15]. In the study of, [16], showed that an rise in governmental debt is adversely linked to economic growth being in long run or short run terms, which are also in line with

the findings of, [17]. The derived first-hand results advise that on the short run effect of debt on growth of GDP, is positively related and stylistically very important, while reductions to round zero and fails significance further than the ratios of public debt into GDP of about 67 percent. It also corresponds to the case of our study where we have short-term impacts on one of our empirical measurements. Based to the IMF (IMF, 2022) Global Debt Database: “overall borrowing increased by 28 percentage points to 256 percent of GDP in 2020. Government borrowing accounted for about half of this increase, with the remainder from non-financial corporations and households. Public debt now represents roughly 40 percent of the global total—the most in almost six decades”.

## 2.2 Development of Hypotheses

Public debt treated in numerous studies have revealed the linkage amongst public/governmental debt and the economic grow, but influenced by a large number of internal and external factors that give effects depending the rise of the level of debt on the country's economy. This was also observed in the case of our study during the analysis of public debt in the economies of 35 EU countries and 6 countries of the Western Balkans. This study also shows the connection between Foreign Direct Investments (FDI), inflation and economic growth rates by comparing the debt level Western Balkans countries versus countries of the EU. A considerable number of studies have treated public debt from short-term and long-term impacts, but what is observed is that the main reasons for the use of debt were the financing of high public deficits. Our paper aims on analyzing also the level of public debt used by the EU member countries and the developing economies of countries in the Western Balkan. The level of public debt differs from country to country, but its connection with GDP growth is evident, in some countries even though we have an increase in public debt, GDP growth has remained constant and this has managed to cover the budget deficit. The continuous growth of the public debt as uncontrolled can increase the level of risk in the economy and can show problems in the economic structure, [18]. In the group of countries that we have for study, we have taken as a basis the factors of debt growth that affect economic growth. Analyzing the data has enabled us to identify the ratio of public debt into the economic growth, relying correspondingly on the controlling variables of inflation, Foreign Direct Investments and their relationship with GDP growth. For this

study, data were used for 35 countries, 29 of which are from the European Union and 6 from the Western Balkans for a 10 years period (2012-2021), resultant to a total of 350 observations for a country. The data is obtained from different sources such as: World Bank, official state statistics, Eurostat and the IMF. In recent decades, globalization has increased opportunities for easier access to debt financing through financial markets. Therefore, the states increasingly use the opportunities to secure financing in foreign markets, which also results in an increase in public debt, [19]. Governments' tendencies to increase public debt mainly aim to finance the economy through financial instruments and economic growth. It often happens that these goals have negative effects both on investments and on the decline of investments, since the increase in debt is done even without affecting fiscal policies and can be a financial burden for future generations. What is observed during our study, the percentage of participation of public debt on GDP, has nothing to do with the size of the economy or the development level that these countries have. Countries with weaker economies, such as WB countries, have different level of public debt on GDP. Of the states that have the lowest percentage, Kosovo's has the lowest level of 31.97% to GDP, while the highest is in Montenegro with 136.09%, which is characteristic of these states that have the economy with the lowest level of income per capita, but the difference in the debt level is very high. While other countries of WB, such as Albania, Bosnia Herzegovina, North Macedonia and Serbia have almost similar level of public debt on GDP with an average of 69.80%, even in these countries we have variances in the level of the economy and income as of per capita but the level of debt is almost the same. Despite the fact that level of development in the EU countries differs from the WB countries, the level of the percentage of debt participation is similar in relation to their GDP. What is worth observing is that countries with strong EU economies have a high level of debt. Estonia has the lowest public debt level at 12.73% of GDP and has a largely stable economy. While the highest public level of debt for years in a row is the in Greece with 236.87% of GDP for years in a row. But what is characteristic to point out is the fact that even countries with powerful economies such as Italy, Belgium, Portugal, France and in some years even Great Britain have a level of their public debt over 120%. The European average of public debt, for the years analyzed in our study, is at the average level of 82% of GDP, and if it is taken at

the level of the Eurozone, on the other side, it is at the allowed level of public debt, but not for the economy separately. Characteristic element of this is that regardless of the level of development, neither developed or developing countries, both used public debt as an opportunity to finance various programs, [20]. Although the effects in economic growth are observed depending on the use of public debt and their orientation in public investment projects, this depends a lot on the level of debt that the states have. [21], who used a GMM specification model with annual models, it shows that as of 1% of rise in public debt in the EU lead to a reduction on the public investment to 0.03%. But this depends also on the flow of public debt and public investments, and as a ritual must also be supported with interventions in fiscal policies that are useful for economic promotion and development, [22]. The data in our study is based on the OLS Fix model, which gives an empirical result where in the set of WB countries, public debt was at the average allowed level of 22.83 points, while in EU countries the average level was 4.259 points of public debt but has exceeded the maximum limit allowed in some countries such as Greece.

Having above mentioned in consideration, we raised:

*Hypothesis 1. Increase of the public debt is very much associated to economic growth*

Based on the collected data on public debt and its relationship with other factors, we have analyzed and made empirical measurements for the correlation of Foreign Direct Investments and inflation with public debt for the states and time period in the case of our study. From this reflection, it can be seen that FDI has an increase and decrease depending on the state and this does not mean that it has an impact or connection with the increase/decrease on the public debt level, [23]. Some research findings show that foreign direct investment is an important determinant of the stability of public finances, and it also shows the confidence of investors in the economic and financial stability of the country, [24]. Therefore, even access to international funds is easier when FDI is taken as a basis, where it is a relevant indicator for economic stability, this complements even more that access to public debt is also the financial stability of a country's economy. If we look at some researches that highlights the role of FDI we could notice positive relation to economic growth in host countries by the critical level of the

public debt, [25]. FDI increases economic reliability and could contribute to real economic growth, and as a result could impact the public debt portfolio, depending on the increase of the level of flow of foreign capital in the economy of a country. But the rate of inflation, even though it was not at a high level during this time period of study, it is not observed to be related to economic growth, and it has not had relevance in determining the public debt level. Effects of increase of inflation rate on the proportion/ratio of public debt to GDP in 35 developing and developed economies provide relevant results that have also been examined by researchers like, [26]. Who suggest that the hit of 1 percentage of the points on the inflation rate could decrease the ratio of debt on GDP to around 0.7 percentage of the point in average in all countries. The empirical results of, [27]. Also show that inflation rates are linked to public debt, where any percentage increase in the inflation rate reduces the ratio of debt to GDP. The rate of inflation can also affect the rise in interest rates, and if there is a rise in the rate of inflation, of course the governments of the states will change the interest rates and this will also affect those countries that enter public debt. Therefore, the maturity of the debt shows a significant part in the rate of inflation, and the longer the term is held, it lowers the interest rate and vice versa. The maturing of the public debt and the movements of the inflation rates have often been in favor of the economies of different countries, and once it has also influenced the economic growth, but up to a certain degree, [28]. Consequently, it is essential that government and central bank precisely assess the influence of the increase in public debt in relation to GDP and the rate of inflation, in directive to raise the control level and management of public/governmental debt. As it is known, inflation brakes down economic motion and directs lowering GDP growth, so state governments must act carefully by managing public money well, so that the level of debt reaches the highest levels of the rate of return, [29].

The level of debt of the countries of the Western Balkans is on a scale from the lowest that Kosovo has on average 34.48% in relation to GDP to the highest level that Montenegro has on average at 112.91 %, while other WB states have an average debt level of 68% in relation to GDP. What is characteristic of this study is that if it is compared with the EU countries that have a higher economic development, these countries on average have 82.11% of the debt level in relation to GDP. What can be singled out is the very high rate of the

state of Greece, which reached the highest possible level of 236.87% in 2020.

Having above mentioned, we developed the following hypothesis:

*Hypothesis 2. Foreign investment directly affects economic growth in a significant way*

### 3 Research Methodology

#### 3.1 Sampling and Data

Starting from the relatively high level of use of public debt, particularly in some countries with the highest economic development of the EU member states, we could say that regardless of the studies that have been done so far, there is still room for analytical and empirical studies that cover this field.

The methodology used in our study will contribute to the analysis of public debt data and the influences or connections to the growth on the Domestic Product. In our study, the six countries of the Western Balkans (WB6) and the 29 countries of the European Union (EU 29) were taken for investigation, for a period of 10 years (2012-2021). The data are based on the basic data of the World Bank, of the International Monetary Fund also the statistical agencies of the countries part of this study, as the main sources and other relevant data that reflect the public debt.

Data on external debt are collected through the Debtors Reporting System (DRS) of the World Bank. Long-term debt data is compiled using the country's public borrowing ratio. They are collected from the Quarterly Database of External Debt Statistics (QEDS), from the World Bank and the IMF, and from creditors through the Bank's reporting systems.

Our study covers the two hypotheses, which have been tested when analyzing the reflection of the public debt into the economic growth on both: Western Balkans countries and European Union countries.

Data used for this study are based on public debt, its flow over the years, as well as an analysis of FDI data and the inflation rate. Their relevance to economic growth and the direct and indirect impacts they have on public debt. In accordance with the literature, public debt is also treated with the connection of monetary and fiscal policies that are mutually dependent on the rate of inflation and the economic and financial stability that are related to Direct Foreign Investments, [30], [31], [32].

We first collected summary data with high relevance for the 10-year period, analyzing the flow of public debt of the EU and WB countries, comparing this group of countries. We have collected and tested with a sufficient number of 60-time series for the Western Balkans countries and 280-time series for the countries of Europe Union. We found also that the level of public debt has a linear flow in different countries and differs from state to state, and we found empirical evidence on the impacts on economic growth and its relevance. We also tested the connection of FDI and Inflation with the increase/rise in public debt and VAT as a controlling variable. Model testing

This section shows the testing model. Considering our data, we used the Ordinary Least Square (OLS) estimator. Therefore, the initial mathematical model consist takes form as below:

$$\beta = (XTX)^{-1}XTy \quad (1)$$

Next, since our data consists of n observations  $[y_i, x_i]$ , then each observation includes a scalar response  $y_i$  and a vector of predictors (or regressors)  $x_i$ . In a linear regression model the response variable is a linear function of the regressors. In other words, our testing model used to test hypothesis is comprehended on main test variables (e.g., age, gender and origin) as show below:

$$cus\_satis\ i = b_0 + b_1age_i + b_2gender_i + b_3origin_i + e_i \quad (2)$$

where,  $y_i$  stands as depend variable for customer satisfaction ( $cus\_satis\ i$ ) for client  $i$ , while  $b_1$ ,  $b_2$  and  $b_3$  represents the coefficients. Running regression models, we find that not all of the independence variables have the same magnitude on the depend variable. Specially, age, gender and origin have not any great impact on customer satisfaction, however they are found to have modest impact on depend variable but not as expected.

In summary, in all cases clients are satisfied with services offered by hotels, but compare to domestic, the foreigners are responded to be more satisfied with services provided by hotels. While age was not found to be impactful to client's satisfaction, next the gender provides mixed results in terms of male versus female.

### 3.2 Measurement of Variables

Based on the public debt data, inflation and foreign direct investment, a correlation with GDP is observed.

The Gross Domestic Product realized for the period 2012-2021 was taken as dependent variable while public debt, foreign direct investment and inflation are independent variables while VAT is controlling variable, and these is supported by many authors when comparing these variables in their studies, [9]. Similarly, the level of FDI in an economy has been treated and evaluated as positive indicator on economic performing and the welfare of the state's economy for the possibilities of using public debt, [33]. We found also that moderate inflation affected the usage of public debt on the growth of the GDP of countries that are part of this study.

### 3.3 The Model Used

During this study we compared several types of regression estimation models but we used OLS, as the fixed model. The results obtained from this model enable the use of changing data for comparison between different periods for different years and their impact on the country economy. Application of the fixed model OLS econometric model enables us to control the variables that in reality are very difficult to measure with simple methods and methods. For our study, the measurement of the influence of public debt, direct foreign investments and inflation on GDP growth and as a controlling variable VAT during the period 2012-2021 for the economies of 35 European countries is valid. All this in order that the data obtained from the qualitative research tend to be subjective, so the findings will be generalized, well administered and with the real choice at the level of more than 95% reliability, therefore the equation model will be used for regression analysis testing in this study is as follows:

$$Y_{it} \text{ (GDP growth)} = b_0 + b_1PD_{it} + b_3FDI_{it} + b_4INF_{it} + b_5VAT + e_{it} \quad (3)$$

y – Gross domestic product (GDP),  
 b 0 - Regression coefficient i = 1,2,3...  
 Pd – Public Debt,  
 FDI – Foreign direct investment,  
 VAT - Value Added Tax  
 t– Time period 2012 -2021,  
 INF-inflation  
 ei – Error term.

Through the used OLS model, variables have been identified based on multiple regression for the results that will be obtained according to econometric calculations, [34]. In the first case, we have the measurement of public debt with an impact on GDP growth, [35]. In the second case we have FDI with an impact on GDP growth, [36], while the third case as a variable we control VAT in GDP growth, [37]. Data collection was done annually during the study period. A similar data collection method is possible and has been implemented in the authors' studies and scientific work, [38]: All independent variables show their participation in the Gross Domestic Product in percentage.

Regression analysis with moderator variables are regression analysis which involve moderating variables in creating the relationship model. Variable moderator performs as a variable which could support or deteriorate the connection between the dependent and independent variable.

## 4 Results and Findings

### 4.1 Descriptive Statistics

Table 1 displays the descriptive statistics of the variable examined for this study which are presented on an annual basis. For the countries of the Western Balkans for the period 2012-2021, it is observed that the average GDP was 23.27 points and in minimum values 22.42 and in maximum values 24.87 which is not sufficient for sustainable development. While the average public debt was 23.27 points and in minimum values 21.24 and in maximum values 24.40 which is within the allowed level with an increasing trend. FDI on average was 20.15 points and in minimum values 18.83 and in maximum values 22.18 which represents the size of the conditions for FDI. Inflation for this period on average was 1.54 points and in minimum values -1.58 and in maximum values 7.69 which represents low values and no indications of decline in purchasing power which is a good possibility of constant economic growth. VAT for this period on average was 21.05 points and in minimum values 20.12 and in maximum values 22.45, which represents a relatively high participation.

The standard deviation values have expressed the variation of the data with high probability. The low values expressed in Table 1, with units of Std . Dev 0.69, 0.86 and 0.57 meaning that data points were gathered very closely to the same rate/value (mean). Though the high values expressed in units of Std . Dev . 1.71 and 1.74 shows us that the data

are positioned in a bigger group of values and have enabled the result to be so for BP countries.

Table 1. Descr. stat. for WB Countries

Variable	Obs	Mean	SD	Min	Max
id	60	3.52	1.71	1.00	6.00
MNE	60	23.27	0.69	22.42	24.87
pd	60	22.83	0.86	21.24	24.40
FDI	60	20.15	0.86	18.83	22.18
inflation	60	1.54	1.74	-1.58	7.69
TV Listings	60	21.05	0.57	20.12	22.45
country1	60	3.50	1.72	1.00	6.00

Table 2 present descriptive statistics of variables examined for our study which are presented in annual basis. For the countries of the European Union and for the period 2012-2021, it can be observed that the average GDP was 26.13 points and the minimum values were 22.97 and the maximum values were 29.07, which indicates a stable development. While the public Debt in relation to GDP was on average 4.259702 points and at minimum values 2.543668 and at maximum values 5.47 which is within the allowed level. FDI on average was 26.1382 points and in minimum values 22.97057 and in maximum values 29.07 which represents the improvement of conditions for FDI . The average inflation for this period was 0.15931 point and in minimum values -4.79074 and in maximum values 1.73 which represents low values and no indications of decline in purchasing power which is like a good possibility of constant economic growth. VAT in relation to GDP for this period on average was 2.615665 points and in minimum values 1.824316 and in maximum values 3.17 which represents a relatively high participation.

The standard deviation values have expressed the variation of the data with high probability. The low values expressed in Table 2, with units of Std . Dev 0.57 (SD), 0.88 and 0.26 meaning the data points were gathered near to the identic value (mean). Though the high values expressed in units of Std . Dev . 1.53 tells us that the data is located in a larger set of values and has enabled the result to be so for BP countries.

Table 2. Descr. Stat. for EU Countries

Variable	Obs	Mean	SD	Min	Max
ID	280	14.5	8.09	1	28
GDP	280	26.14	1.53	22.97	29.07
Pd GDP	280	4.26	0.58	2.54	5.47
FDI	280	26.14	1.53	22.97	29.07
Inflation	280	0.16	0.89	-4.79	1.73
VAT_GDP	280	2.62	0.27	1.82	3.17
COUNTRY	280	14.5	8.09	1	28

## 4.2 Model Testing

However, before proceeding to the interpretation of the results, some diagnostic tests related to the testing of the model are presented, namely the application of variables. Meeting the required econometric /statistical assumptions when fitting an econometric panel regression model. We have performed the necessary diagnostic tests related to Correlation matrix and multicollinearity. Multicollinearity is directly related to the correlation between the independent variables and thus we present the correlation matrix with the dependent variables.

## 4.3 Multicollinearity Test

Table 3 shows the correlations between the variables used by what we have presented. The variable of 1.00 that goes from the top left to the bottom right is the key diagonal, showing that individually variable is constantly correlated with itself. As provided by Table 3 there is no presence of multicollinearity

Table 3. Correlation Matrix

Variables	1	2	3	4	5
GDP	1				
PD/GDP	0	1			
FDI	1	0.49	1		
inflation	0	-0.179	-0.036	1	
VAT_GDP	-1	0.237	-0.591	0.047	1

Table 4 show the results of variance Inflation Factor (VIF), which enables to test the statistical data that we used through the multiple regression model that measured the values of a specified dependent variable grounded on the values of two (2) or more independent variables. Indeed, VIF show that values are under parameters (i.e., under 10). Table 4 show that mean VIF is 1.47, which are much lower values that we cannot say without the

presence of multicollinearity.

Table 4. Multicollinearity

Variable	VIF	1/VIF
FDI	1,930	0.517
VAT GDP	1,550	0.645
bpGDP	1,370	0.728
Inflation	1,040	0.962
<b>Mean VIF</b>	<b>1,470</b>	

There is no reason why it is below 10, in our case it is 1.47, the sum decreased with the absence of multicollinearity. Conclusion and findings

## 5 Conclusions

Results of the regression analyses have been presented in the Table 5. According to the regression analysis, the data on the influence of the variables that have correlation and influence on GDP and those that have not shown any correlation are presented.

Data are presented in two models: in Model 1 which shows, for WB 6 countries that: Public debt has an influence on economic growth with 0.260\*\*\*, whereas FDI has not shown a connection with economic growth and is presented with 0.0971, inflation also does not show any impact with GDP growth in terms of 0.00114. As for VAT, the data show a high correlation of 0.669\*\*\* and it affects the growth of GDP. But what is observed in model 2 of EU27, the data show us a negative result or no effect of public debt, inflation, VAT in relation to GDP. While FDI has a correlation of 1,000\*\*\* with the impact or growth of GDP.

Results obtained from the regression analyze are the data on the impact that variables have given on the GDP. This stylistically measured model gives us the results that are observed for the high level of correlation in GDP growth of the variables presented and with negative results in EU27 countries.

Table 5. Regression analysis where GDP growth is depending variables

VARIABLES	WB6	EU27
	Model (1)	Model (2)
PD	0.260*** (0.0728)	
FDI	0.0971 (0.0593)	
Inflation	0.00114 (0.0192)	
VAT	0.669*** (0.0976)	
PDGDP		0.000 (0.000)
FDI		1.000*** (0.000)
Inflation		0.000 (0.000)
VAT_GDP		0.000 (0.000)
Constant	1.291 (1.203)	-0.000 (0.000)
Observations	60	280
R-squared	0.889	1.00
Fixed effects	Yes	Yes

This paper examined the influence of the public debt on GDP growth based on the data from 35 countries. The treatment of this topic has been done for different countries and in different periods, but this paper will be supplemented with appropriate information for the case studies for the countries we have taken as a basis. Individual studies and social studies are increasingly helping to find and offer alternatives, supporting them in analysis and measurable and empirical results. All this on the assumption of the connection among public debt, FDI and inflation in GDP growth.

The influencing factors and the approach that should be used towards public debt, together with the risks that accompany them, play an important role in the economic growth and development of countries. Conclusions of the research are based on the purpose and objectives of the paper, that through the selected research model the research objectives have been achieved and the basic hypotheses of the paper have been proven.

The application of the Econometric Model OLS Fix multiple linear regression model that has been implemented through the STATA program, has enabled us to measure the variables. For our case study, the measurement of the impact on public debt, FDI and inflation for the years 2012-2021 and the impact on GDP was valid.



Through the testing of variables, it has been proven that the rise in public debt over the years has a direct influence on GDP growth, indirect impact and other statistical forms. The independent variables in the case of this research were: FDI, inflation and VAT, while dependent variable was GDP. Through the use of the standard deviation and the median and the linear regression formula, the results have been obtained that some independent variables have affected GDP growth uniformly and some in a fair way through real growth, [39]. Through the correlation matrix, it has been tried to find the influence of public debt as an independent variable, in GDP of the Western Balkan countries. This can also be argued by many economic theories that support the argument that the increase/rise of the public debt affects the increase/rise in GDP, [40]. Testing of the Hypothesis of this paper, as the correct one, has been tested through the model by testing the impact of the Y independent variable by years, built on linear regression, to perceive the relation with the X quantitative variable and their effect on GDP. Results have shown that the independent variables of public debt have influenced GDP growth for the WB 6 countries, with a high impact and it is positive but not in EU25 countries, [41]. These obtained results are also consistent with the results of several different authors and researchers who have researched similar fields of study.

By the OLS model and the use of STATA p, hypotheses H1 has been tested through independent variables: public debt, FDI and inflation on the one hand and dependent variable GDP. According to this, the independent variables public debt and VAT have influenced the growth of GDP and it is positive, while the other variables are negative for WB 6 countries, while the EU 25 countries come out as incorrect since they do not give any effect.

Using the OLS model and the STATA program, H2 was also verified

According to the obtained data, we have different results in Model 1 for WB6 countries, the tested variables FDI and Inflation do not give effect or impact on economic growth. But in model 2 for the EU25 countries, we have a difference where FDI has an effect on economic growth, while inflation does not show any correlation.

Also, this hypothesis is fulfilled even more by the data presented in this study. Using the impacts of independent variables Y according to years, based on linear regression, to observe through measurements with quantitative variables X and their impact on GDP, where it has been proven that the growth of FDI has a direct impact on the

growth of GDP in EU25 countries. Even in this study, as with any study, there are some limitations regarding the treatment of this issue. In addition to the general limitations of research based on primary and secondary data, a particular limitation of this study is related to the measurement of variables due to the time series and general data on which the paper is based. As noted in the study, public debt has not been sufficiently addressed in BP for long periods of time. During the review of the literature and the collection of data, it is clear that it is worth studying the effects of public debt, FDI and inflation on GDP.

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