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The Impact of Tax Burden and Tax Structure on the Economic Growth of the Balkan Region

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Abstract

Purpose: The present study is aimed at the analysis of the extent to which the collected taxes and the structure thereof have an impact on the economic growth of the Balkan region. Design/Methodology/Approach: Linear regression models have been developed and applied. Data for the period 2005-2018 have been used from the annual reports on the execution of the consolidated budget, published by the Ministries of finance of the Balkan countries and macroeconomic data from their Central banks and National statistical institutions. The estimation is made using the ordinary least squares (OLS) method. Findings: The results of the applied models show that the increase of the tax burden during the period under review and the restructuring of the tax systems have a restraining effect in the search for higher economic growth. The countries in the Balkan region where the tax burden is lower, as well as the countries where indirect taxes occupy a larger relative share, show better economic results. Practical Implications: The present study provides a good starting point for the conduct of fiscal policy by the ruling governments in the countries of the Balkan region. The guidelines are on how these governments manage the tax burden on the economic agents and what the appropriate structure of applicable taxes would be to achieve sustainable economic development. Originality/Value: The study contributes to the scientific literature by conducting an extensive analysis of some of the already studied relationships between taxation and economic growth, on the one hand, and examines the extent to which opinions already expressed are applicable to Balkan countries' policy, on the other hand. The study also identifies the reason for some of the dynamic processes in the Balkan economies in the period 2005-2018.

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INTRODUCTION

Tax systems management is of particular importance in conducting fiscal policy in modern societies. Changes in tax systems can stimulate the economic agents and their activity and contribute to better economic performance, respectively. On the other hand, these changes can lead to the cessation of production activities that are specific for an area or region, to discourage foreign investors and the persons employed in private sector as well as to stimulate the spreading of shadow economy. The object of this study is the tax structure in the countries from the Balkan region. The subject of the study is the influence of the tax burden and the tax structure on the economic growth of the Balkan region. The aim of the study is to examine the extent to which the tax burden, on the one hand, and the structure of taxation, on the other hand, have an impact on the opportunities for achieving economic growth in the period 2005-2018 within the Balkan region. The study is structured in several sections. The first section reviews the literature available so far, which analyzes the impact of taxes on economic growth, changes in the tax burden and the channels of influence of the main types of taxes. The second section presents a descriptive analysis of the tax burden, tax structure and economic growth of the countries in the Balkan region. The third section describes the methodological framework of the analysis, while the fourth and fifth sections present and analyze the results obtained.

LITERATURE REVIEW

The modern theoretical and empirical scientific studies do not provide an unanimous answer to the question of the effects of taxation on economic growth. Most authors, including Marsden (1984), King and Rebelo (1990), Plosser (1992), Engen and Skinner (1992), Bassanini et al. (2001), Lee and Gordon (2005) and Ilzetzki (2011), argue that taxes have a predominantly negative impact on the attempts to achieve economic growth. Most often, such a conclusion is reached when assessing the direct effect of taxation on economic performance. Other authors, such as Scully (1998) and Terzi et al. (2017) aim to determine the optimal level of taxation that would promote a higher rate of economic growth. The effects of the conducted tax policy are sought in the following directions: the influence of the tax burden and the influence of the tax structure.

The tax burden on society can be measured by tax rates and tax revenue to GDP ratio. In this regard, the applicable tax rates affects the behavior of taxpayers, and are considered as a fiscal instrument for macroeconomic and microeconomic impact, respectively. When a government needs additional funds to finance its expenditures, it can look for an option to generate them by increasing the marginal tax rate, but the higher tax burden may shrink economic activity and this, in turn, may not lead to the collection of projected budgetary resources. Marsden (1984) focuses on the impact of taxation on economic growth, taking into account the level of development of countries and concludes that in countries with significantly lower incomes the impact of the tax system on the opportunities for achieving economic growth is almost twice as negative. In addition, Ilzetzki (2011) applies various econometric techniques and examines the burden of personal income tax in 28 countries. The reached conclusions show that for developing countries reduction of the average marginal tax rate by 1 p.p. will lead to an increase in GDP between 1.5 and 2.5 times higher compared to the effect for the general sample.

Lee and Gordon (2005) empirically test the relationship between the growth rate of GDP per capita and tax structure for 70 countries, emphasizing on the change in the corporate tax rate for the period 1970-1997. The main conclusions show that there is an inverse relationship, i.e. if the government reduces the tax burden by 10 p.p., the growth rate of GDP per capita on an annual basis will increase in the range of 0.6 p.p. to 1.8 p.p. King and Rebelo (1990) came to a similar conclusion by applying the basic neoclassical model and additional endogenous growth models.

On the other hand, in the contemporary scientific literature it is also investigated the indirect effect of taxation. For instance, Nantob (2014) highlights that the revenue collected from applicable taxes can be channeled as a public resource in productive areas and thus eliminate the initial negative effects of taxation, and why not contribute to greater economic growth. Engen and Skinner (2011) investigate the relationship between fiscal policy and the growth rate of the economy for 107 developing and developed countries in the period from 1970 to 1985. In their study it is established that an increase in the tax burden by 10 p.p. would lead to a decrease in the rate of economic growth by 3.2 p.p. per annum in the medium term, while in the long term a balanced budget increase in taxes and public expenditure by 10 p.p. would lead to a decrease in growth by 1.4 p.p. per annum. Bassanini et al. (2001) found a direct negative effect of the tax burden on GDP per capita for countries of the Organization for Economic Co-operation and Development (OECD). Their empirical results show that growth of the tax burden by 1 p.p. would lead to a twofold decrease in GDP per capita, taking into account the indirect effect through changes in investment activity. Kotlán and Machová (2013) also examine the impact of the taxation on economic

growth for 34 OECD countries in the period 2000-2010 and confirm the negative impact of overall tax burden on growth. Sachsida and Memdonca (2016) use quarterly data from 2002Q1 to 2015Q2 for the Brazilian economy and conclude that an increase in the total tax burden of 1% will lead to a decrease in GDP per capita of 0.3%. The study also analyzes the structure of taxation and its impact on some macroeconomic variables (labor force participation rate, private investment, total productivity factor), i.e. the aim is to show the transmission (indirect) tax effects on the development of the economy.

Nowadays, in order to achieve competition between countries, measures to reform tax systems as an essential part of their fiscal policy is often used by governments. The proponents of Supply-side economics advocate the idea that the lower levels of tax burden can be used in order to attract more investors. Marsden (1984) notes that reducing the tax burden may result in stimulating economic activity, which in turn could provide additional budget revenues. However, in economic theory there is another concept, that is laid down as the basis in the Keynesian doctrine and according to it the government has a significant role in managing the economy of a country. It should be noted that when budget revenues are insufficient, this may affect the financing of public activities that are important for the development of modern society, such as public infrastructure, socio-economic activities, education, defense and security and health. This can negatively reflect on fiscal sustainability and economic growth, both in the short and long term. On the other hand, Evans et al. (2018) emphasize that the large revenues in the state budgets, or higher public expenditures, respectively, may not always lead to improved economic development. What is important is how efficiently the budget resource will be used, i.e. whether it will be invested in more productive capital expenditures, or will be focused on covering current expenditures.

The topic of the tax structure and its impact on opportunities for achieving economic growth is debated in many scientific studies (Tanzi 1996; Lee and Gordon 2005; Johansson et al. 2008; Xing 2011; McNabb and LeMay-Boucher 2014; Stoilova 2017; Gashi et al. 2018, Neog and Gaur 2020). Although, there is no consensus which is the most optimal tax structure that can be applied. In some countries especially from Northern and Western Europe (e.g. Belgium, Germany, Sweden, Denmark, the Netherlands, Ireland), East Asia (e.g. the Republic of Korea, China) and Northern America (e.g. USA and Canada), the emphasis is on labor and capital taxation. In another group of countries mostly from Southeastern Europe (e.g. Croatia, Bulgaria, Lithuania, Hungary) the use of indirect taxes is preferred.

The scientific literature brings to the fore the debate about the effect of income taxes in view of their connection with the factors of production such as labor and capital. A large part of researchers (Skinner 1987; Arnold 2008; Acosta-Ormaechea and Yoo 2012; Masca et al. 2015) conclude that the impact of income taxes is more negative on economic growth than the impact of taxes on consumption. Romero-Avila and Strauch (2008) indicate that this is one of the reasons for fiscal reforms in most European countries observed in the 80s and 90s of the twentieth century associated with the change in the tax structure and the transfer of burden from income taxes to consumption taxes. Benos (2009) advocates the idea of the endogenous growth theory related to the fact that the income taxes distort the behavior of economic agents. The personal income tax and social security contributions can impact on the work-leisure choice, i.e. on incentives to supply labor. On the other hand, Bujang et al. (2013) mention that the corporate income tax has a large impact on the market-positioned entities, as well as on aggregate supply. According to Tanzi and Zee (1996) and Skinner (1987), corporate tax can influence the decision to develop entrepreneurial, investment and innovation activity. Arnold et al. (2011) and Dackehag and Hansson (2012) complete that the effects of taxation with corporate income tax are particularly negative in conditions of economic downturn. Marsden (1984) deduces that increase in the tax revenue to GDP ratio would lead to a decrease in the growth rate of investment, but equivalent increase in the corporate income tax burden would lead to three times more negative effect on the investments.

Leibfritz et al. (1997) use simulation model to determine the effect of the change in the tax burden or change in the tax structure on the macroeconomic development in EU Member States, the USA and Japan. From the conducted simulation one can draw conclusions that the corporate income tax, personal income tax and consumption tax have a negative impact on GDP both in the EU and the USA and Japan. The corporate income tax has the strongest negative effect on the value of GDP as a tax cut will lead to GDP growth with 2.85% in Japan, 3.09% in the EU and 5.28% in the USA. This once again shows that income taxes are detrimental to the fiscal ability to contribute to economic growth through a direct assessment of the impact of taxation.

Proponents of endogenous growth theory emphasize that the indirect taxes do not affect the incentives for work and investment activity and define them as non-distorting taxes (Kneller et al. 1999). However, indirect taxes and especially VAT have often been criticized for increasing income inequality. The reason is that these taxes are regressive in nature on the income of the population. In case the government increases the tax burden, this may lead to an increase in the prices of taxable consumer goods and services, and to shrinkage of consumption and the value of GDP, respectively. According to the macroeconomic statistics of The World Bank (2019), consumer expenditure of households and non-profit

institutions serving households consist 57.8% of the value of the GDP worldwide. Within the EU member states this percentage is slightly lower (around 53.8%), and in the Euro area member states - 54.1%. For most Eastern European countries, consumer expenditure is formed as the main determinant in the structure of GDP (over 70% or 80%), the indirect taxes are essential source of revenue in the state budget of these countries, respectively.

Fernandez et al. (2018) study the effects of simulation changes in the tax system in France. The aim is to monitor how the replacement of direct with indirect taxes would affect various macroeconomic indicators, including consumption levels, investment activity, real wages, employment, price competition and other fiscal indicators. The main directions of the simulation are related to the equivalent replacement of social security contributions with VAT (equal to 0.4% of GDP), on the one hand, and a similar replacement between a reduction in corporate tax and an increase in the VAT rate, on other hand. The mixed effects are also traced. The final conclusion reached by Fernandez et al. (2018) is that such changes in the tax system have a net positive effect on the French economy. Stoilova (2017) uses regression models in order to investigate the impact of fiscal policy on economic growth in the EU-28 Member States in the period 1996-2013. The obtained results show that indirect taxes on production and imports have a rather positive impact on the growth of economies, but this is not the case with the impact of VAT. Ilaboya and Mgbame (2012) and Szarowská (2013) reach to a similar conclusions. In particular, Szarowská (2013) uses a panel regression for EU-24 Member States in the period 1995-2010 and establishes the positive impact of consumption taxes on GDP growth, as well as also proves a negative impact of labour taxes on GDP growth. In turn, Ilaboya and Mgbame (2012) use Engle-Granger two-step test for cointegration and additional error correction model based on annual data from 1980 to 2011 in Nigeria and establish that the custom and excise duties have a positive effect on growth rate while the effect of taxation with VAT is negative, but statistically insignificant. Similarly, Korkmaz et al. (2019) use the autoregressive distributed lag approach and study the impact of direct and indirect taxes on the Turkish economy for the period 2006-2018. Their findings show that the direct taxes have a negative impact on economic growth, while indirect taxes have a stronger and positive impact on the GDP of Turkey. Al Quraan (2020) tests the influence of general sales tax on economic growth in Jordan and proves that there is a positive effect in short term and negative effect in long term. Johansson et al. (2008) emphasize that if the total tax burden is unchanged, but the share of revenues from indirect taxes is increased, this would lead to a higher value of the GDP per capita.

TAX BURDEN, STRUCTURE OF TAXATION AND ECONOMIC GROWTH OF THE BALKAN REGION

The present study focuses on the impact of the tax burden on economic development and especially on the possibility of achieving economic growth, on the one hand, and on determining the extent to which the structure of taxation with different types of taxes affects the potential for economic development, on the other hand. The study is based on an analysis of the relationship between these variables within the Balkan region (Balkan-13). The scope of the analysis includes 13 countries, 12 of them (Bulgaria, Romania, Greece, Turkey, Serbia, North Macedonia, Bosnia and Herzegovina, Albania, Kosovo, Croatia, Slovenia and Montenegro) are included because of their geographical positions, and the thirteenth (Cyprus), as highly dependent and bound territorially, administratively and economically with other countries in the region.

We calculate the overall tax burden within the Balkan region using data based on the execution of the state budgets of the countries for the period 2005-2018. For measuring the overall tax burden, total tax revenue to GDP ratio is used. While in 2005 the tax revenue in the countries of the Balkan region is equal to about 28.03% of GDP, in 2018 it reached 30.03% of GDP, i.e. there is a gradual increase in the tax burden. Countries with high tax burdens include Slovenia, Montenegro, Bosnia and Herzegovina, Greece, Croatia, Serbia and Cyprus. Each of these countries has an average tax revenue to GDP ratio of over 32% for the period 2005-2018. At the same time, the tax burden in Kosovo is between 18.45% (2005) and 23.25% (2018) and an average of about 21.25% for the analyzed period. Albania also has a relatively low tax burden (23-24%). For the other countries (Turkey, Romania, North Macedonia and Bulgaria) the tax burden is between 25% and 28%. For the period under review, the largest increase in the tax revenue to GDP ratio is observed in Greece (+8 p.p.) and Kosovo (+4.8 p.p.), while Slovenia (-1.7 p.p.) and Romania (-1 p.p.) register the largest decrease in the indicator.

In structural terms, revenues from direct taxes dominate. The group of direct taxes for the analysis includes personal income tax, corporate income tax and revenues from social security contributions. While the share of these taxes in total tax revenue in 2005 is 50.5% (14.17 % of GDP), in 2018 it reaches 55% (16.52% of GDP). The group of indirect taxes is formed by the revenues from VAT, excises and customs duties and marks a decline in the general structure of tax revenues. While in 2005 their share reaches 41.83% of tax revenues (11.72% of GDP), in 2018 it is 36.79% (11.05% of GDP). There is also a third

group, which includes all other tax revenues, the share of which fluctuates within the range of 7.61% in 2005 to 8.21% in 2018. This group is not reflected in the models developed below, given that it is composed of a wide variety of applicable taxes with a small relative share. Therefore, the countries of the Balkan region rely mainly on revenues from direct taxes, and it should be emphasized that about 60% of revenues from direct taxes are due to the funds raised from social security contributions.

The analysis made so far can be supplemented by considering the structure of tax revenues in the formed groups of taxes above (with emphasis on the first two groups) by individual countries within the Balkan region. The data show that in some countries direct taxes have a predominant importance throughout the period under review (Slovenia, Cyprus, Greece, Romania and Turkey), while in other countries indirect taxes are predominant (Kosovo, Montenegro, Albania and Bulgaria). In the third group of countries one can distinguish those in which there is a change in the structure of tax revenues (Bosnia and Herzegovina, Serbia, North Macedonia and Croatia). The most significant representatives of the three groups are: Kosovo, where the share of indirect tax revenues is over 85% of total tax revenues, Slovenia, where the share of direct tax revenues is over 60% of total tax revenues, and Bosnia and Herzegovina, where with a significantly higher share of indirect taxes in 2005 (53% ↔ 42%), in 2018 there is a reverse trend (43% ↔ 49%). It is also worth noting the dynamics observed in Turkey, where in 2005 the share of direct and indirect taxes is almost the same, while in 2018 the difference is quite large in favor of direct taxes (56% ↔ 33%).

The economic development of the countries of the Balkan region is relatively stable over time. With slight exceptions - in 2009, 2014 and 2018, in the rest of the years there is an increase in the value of total GDP. In 2005 the value of total GDP in the Balkans increases by about 15.7% compared to a year earlier. Until 2008, there is a double-digit annual increase in GDP (in the range of 10-15%), and only in 2008 it is about 7.46%. In 2009, given the onset of the global economic crisis, the value of GDP decreases by 8.37%. After 2010 the economy of the Balkans has been growing, albeit at a much slower pace (ranging from 1-2% to 5-6%). In 2018 there is an economic downturn of 4.61%. Regarding the growth of the economies of the Balkan countries, generated in time, it is also possible to group the countries into three larger groups. The first group includes countries that show higher average GDP growth rates (over 6% on average for the period 2005-2018), including Romania, Montenegro, Bulgaria, North Macedonia, and Albania. The second group is formed by Turkey, Serbia, Bosnia and Herzegovina, where the growth rate is between 5% and 6%, while the third group includes Greece, Cyprus, Slovenia and Croatia, where the average economic growth rate is below 3.7%, and in Greece we can even talk more as an economic downturn than as an economic growth.

METHODS

The methodological framework of the analysis is based on the development of regression models in which the dependent variable is the rate of economic growth within the Balkan region (BREGR). For the purposes of the analysis an aggregate value of the annual GDP is calculated from the GDP values of all 13 countries, after which the growth of the Balkan economy is calculated through a chain-linked growth rate on an annual basis for the period 2005-2018.

$$\mathrm{BREGR_t} = \frac{\sum \mathrm{GDP_{i,t}} - \sum \mathrm{GDP_{i,t-1}}}{\sum \mathrm{GDP_{i,t-1}}} \quad (1)$$

where:
BREGR - economic growth rate
GDP - gross domestic product
i = 1…13
t = 2005…2018

Two linear regression models have been developed, the first of which aiming to show the impact of the overall tax burden on economic growth and the second one - the impact of the tax structure represented by direct and indirect taxes on economic growth. In the models public expenditure is added as a percentage of GDP as a factor (control) variable, because, as specified above in the theoretical part, expenditures also have an impact on economic growth, which makes it possible to estimate both the direct and indirect effect of taxation.

$$\textbf{Model 1: } \mathrm{BREGR_t} = \beta_0 + \beta_1 \mathrm{BRTaxBurden_t} + \beta_2 \mathrm{BRPubExp_t} + \varepsilon_t \quad (2)$$

where:
BREGR - economic growth rate
BRTaxBurden – overall tax burden (measured by the ratio of total tax revenue to GDP, %)

BRPubExp - public expenditure to GDP ratio (%)
ε - residual component
t = 2005…2018

In the second model, as independent variables are set the tax burden of indirect taxes and the tax burden of direct taxes, calculated as ratios of the respective type of taxes and the value of GDP for the respective year.

$$\text{BRINDtax}_t = \frac{\sum(\text{VAT}_{i,t} + \text{DutTax}_{i,t} + \text{ExcTax}_{i,t})}{\sum \text{GDP}_{i,t}} \quad (3)$$

where:
BRINDtax - tax burden of indirect taxes
VAT – budget revenue collected from value added tax
DutTax – budget revenue collected from custom duties
ExcTax – budget revenue collected from excises
GDP – gross domestic product
i = 1…13
t = 2005…2018

$$\text{BRDIRtax}_t = \frac{\sum(\text{PIT}_{i,t} + \text{CIT}_{i,t} + \text{SSC}_{i,t})}{\sum \text{GDP}_{i,t}} \quad (4)$$

where:
BRDIRtax - tax burden of direct taxes
PIT – budget revenue collected from personal income tax
CIT – budget revenue collected from corporate income tax
SSC – budget revenue collected from social security contributions
GDP – gross domestic product
i = 1…13
t = 2005…2018

In this way the extent to which the tax structure influences the growth of the economy is examined. A linear regression model is used, having the following form:

$$\textbf{Model 2: } \text{BREGR}_t = \mu_0 + \mu_1 \text{BRINDtax}_t + \mu_2 \text{BRDIRtax}_t + \mu_3 \text{BRPubExp}_t + \varepsilon_t \quad (5)$$

where:
BREGR - economic growth rate
BRINDtax - tax burden of indirect taxes
BRDIRtax - tax burden of direct taxes
BRPubExp - public expenditure to GDP ratio (%)
ε - residual component
t = 2005…2018

The estimation is made using the ordinary least squares method (OLS). Table 1 below presents descriptive statistics of the variables used in the subsequent analysis. The data are aggregated for the whole Balkan region (Balkan-13). The data set used in the analysis is obtained from the annual reports on the execution of the consolidated budget, published by the Ministries of finance of the Balkan countries and macroeconomic data from their Central banks and National statistical institutions for the period 2005-2018. We also use the International Monetary Fund's macroeconomic statistics (2020) and Eurostat (2020) as a source of data.

Table 1. Descriptive statistics of the variables used for the Balkan region for the period 2005-2018

Variable	Mean	Median	Min	Max	Standard Deviation	Coefficients of variation	Skewness	Kurtosis
BREGR	0,046	0,044	-0,084	0,157	0,068	1,486	-0,156	-0,662
BRINDtax	0,115	0,115	0,108	0,119	0,003	0,027	-0,847	0,056
BRDIRtax	0,178	0,180	0,163	0,190	0,008	0,047	-0,363	-0,977
BRPubExp	0,391	0,386	0,370	0,432	0,018	0,046	0,852	0,008
BRTaxBurden	0,292	0,296	0,280	0,303	0,008	0,027	-0,363	-1,540

Source: Authors' own calculations

RESULTS AND DISCUSSION

The results of the constructed regression models are presented in Table 2 below. The applied models in Table 2 are adequate, which is certified by the value of the significance level (Significance F), as in model 1 the adequacy is proved at a significance level of 5%, and in model 2 - at a significance level of 1%. Adequacy is assessed by applying Fisher's F-test. The coefficient of determination (R square) shows that nearly 42% of the variation in economic growth can be linked to the joint action of taxation and public expenditure in the Balkan region. In addition, about 80% of the variation in economic growth is explained by changes in the tax structure and the impact of public expenditure. It is generally accepted that the adjusted coefficient of determination (Adjusted R square) is a more accurate measure, in this case its value is 0.32 in model 1 and 0.74 in model 2 (or 32% and 74% explanatory variation in the dependent variable).

Table 2. Ordinary least squares (OLS) regression results

Dependent variable: BREGR

Independent variables	Model 1			Model 2		
	Coefficients	Standard Error	P-value	Coefficients	Standard Error	P-value
Intercept	1.890513	0.665232	0.016028**	0.178164	0.572342	0.761973
BRTaxBurden	-4.098822	1.963301	0.060880*			
BRPubExp	-1.654239	0.874493	0.085144*	-1.009903	0.562550	0.102849
BRINDtax				9.383967	3.355414	0.018902**
BRDIRtax				-4.583147	1.221478	0.003771***
Regression Statistics						
Multiple R	0.649275			0.893158		
R Square	0.421557			0.797731		
Adjusted R Square	0.316386			0.737050		
Standard Error	0.056376			0.034964		
Observations	14			14		
ANOVA						
	df	SS	MS	df	SS	MS
Regression	2	0.025479	0.012739	3	0.048245	0.016082
Residual	11	0.034961	0.003178	10	0.012194	0.001219
Total	13	0.060440		13	0.060440	
F_{EM}	4.008290			13.146381		
Significance F	0.049253			0.000836		

Note: *** indicate significance at 1% level, ** indicate significance at 5% level, * indicate significance at 10% level.
Source: Authors' own calculations.

On the other hand, the correlation coefficient (Multiple R) between the independents and the dependent variable is also quite high (0.89) in model 2, which indicates a strong relationship between the tax structure and public expenditure, on the one hand, and economic growth, on the other hand, while in model 1 the relationship is significant (the correlation coefficient is 0.64).

Model 1:

$$\text{BREGR}_t = 1.890513 - 4.098822\ \text{BRTaxBurden}_t - 1.654239\ \text{BRPubExp}_t$$

Model 2:

$$\text{BREGR}_t = 0.178164 + 9.383967\ \text{BRINDtax}_t - 4.583147\ \text{BRDIRtax}_t - 1.009903\ \text{BRPubExp}_t$$

The data in Table 2 help to assess the statistical significance of the model parameters and their influence on the dependent variable, and for this purpose two hypotheses are defined. The results are derived based on the level of significance (P-value). The data from Model 1 show that the increase in the tax burden has a rather negative impact ($\beta_1 < 0$) on the opportunities for achieving economic growth, while in terms of the tax structure there are divergent effects in Model 2. The net impact of indirect taxes on economic growth in the Balkans for the period 2005-2018 is positive ($\mu_1 > 0$). This confirms the statements set out in the theoretical part above. This is not the case with the impact of direct taxes, which lead to a slowdown in economic growth, i.e. their influence is negative ($\mu_2 < 0$). The increase of overall tax burden and raise the share of the income taxes can be regarded as one of the reasons for the lower growth. The results explain to a great extent the lower average growth rates of the economies of some of the countries

in the Balkan region, such as Greece, Croatia, Slovenia and Cyprus. At the same time, the lower tax burden in Kosovo, North Macedonia and Bulgaria and the larger share of indirect taxes (although in North Macedonia there is a significant change in the tax structure) contribute to higher economic growth in these countries. Gashi et al. (2018) confirm a similar thesis, finding a positive impact of VAT on Kosovo's economic growth. The higher share of indirect (consumption) taxes contribute to higher growth and the economy of Montenegro, although the overall tax burden is one of the highest in the Balkans. Romania is the Balkan country with the highest average economic growth rate, which may be due to the relatively low overall tax burden and its downward trend. However, the share of direct (income) taxes in Romania is growing significantly, which could create serious problems in economic development in the future. Bosnia and Herzegovina, Serbia, Turkey and Albania are experiencing similar economic growth rates. All these countries report an increase in the share of direct taxes and, in some of them the tax burden also increases. However, with the exception of Turkey, in the other countries the share of indirect taxes is higher or close to that of direct taxes. In Turkey, there is a significant difference and predominance of direct taxes. Although the overall tax burden in Turkish economy increases, the tax revenue to GDP ratio remains low.

The data in Table 2 also show some negative response to growth from changes in public expenditure, as far as Model 1 can be interpreted with an allowable significance level of up to 10%. This confirms the thesis of Evans et al. (2018) that not always the higher tax burden on economic agents, which provides a greater budgetary resource, can serve as a sufficient argument in search of higher economic growth. Nenkova and Mihaylova-Borisova (2020) conclude that after the global economic crisis, the efficiency of public expenditure in the Balkans tends to decrease, which also supports the thesis of irrational spending of part of the tax revenues over time.

The developed and estimated regression models are subjected to an additional diagnostics, which confirmed results obtained (Table 3). Hypotheses are defined and tests were conducted for normal distribution and homoskedasticity of the residuals, absence of multicollinearity and autocorrelation.

Table 3. Regression diagnostics and specification tests

Model 1	Model 2
Breusch-Pagan test for heteroskedasticity	
H0: heteroskedasticity not present	H0: heteroskedasticity not present
H1: heteroskedasticity is present	H1: heteroskedasticity is present
Test statistics: LM = 4.04986	Test statistics: LM = 2.71093
p-value = 0.132003	p-value = 0.438372
Test for normality of residual (Chi-square)	
H0: error is normally distributed	H0: error is normally distributed
H1: error is normally distributed	H1: error is normally distributed
Test statistics: Chi–square(2) = 0.546067	Test statistics: Chi–square(2) = 0.440011
p-value = 0.761067	p-value = 0.802514
Breush-Godfrey test for autocorrelation - Lagrange multiplier (LM)	
H0: no autocorrelation	H0: no autocorrelation
H1: there is autocorrelation	H1: there is autocorrelation
Test statistics: LMF = 0.450705	Test statistics: LMF = 5.03417
p-value = 0.517207	p-value = 0.0515313
Variance inflation factor (VIF)	
Minimum possible value = 1.0	Minimum possible value = 1.0
Values > 10.0 may indicate a collinearity problem	Values > 10.0 may indicate a collinearity problem
BRPubExp 1.000	BRINDtax 1.162
BRTaxBurden 1.000	BRDirTAx 1.095
	BRPubExp 1.076

Source: Authors' own calculations

The data in Table 3 confirm the adequacy of both models.

CONCLUSION

Despite the relatively sustainable economic development in the period 2005-2018 the Balkan countries mark gradual increase in the tax burden, and it becomes clear from the applied tests that there is a restraining effect on the opportunities for achieving economic growth. At the same time, there is a change in the structure of applicable taxes. Most of the countries in which direct taxes (personal income

tax, corporate income tax and social security contributions) have a larger share in the tax structure, continue to maintain this trend even when a larger increase in their share is observed. In the other countries from Balkan region, where the main indirect taxes (VAT, custom duties, excises) have a higher relative share in the tax structure, they begin to restructure their tax systems over time, reducing the share of indirect taxes and increasing the share of direct taxes. The available data allow us to identify cases of significant changes in the applicable tax structures in the Balkans. Although some countries in the region have low personal income tax rates, social security contributions are the reason for the significant burden on labor as a factor of production. Such a decision of the governments do not enable to achieve desired economic growth, necessitating future changes in the structure of taxation.

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