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# DETERMINANTS OF PUBLIC INDEBTEDNESS IN THE WESTERN BALKAN COUNTRIES

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## **Abstract**

*High public debt accumulated in the last decade all over European and Western Balkan countries threatens to jeopardize sustainability of budgetary policies and public finances in a whole. Further increase of public indebtedness should be expected in the future regarding economic situation in Europe as well as globally. It is important that further increase of indebtedness should be adjusted with other macroeconomic goals and current economic situation. Therefore, it is important to determine which economic factors could affect public indebtedness in certain country. The aim of this paperwork is through econometric analysis to investigate macroeconomic determinants of public indebtedness in selected countries of the Western Balkan and make comparative analysis with the selected Central and Eastern European countries. This research will investigate possible effects of economic growth, debt stock, fiscal balance, gross fixed capital formation, inflation and foreign direct investment on indebtedness in the selected countries in the period 2007 – 2023. The obtained results will be used to analyse determinants within selected sample and to compare possible differences between two groups of countries within the sample. Results of analysis will be also used to make conclusions and give certain guidelines for fiscal policy, public finances and debt management in the Western Balkan countries.*

**Keywords:** *public indebtedness, economic determinants, Western Balkan*

## **1. INTRODUCTION**

Global public debt that is increasing since the global financial crisis once again is an important economic issue. Developed countries as well as developing countries are experiencing increase of debts during all this time. Worsen with the pandemic, energy shocks and monetary tightening that led to expansive fiscal policy, public debt ratios around the world are higher than before. According to the IMF Global Debt Monitor (2024) global public debt amounted 237 percent of GDP in 2023, that is higher than the pre-pandemic level when it was 229 percent of GDP. When analysing European Union, government debt in the EU was 81.5% at the end of the second quarter of 2024 (Eurostat, 2024). When speaking about debt problems in the Western Balkan countries the situation is similar. Similar movements of public debt caused by the pandemic, energy shocks and monetary tightening can also be seen in the Western Balkan

countries. Higher debt ratios followed by decrease in growth are threatening to jeopardize sustainability of budgetary policies and public finances in all mentioned areas. Even though public debt trajectories are similar in cause and movements in mentioned areas, it is necessary to analyse specific economic characteristics and conditions in different countries for more country-specific conclusions on public debt and its effects on economy as a whole. Therefore, it is important to determine which economic factors could affect public indebtedness. The aim of this paperwork is to analyse macroeconomic determinants of public indebtedness of the Western Balkan and Central Eastern European Union countries and then to make comparative analysis within selected group of countries.

## 2. LITERATURE AND THEORETICAL BACKGROUND

In the context of continuing global increase of public indebtedness, many researches have focused on analysing determinants of public debt. Different researches showed that determinants affecting public debt could be macroeconomic, political and institutional. In this paperwork the aim is to analyse effects of specific macroeconomic determinants, so this theoretical and literature review will focus on researches relating to those determinants. Sinha et al. (2011) analysed panel data for 31 country, with high and medium income, in the period 1993-2008 and concluded that the most important determinant of indebtedness in GDP growth rate for both group of countries. They also addressed importance to analyse other determinants specific for certain country or group of countries. Easterly (2011) in his work argue that slowdown of economic growth had an important role in development of debt problems in medium-income countries in 1980s, crisis of highly indebted poor countries in 1980s and 1990s and increase of public debt burden in industrial countries in the same period. Cherif and Hasanov (2012) address that stimulating growth can improve both debt dynamics and fiscal balance, while slow growth and interest rates near zero and fiscal consolidation could be counterproductive. Pirtea et al. (2013) implicated with its research that encouragement of growth conditions in addition to decrease of interest rate risk is of key importance for public debt management. They also analysed effects of primary fiscal deficits and real interest rate on public indebtedness and found that both variables are significant for debt to GDP ratio. Mota et al. (2015) showed on quarterly data in the European Union for the period 2000-2011 that significant increase of public debt-GDP ratio could be directly related to sudden slowdown of GDP. Swamy (2015) in his paperwork concluded that real GDP growth, foreign direct investment and inflation, among other variables, have negative effect on debt, while gross fixed capital formation among other variables has positive effect on debt. Matošec and Globan (2015) in the sample of 13 new European Union countries for the period 2000-2015 showed that growth rate of real GDP is significant for decrease of public debt and this effect is stronger than effect of balanced government budget. Attinassi et al. (2016) in their research found an adverse effect of inflation on fiscal balance. Their results suggested deterioration of around 0.15pp in the budget balance-to-GDP ratio in response to a temporary 1pp fall in inflation. Akitoby et al. (2017) concluded in their research that higher inflation could help reduce the public debt-to-GDP ratio in advanced economies, but it would hardly solve the debt problem and it rather raise significant challenges and risks. Agoraki et al. (2018) investigated sources of changes in the debt to GDP ratio across countries of the European Periphery (Greece, Italy, Spain, Portugal and Ireland), the European Core (Germany and France) and other G7 countries (Japan, UK, Canada and USA) in two seven years period, 2000-2007 and 2008-2015, respectively. They found that low inflation and real growth caused debt to GDP ratio to increase in the European Periphery countries and there is positive dependency between primary deficit and public debt after a crisis, excluding Germany and Italy. Fukunaga et al. (2019) found for advanced economies that 1pp inflation shock brings down debt-to-GDP ratio by 0.5-1pp. Mauro and Zhou (2020) addresses that until economic growth exceeds cost of public indebtedness, government is able to refinance its debt and public debt-GDP ratio will decrease without need to increase taxes. Radonjić (2020) in the sample of the Western Balkan countries in the period 2006-2017 showed that stimulation of economic growth leads to decrease of public debt. Also, they showed that there is negative relation between inflation and debt. Toth et al. (2022) analysed public debt determinants in EU countries and found that among other variables growth of budget balance, inflation rate and GDP growth lead to reducing public debt. Mihaljek (2023) in his research concluded that inflation

is boosting government revenues faster than expenditure and therefore the overall budget balance tends to improve under high inflation in short run, but in the medium-term expenditures also rise quickly with inflation and offset much of this improvement in the budget. Regarding public indebtedness and investment, domestic investment (GFCF) and foreign investment (FDI), there are various conclusions on link between these variables and they are mostly in the direction that high public indebtedness could have negative impact on investments. The impact of domestic and foreign investment on public indebtedness is often analysed through the impact of investment on economic growth that could lead to decrease of public debt. As Islam and Nguyen (2024) suggested in their research high levels of debt among other consequences could lead to capital flight and reduction of investments. This is often referred as “crowding out” effect of public debt. Picarelli et al. (2019) in their research of 26 EU countries between 1995 and 2015 concluded that 1 percent increase in the public debt leads to reduction in public investment of 0.03 percent. Vanleear et al. (2021) in their research of 28 EU countries between 1995 and 2016 showed that 10pp increase in public debt reduce private investment by 18.32 billion euros given the levels of private investment in 2016. They also suggest that attracting foreign capital compensates for contraction in the domestic financial resources due to higher public debt levels.

High public debt accumulated during last two decades in the European Union countries but also in the Western Balkan countries threatens to jeopardize sustainability of public finances and budget policies. Analysing data for the period 2007 – 2023 in the 11 Central and Eastern European Union countries, it can be seen that most of these countries before global financial crisis had debt-to-GDP ratio below 60% determined by the Maastricht Agreement (Figure 1). Hungary is exception that had debt-to-GDP ratio higher than 60 percent even before crisis. From the other side, Estonia is example of small debt ratios in the mentioned period. Global financial crisis led to strong increase of public debt rations until 2014, when debt started to decline, and public finances started to recover. Pandemic, energy prices shocks, and extensive policy of governments financial support led to the usage of fiscal space that again led to increase of public debt.

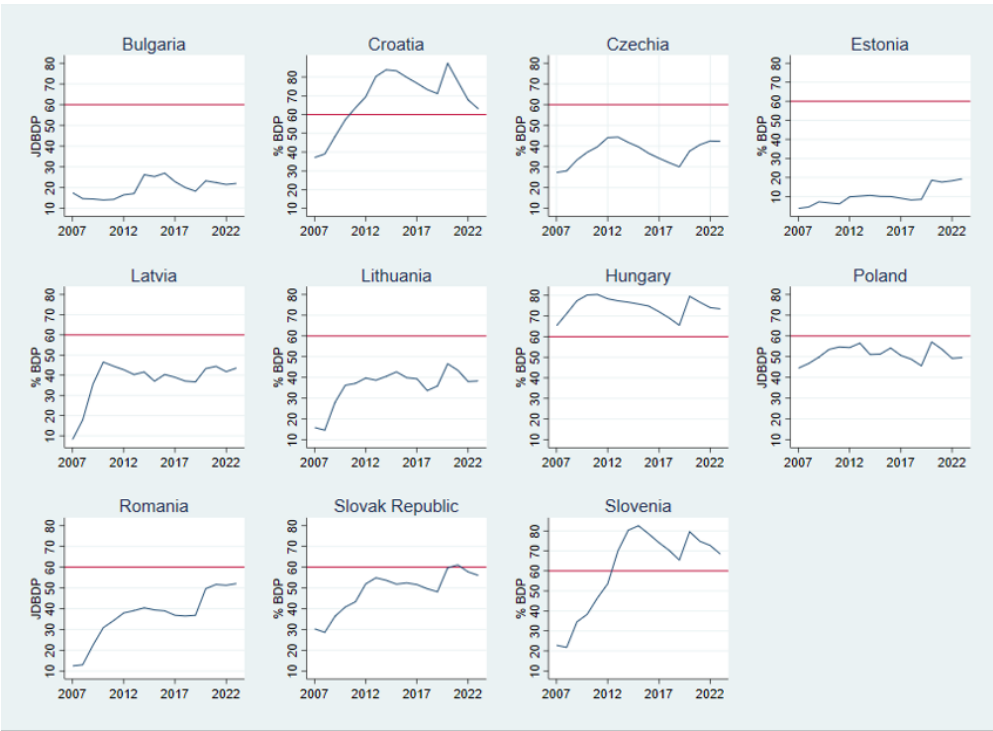


Figure 1 Public debt in the selected CEE countries

Notes: data for debt-to-GDP ratio are from IMF World Economic Outlook (<https://www.imf.org/en/Publications/WEO/weo-database/2024/October>)(accessed:01.02.2025); red line is debt threshold of Maastricht’s criteria

Source: Author’s calculation (Stata MP 17)

Recommendations of the International Monetary Fund (IMF) for public debt ratios in the Western Balkan countries are 30 – 50 percent of GDP. Figure 2 shows situation regarding public debt in the Western Balkan countries in the period 2007 – 2023. Global financial crisis had negative effect on public debt in the Western Balkan countries as well. Recovery of economies and decrease of public debt ratio followed trends as on the European markets and in 2014 public debt started to decrease. Pandemic, energy prices shocks, and government financial support measures led to increase of public debt in mentioned countries that is high above recommended values.

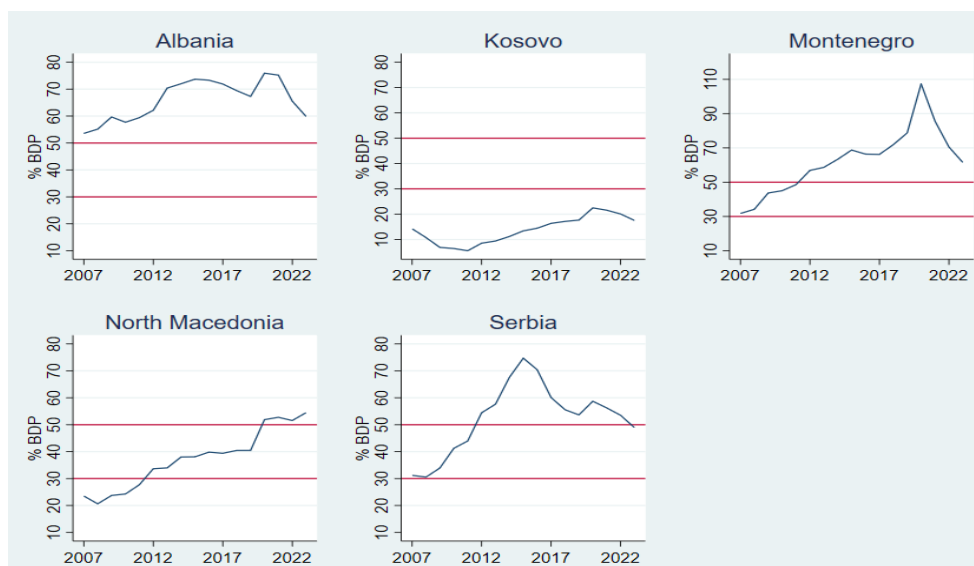


Figure 2 Public debt in the WB countries

Notes: data for debt-to-GDP ratio are from IMF World Economic Outlook (<https://www.imf.org/en/Publications/WEO/weo-database/2024/October>)(accessed:01.02.2025); red line is debt threshold of IMF for middle income countries

Source: Author's calculation (Stata MP 17)

Comparing public debt data in the selected CEE countries and in the WB countries it can be seen that ratios in the latter are lower than in the CEE countries. But having in mind lower tolerance and macroeconomic instability as well as often complicated political situation, even those lower levels could be significant risks for the WB countries. Therefore, it is important to examine determinants of public debt that could have positive or negative effect on public debt levels. Obtained results could be used as guidelines for public debt management and sound fiscal policy. Thus, this paperwork has aim to investigate macroeconomic determinants of public debt in the WB countries and CEE countries.

### 3. MODEL AND DATA

This research will investigate possible effects of certain macroeconomic determinants on public indebtedness in the Western Balkan countries and Central and Eastern European countries in the period 2007 – 2023. Variables that will be used to investigate possible effects on public indebtedness are one that are commonly used in investigating determinants of public debt in empirical researches and they include economic growth, debt stock, fiscal balance, gross fixed capital formation, inflation and foreign direct investment. Data for the analysis are obtained from the web pages of World Bank (World Development Indicators)<sup>1</sup> and International Monetary Fund (World Economic Outlook)<sup>2</sup>. The following table shows variables of the model, their indicators, unit of measurement and source of the data for specific variable.

<sup>1</sup> <https://databank.worldbank.org/source/world-development-indicators> (accessed: 01.02.2025)

<sup>2</sup> <https://www.imf.org/en/Publications/WEO/weo-database/2024/October> (accessed:01.02.2025)

Table 1 List of variables

Variable	Indicator	Abbreviation	UofM	Source
Economic growth	GDP per capita growth (annual)	GDPpc	Δ %	WDI
Public debt	Public debt-GDP ratio	PDGDP	% of GDP	WDI
Fiscal balance	Net lending (+)/net borrowing (-)	FS	% of GDP	GFSD
Gross Fixed Capital Formation	Gross Fixed Capital Formation	GFCF	% of GDP	WDI
Inflation	CPI (annual)	INFL	Δ %	WDI
Foreign Direct Investment	FDI net (net inflows)	FDI	% of GDP	WDI

Notes: source of variables are World Development Indicators (World Bank) and World Economic Outlook (International Monetary Fund) for the period 2007 -2023

Source: Made by authors

The analysis of relations between variables will be made on sample that includes sample of all European Union countries and Western Balkan (WB) countries (Albania, Bosnia and Herzegovina, Kosovo, Montenegro, North Macedonia and Serbia), sample that includes Central and Eastern European Union countries (CEE) (Bulgaria, Croatia, Czechia, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia Slovenia) and WB countries and third sample that included only WB countries. The models that will be used belong to the class of dynamic panel models where present value of dependant variable depends on its previous value and dependant variable is function of random effect. Results will be estimated by appropriate estimators for dynamic panel models that are used with panels with large number of units and relative short time series and by using Generalized Method of Moments (GMM). For the sample that includes all European Union countries and WB countries model will be estimated using Blundell-Bond (1998) estimator for panel models that estimates first equations in the first differences and in levels. Models for samples that include CEE and WB countries and WB countries separately will be estimated using Kiviet (1995) Least Squares Dummy Variables corrected estimator (LSDVC) that is used when number of units is small. Diagnostic tests that will be used for valuation of models are Sargan test and two diagnostics test  $m_1$  and  $m_2$ . Sargan test is used for pre-identification of limitations and it is used to determine whether chosen instruments are valid or not (p-value should be higher than 0.05). Other two diagnostic tests  $m_1$  and  $m_2$  test existence of autocorrelation between first differences of residuals. Null hypothesis of  $m_1$  assumes non-existence of autocorrelation of the first-order in the first-differenced residuals and  $m_2$  assumes non-existence of autocorrelation of second-order in the first-differenced residuals. Existence of autocorrelation of the second and higher order indicates problems in specification of models. So, diagnostic test  $m_2$  also indicates validity of chosen instruments not (p-value should be higher than 0.05). The obtained results will be presented in the form of tables and graphs. The equation for the dynamic panel model is as follows:

$$\begin{aligned}
 JDBDP_{it} = & \mu + \gamma JDBDP_{i,t-1} + \beta_1 GDPpc_{it} + \beta_2 FS_{it} + \beta_3 INFL_{it} + \beta_4 GFCF_{it} \\
 & + \beta_5 FDI_{it} + \alpha_i + \varepsilon_{it} \\
 & i = 1, 2, 3 \dots 33 \quad t = 2007, 2008, \dots 2022, 2023
 \end{aligned}
 \tag{1}$$

- $\mu$  – constant equal for all units
- $\gamma, \beta_1, \beta_2, \beta_3, \beta_4, \beta_5$  are parameters that are to be estimated
- $JDBDP_{it}$  debt-to-GDP ratio for country  $i$  in the period  $t$
- $GDPpc_{it}$  growth rate of GDP per capita for country  $i$  in the period  $t$
- $FS_{it}$  fiscal balance for for country  $i$  in the period  $t$
- $INFL_{it}$  inflation for country  $i$  in the period  $t$
- $GFCF_{it}$  gross fixed capital formation for country  $i$  in the period  $t$
- $FDI_{it}$  foreign direct investments for country  $i$  in the period  $t$
- $\alpha_i$  effect for country  $i$  in the period  $t$
- $\varepsilon_{it}$  error for country  $i$  in the period  $t$

### 3.1. Estimated results

In the context of the mentioned objectives of this paperwork, estimation of public debt determinants will be conducted using two different estimators as mentioned earlier. Blundell-Bond (1998) estimator will be used for sample that include data for CEE and WB countries and data for all other European Union countries (Model 1). Kiviet (1995) LSDVc estimator will be used for estimation of samples that include CEE and WB countries together (Model 2) and only WB countries (Model 3). Results of estimated models and relations between variables obtained using different estimators are given in the following Table 2.

Table 2 Results of panel models of public debt determinants

Variable	Model 1- BB	Model 2- LSDVc	Model 3- LSDVc
<i>LJDBDP</i>	0.910*** (0.000)	0.894*** (0.000)	0.846*** (0.000)
<i>GDPpc</i>	-0.7619*** (0.000)	-0.510*** (0.000)	-0.686*** (0.000)
<i>FS</i>	-1.001*** (0.000)	-1.016*** (0.000)	-0.976*** (0.000)
<i>INFL</i>	-0.413*** (0.000)	-0.257*** (0.000)	-0.305** (0.013)
<i>GFCF</i>	-0.109*** (0.000)	0.074 (0.257)	0.185 (0.0117)
<i>FDI</i>	-0.009*** (0.000)	0.037* (0.056)	0.050 (0.636)
<i>_cons</i>	8.873*** (0.000)		
<i>Number of observations</i>	528	270	90
<i>Number of countries</i>	33	18	15
<i>Number of instruments</i>	36		
<i>Sargan test (p-value)</i>	0.3577		
<i>AR(1) (p-value)</i>	0.0498		
<i>AR(2) (p-value)</i>	0.3849		

\* $p < 0.1$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$

Source: Author's calculation (Stata MP 17)

Results of the Model 1 indicate that all variables are statistically significant ( $p$ -value=0.01) while in the Model 2 variable GFCF is not statistically significant and in the Model 3 either GFCF or FDI are not statistically significant. Obtained results are in line with the most previous researches about determinants of the public debt. Results of all estimated models indicate that increase of debt-to-GDP ratio in the previous period increases debt-to-GDP ratios in the current period in all three models. According to obtained results economic growth measured with GDP growth rate, fiscal balance (net lending/net borrowing) and inflation have negative impact on debt-to-GDP ratio, ceteris paribus in all three analysed samples.

### 3.2. Discussion

Just like previous aforementioned researches, results of our analysis show that increase of growth rate of GDP per capita in average leads to decrease of public indebtedness. That is in accordance with previous researches (Sinha et al., 2011; Briceno and Perote, 2020) who found that economic

growth is one of the most important determinants of indebtedness. Thus, encouragement of economic growth could be considered as one of the effective manners for indebtedness management. However, considering constant increase of public indebtedness in the WB countries, it is evident that public indebtedness policies are not oriented enough toward promotion of growth since often new borrowed funds are again used for public spending and not in productive investments. This fact is also related with results and our conclusion that there is significant impact of indebtedness from the previous period on current indebtedness. That is consequence of the fact that countries usually go into debt for longer period of time and they have costs of interests on that debt during all that time. According to one of definitions of public debt in Bajo et al. (2011), public debt is cumulative of past budget deficits. So, it was logical to expect that fiscal balance could be significant determinant in selected samples. Our results confirmed our presumption and indicate that fiscal deficits in the WB and CEE countries as well have significant effect on indebtedness. We can conclude that in all three samples results showed that fiscal balance is very significant and strong determinant of the public debt. Very often in the WB countries as well as in CEE countries increase of public debt is caused by the long-term budget deficits. Budget deficit can be created on the current part of the budget, as difference between current revenues and expenditures and in that case, it means that public debt funds are used for spending. That discourages investment and economic growth and less funds are available for financing capital projects that could have positive impact on economic growth (Kolačević and Hreljac, 2011). In the situation of high fiscal deficits, one of the solutions is fiscal consolidation but one that encourages decrease of non-productive expenditures. Decrease of deficit ensures budget space that through more productive spending induce economic growth. In the WB countries burden of the budgets, high public spending and deficits are result of increased non-productive spending that in the long-term does not have multiplicative effects on economic growth and could lead to further increase of public indebtedness and have negative effect on public finances. Results also showed that increase of inflation in average leads to decrease of public indebtedness. Increase of inflation, in developing countries as WB countries, means higher nominal GDP that lowers debt-to-GDP ratio. Currently, inflation rates are high in the selected countries and that will probably affect indebtedness on the manner that it will cause lower debt-to-GDP ratios that maybe will not show real situation in selected countries and cause governments to think about new borrowing and additional spending. However, in addition to positive impact of inflation for decrease of public indebtedness, it is also important to have in mind negative consequences of inflation on economies of mentioned countries. Further increase of food and energy prices will necessary lead to increase of salaries and government financial support that will again have further impact on fiscal deficit and public debt in the mentioned countries. For example, central banks responded to increase of inflation rates by increasing interest rates that worsen indebtedness and significantly increases its costs. Debt and interest payments increased much due to mentioned. This limits ability of the selected countries to attract foreign direct investments. Analysed data showed that most of the WB and CEE countries have fiscal deficits that means there is little fiscal space for financing further economic recovery and growth. Therefore countries, and especially WB countries, are very much in need for new debts in order to finance necessary infrastructure projects, transition of economies and digitalization. Although, the 2 variable FDI in Models 1 and 3 is not statistically significant and in the Model 2 it has very small coefficient, it is interesting to notice that increase of FDI leads to increase of public debt. That is in favour of mentioned fact that borrowed funds are poorly used for financing productive investments. Productive investment could contribute to growth and income increase that could be further used for financing due debts. The WB countries need aimed infrastructure investments that could launch economic growth, help in attracting foreign investments and support green transition and digitalization (Schreiner, 2022).

Comparing results of the WB and CEE countries, it can be seen that debt-to-GDP ratios in the WBs are lower than in the CEE countries but due to their macroeconomic instability and often complicated political situation even those lower values could be significant risk. The lower debt-to-GDP ratio is, less budget is allocated for debt payment and it less hard to decrease deficit caused by

debt payment. Fact that it is easier to solve debt problems at lower indebtedness should be certain guideline for economic policy in the WB countries. In the situation when their debt ratios are still not so high they should properly manage their further borrowing and wisely use it to contribute to economic growth. Economic recovery in the WB countries after 2021 positively affected public finances of mentioned countries. However, because of their macroeconomic instabilities and limited fiscal space exhausted by pandemic, countries should carefully decide about costs and benefits of new spending and new borrowed debt.

#### 4. CONCLUSION

Issue of public indebtedness and its possible side effects became especially important in the global situation of constant increase of indebtedness and economic growth slowdown. Therefore, it is very important to manage indebtedness properly and to ensure that financial needs of government and due obligations are fulfilled at lowest cost possible and in accordance with appropriate risks. Indebtedness and its possible effect are also subject of specific characteristics of countries. Something that triggers shocks and unexpected events or that ensures improvement in one country does not have to do the same in another. Therefore, it is important to include different macroeconomic determinants when analysing public indebtedness and its possible impacts. The aim of this paperwork was to investigate significance of specific macroeconomic determinants in the Western Balkan and Central and Eastern European Union countries. Results of the estimated models showed in both cases that determinants of public debt are similar in selected groups of countries. Both in the Western Balkan countries and Central and Eastern European Union countries economic growth, fiscal and previous debt balance and inflation have significant and strong negative effect on public indebtedness. Therefore, results of this research should contribute to analysis of public indebtedness in the selected samples. Government and competent authorities might have in mind and consider the mentioned determinants when planning further borrowing programmes and policies about debt management and potential debt risks. Obtained results could be used as some guideline for fiscal policy and debt management policy especially in the Western Balkan countries. Due to limitation of small sample in the case of Western Balkan countries further researches should consider use of some other methods that could be more appropriate for those samples. This could also allow testing of more explanatory variables as possible determinants of public debt. In the context of global events, further increase of inflation and public expenditures, further researches should focus on impact of inflation on public debt in the short and medium term as well as effects of type of inflation, and impact of specific public expenditures (like military expenditures) on changes in public indebtedness.

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