TEME, Vol. XLVI, N^{o} 2, April – June 2022, pp. 541–559

Original Scientific Paper https://doi.org/10.22190/TEME210521028D
Received: May 21, 2021 UDC 336.21/26(497.11
Revised: October 24, 2021
Accepted: February 3, 2022

ECONOMIC GROWTH AND TAX COMPONENTS: AN ANALYSIS OF CORPORATE INCOME TAX INCENTIVES AND THEIR IMPACT ON THE ECONOMIC GROWTH IN SERBIA

Jadranka Đurović Todorović[1], Milica Ristić Cakić[2*], Vitomir Starčević[3]

[1]University of Niš, Faculty of Economics, Niš, Serbia
[2]University of Niš, Innovation Center, Niš, Serbia
[3]University of East Sarajevo, Faculty of Business Economics, Bijeljina, Republic of Srpska, Bosnia and Herzegovina

Abstract

The paper empirically examines the effects of incentives in the domain of corporate income tax in Serbia between 2007 and 2018. The main aim of the paper is to test for effects of tax incentives on economic growth. To achieve the stated aim, a dataset consisting of 10 indicators will be analyzed by using the Principal Component Analysis method. This method allows the initial set of predictors to be transformed into a set of uncorrelated components, and allows linear regression to be performed. In accordance with the results of the analysis, the proposal for parametric reform should be based on the abolition of certain tax incentives in order to increase the efficiency of corporate income tax and improve business conditions. The analyzed data has shown that certain corporate tax incentives have had a significant effect on economic growth. Taking into consideration the adverse effects of the coronavirus crisis, the authors give recommendations on what should be developed in the domain of corporate income tax.

Key words: corporate income tax, tax incentives, economic growth, tax reforms, Serbia

[*] Corresponding author: Milica Ristić Cakić, University of Niš, Innovation Center, Univerzitetski trg 2, 18000 Niš, Serbia, milica42777@gmail.com

ЕКОНОМСКИ РАСТ И ПОРЕСКЕ КОМПОНЕНТЕ: АНАЛИЗА ПОДСТИЦАЈА ПОРЕЗА НА ДОБИТ ПРЕДУЗЕЋА И ЊИХОВ УТИЦАЈ НА ЕКОНОМСКИ РАСТ У СРБИЈИ

Апстракт

У раду се емпиријски испитују ефекти подстицаја у домену пореза на добит правних лица у Србији у периоду између 2007. и 2018. године. Основни циљ рада је испитивање ефеката пореских подстицаја на економски раст. Да би се постигао наведени циљ, скуп података који се састоји од 10 индикатора биће анализиран методом Анализа главних компоненти. Ова метода омогућава да се почетни скуп предиктора трансформише у скуп некорелираних компонената и спроведе линеарна регресија. У складу са резултатима анализе, предлог параметарске реформе требало би да се заснива на укидању одређених пореских подстицаја у циљу повећања ефикасности пореза на добит предузећа и побољшања услова пословања. Утврђено је да су одређени подстицаји у систему опорезивања добити правних лица имали значајан утицај на економски раст. У светлу негативних ефеката кризе изазване појавом епидемије коронавируса, аутори препоручују шта је потребно развити у домену пореза на добит предузећа.

Кључне речи: порез на добит предузећа, порески подстицаји, економски раст, пореске реформе, Србија

INTRODUCTION

The global economic crisis initiated by the covid-19 pandemic outbreak has influenced the whole world. During economic downturns, states and local governments come under stress. Although the development of the disease is uncertain, negative reflections on the economic development of countries are inevitable. In order to mitigate the effects of the economic crisis, this paper explores the potential opportunities for corporate income tax reform in Serbia. The subject of the research are corporate income tax incentives, and the aim is to identify the major tax incentives contributing to economic growth.

Since a number the ongoing pandemic's outcomes of are yet to come to light, we cannot know whether the monetary and fiscal responses to the Covid-19 crisis will be sufficient for the recovery of Serbian economy.[1] Indicatively, Serbia's economic growth is declining. At the mo-

[1] After the pandemic outbreak, most central banks implemented a new monetary policy. Central banks' main goal was to stimulate lending by cutting interest rates. European Central Bank and the FED had to provide large amounts of money for the world economy since standard monetary policy measures did not produce the expected results. Consequently, countries started implementing tax reforms. The National Bank of Serbia reduced interest rates which led to a minor growth in lending activity and loan servicing was suspended for the next three months as the next measure, even so, many businesses had to suspend their production or even cease

ment, the key economic growth driver are domestic companies. Reducing income tax is a more acceptable and effective solution for reform because it lowers production costs and needs to be addressed as soon as possible. According to the opinion of the Serbian tax policy creators, temporary tax incentives for some sectors can mitigate adverse pandemic effects. Adverse pandemic effects on the economy would be mitigated if taxes were delayed. The fact is that the most endangered sectors are small and medium-sized enterprises, catering, transport, etc. Bearing in mind that the pandemic did not hit all parts of the economy equally, aid should be directed towards these sectors. Tax policy can prevent the employment rate from deviating too much from the rate recorded before the outbreak of the pandemic in Serbia. The additional problem for Serbia is that the main suppliers of Serbian domestic industry are China and Italy, and a large amount of goods are imported from these countries (Kujis, 2020).

Corporate income tax in the current tax system belongs to the category of "real" taxes. Accordingly, it is levied on profits. In addition, this form of tax is also the basic form of direct taxation of legal entities, whose aim, in addition to securing fiscal revenues, is to realize its economic and social function. However, there are discussions in academic literature about the justification of its existence and the most common argument is that corporations actually represent artificial legal entities. This argument is based on the fact that income taxes cannot burden a business (Rosen & Gayer, 2009; Atkinson & Stiglitz, 1980; Myles, 1995). However, despite discussions on the justifiability of its existence, corporate income tax represents the most significant tax form in the tax systems (Đurović Todorović, et al., 2019, p. 156). This tax form does not have a high collection capacity. But, it can act as a stabilization and development instrument. Corporate income tax can be the driver of development and economic growth in one country. As an instrument of the fiscal system of great importance (Delgado, Fernandez-Rodriguez & Martinez-Arias, 2014, p. 487), the corporate income tax can also affect relative prices, investments, etc. (Arsić & Ranđelović, 2017).

In order to stimulate economic growth and mitigate the consequences of covid-19, it is necessary to examine whether corporate income tax can be an effective tax tool. Therefore, it is necessary to discover its instruments that can act in this direction. Considering that tax incentives are an element of this tax form, it is necessary to find out which tax incentives can affect these goals. Based on our analysis, the survey results may from the basis for tax reform of all countries affected by the pandemic. The paper is organized into several sections. Section 2 provides a brief

operations. Serbia's new fiscal policy provided 5.1 billion (11% of GDP) to fight against the pandemic out of which 1.3 billion euros have been earmarked for the implementation of tax measures.

background on the relation between corporate income tax incentives and economic growth. Section 3 describes the data for Serbia, and research methodology. Section 4 presents the potential measures for corporate income tax reforms.

LITERATURE ON TAX INCENTIVES

The outbreak of covid-19 has reinforced the idea that, in an uncertain world, the government plays an important role in information sharing globally. In Serbia, potential tax revenues are significantly reduced due to tax incentives offering, which is inevitable for all countries that apply this tax policy instrument. In order to attract investors and encourage economic growth, countries around the world use tax incentives. Nevertheless, the empirical evidence of studies of economic effectiveness brings the tax incentives under question.

Ineffective tax incentives may reduce the tax revenues and cannot improve the business environment. Therefore, governments often use tax rates as an instrument of tax competition. Moreover, the governments' approach with lowering the corporate income tax rate in order to attract investors (the "race to the bottom" phenomenon) (Arsić &Ranđelović, 2017; Đurović Todorović et al., 2019). This also initiated the "corporate income tax rate-revenue paradox." Namely, "some countries have seen their ratio of corporate tax revenue to gross domestic product increase despite reductions in their corporate tax rates" (Ohno et al., 2015, p. 333). Thus, it is very important to conduct detailed analyses, especially during post-crisis period.

Corporate income tax is an instrument of active fiscal policy, and some of its basic elements are tax incentives and reliefs. Corporate tax is defined as a "fundamental tool of the fiscal system due to its high collection capacity, its sensitivity to the economic cycle, and the influence that it can have on economic decisions of enterprises" (Delgado et al., 2014, p. 487).

However, in academic literature, there are divided views of theorists on the effectiveness of the corporate income tax incentives. The effectiveness of tax incentives is widely discussed in academic research. Fujii & Huffman (2008) research fiscal incentives in Mexican companies. The authors examine the effectiveness of tax incentives. They conclude that tax incentives can affect domestic firms. The authors pay special attention to the introduction of tax incentives in the Mexican tax system and conclude that they are not very well established. According to Azhar and Sharif (1975) fiscal incentives are an effective instrument for attracting resources in developing countries. These issues are discussed in their publication based on the example of the Pakistan tax system. The study analyzes the period between 1959 and 1975. The authors used econometric tools and concluded that tax incentives in Pakistan were used in the

less developed regions. They also concluded that, when introducing an incentive to encourage industry in the industrial sector, the overall level of investment increases. Mintz (1990) explained that "governments of developing countries commonly adopt tax holidays to encourage investments and investigate tax incentives provided by corporate income tax and its importance". As Shah explains, "investment promotion is an important objective of tax policy in developing and industrial countries alike" (1995). Shah (1995) concluded that policymakers actively promote incentives for investments, but in developing countries, there is not enough information about their effectiveness.

Holland and Vann (1998) identified that developing countries introduce corporate tax incentives for various problems. Very often, tax incentives can be a solution for underdeveloped infrastructure in the country, inadequate tax legislation or underdeveloped administration. Zee et al. (2002) note that there is no empirical evidence of the effectiveness of corporate income tax incentives in stimulating investments (Zee et al, 2002, p. 1947). The authors view tax incentives from the standpoint of transparency. They found that the transparency in implementing tax incentives must be graded in many countries. In the work by Klemm and Parys (2009) the authors studied incentives as a tax competition tool. The authors identified a considerable positive effect of tax incentives on FDI. Their econometric analysis is based on data from 40 Latin American, the Caribbean, and African countries. The authors used data for the period between 1985 and 2004. They conducted a panel analysis and found that lower tax rates and longer tax holidays can be effective instruments in attracting investment. The importance of studying the advantages of tax incentives in Western Balkan countries is analyzed in the work by Šimović and Žaja (2010). The authors analyzed tax rates, tax holidays, and other investment incentives. The authors pay special attention to the presence of corporate income tax incentives and believe that their establishment is very important for the tax system (Šimović & Žaja, 2010, p. 111). Mauda and Saidu (2019) analyzed the effects of tax incentives at the micro-level. In their research, the authors examined the effects of tax incentives on financial performance. In the author's opinion tax incentives at the level of enterprises are very important. Their work analyzed 7 companies and observed a period of 17 years. Using the precise approach based on correlation and regression analysis, the authors give the opinion of introducing more incentives for investing.

Lee and Gordon (2005) found a significant influence of corporate tax rates on economic growth. They emphasized that the structure of the tax system can affect economic growth rates. Also, they found that tax incentives may be effective at stimulating innovation. However, they were not able to find any information on the size of incentives. Bearing in mind that the tax policy plays a crucial role in the growth process, Lipsey and

Chrystal (2007) researched tax incentives. In their study, they noticed that studies conducted in the recent past prove that the tax incentives offered have not resulted in an increase in growth and investments.

Šimović and Bratić (2009) studied the influence of tax incentives on economic growth in Croatia. The multiple regression methods allowed the authors to evaluate the influence of tax incentives in Croatia. Their study identified a considerable positive effect of tax incentives on economic growth in Croatia. According to Kovač (2003), the effectiveness of tax incentives in attracting FDI must be based on a created favorable business climate in one country. Kandie (2020) researched the influence of tax incentives on the overall economic performance over the last decade. Alegana (2014) took a step further and investigated the effects of corporate income tax incentives on economic growth. She concluded that the corporate income tax incentives alone do not increase economic growth, and explored an inverse relationship between the GDP growth rate and tax incentives. Also, although corporate income tax incentives may encourage investments, they do not drive economic growth because the growth rate is affected by many other factors. The author recommends that the government of Kenya should consider rationalizing tax incentives.

Skott (2021) found that the growth rate also affects the debt ratio. In other words, the higher the growth rate, ceteris paribus, the lower the asymptomatic debt ratio. So, this can be an incentive for the countries affected by Covid-19 to analyze the determinants of economic growth. In his study he explained the dynamic effects on the debt ratio of a rise in economic growth. Chugunov et al. (2021) explained the methods which can be used by policymakers in the creation of fiscal policy. The authors note that fiscal policy can be an effective tool in the age of covid-19 for mitigating the post-crisis consequences.

Siregar and Patunru (2021) analyzed data from twenty-two partner countries in the period between 1999 and 2018. They analyzed the impact of tax incentives on foreign direct investment in Indonesia. The main findings have shown the negative effects of tax incentives. In other words, as tax incentives increase, the foreign direct investment flow decreases significantly.

Akanbi (2020) investigated the impact of tax collection and incentives on economic growth. According to the author, taxation is an important tool in achieving economic growth. The study objective was to assess the impact of the incentives on the economic growth in Nigeria. Empirical results confirm that tax revenue negatively effects economic growth. Therefore, the government must increase tax incentives:

> "Increasing tax incentives in the productive sectors would go a long way in reducing the cost of production thereby increasing the productivity in these sectors because of the positive multiplier effects on the economic growth" (Akanbi, 2020, p. 174).

In order to find ways to address the problems caused by the covid-19 pandemic, we also investigate does temporary corporate tax incentives can be an effective instrument. We analyzed the performance of temporary incentives whose introduction is limited to a certain period of time. In the opinion of some authors, these incentives are the key condition and crucial mechanisms of growth for domestic companies in the age of economic crisis (Boadway & Shah, 1995).

DATA AND METHODOLOGY

Corporate income tax incentives are of great importance for tax expenditures. Therefore, the survey includes all corporate income tax incentives in Serbia. With a view towards parametric reform of corporate tax incentives, we reviewed the structure of tax incentives that were applied in the period between 2007 and 2018.

The analysis was performed using primary data obtained from the Tax Administration department of the Ministry of Finance of the Republic of Serbia. The data which has been analyzed is not transparent and they are from internal statistical tax reports. Thus, the research includes analysis of corporate income tax incentives for the period between 2007 and 2018 in Serbia.

An important issue in implementing tax incentives is stimulating economic activity. According to financial theory, corporate income tax incentives play an important role in investment decisions. Also, incentives have an effect on economic growth, investment and export. Corporate income tax incentives are closely related to reducing effective corporate income tax rates. Thus, it is very difficult to evaluate their effectiveness. The following classification of tax incentives are used as basic in literature:

1. reduced corporate income tax rates;
2. tax holidays and various other incentives;
3. investment incentives in the broader sense, which imply incentives like accelerated depreciation, investment allowances and investment tax credits (Šimović & Žaja, 2010, p. 111).

Table 1 shows corporate income tax incentives in Serbia in the period between 2007 and 2020. Serbia implements a relatively large number of corporate income tax incentives, and in accordance with worldwide practice, Serbia has the predominant trend of tax holidays.

The presence of numerous paradoxes in the literature related to tax incentives initiated the examination of the incentives' efficiency. Since the introduction of tax incentives is associated with stimulating economic growth, it is logical that they are positively correlated with them. In order to examine their effects on the economic growth in Serbia, and thus examine their efficiency, an empirical analysis has been conducted.

Table 1. Tax incentives in Serbia

No.	Article of the Law	Description	Period of application
1.	Article 45 (art45)	Tax exemption from payment of income tax on the income from the subject of concession (in case of concession investment)	2007-2009
2.	Article 46 (art46)	Tax exemption of legal entities for vocational training, vocational rehabilitation and employment of disabled persons	2007-2020
3.	Article 47 (art47)	Amount of deduction for profits made in a newly established business unit in underdeveloped areas	2007-2012
4.	Article 48 (art48)	Reduction of accrued income tax on taxpayers who make investments in fixed assets owned by them	2007-2018
5.	Article 48a (art48a)	Reduction of the calculated tax on the realized profit of a taxpayer who makes investments in fixed assets in their own possession mainly performing one of the activities mentioned in Article 48a	2007-2018
6.	Article 49 (art49)	Amount of deduction for the employment of full-time workers	2007-2009
7.	Article 50 (art50)	Tax exemption for investing in fixed assets in the amount of more than 600 million or one billion dinars and additional permanent employment of at least 100 persons	2007-2020
8.	Article 50a (art50a)	Tax exemption for investing in fixed assets in the amount of more than 800 million or one billion dinars and additional permanent employment of at least 100 persons	2007-2020
9.	Article 50b (art50b)	Tax exemption for profits made by a taxpayer engaged in an underdeveloped area	2010-2017
10.	Article 51 (art51)	Deduction of tax on the amount of income tax paid by operating in another country	2007-2020
11.	Article 52 (art52)	Deduction of income tax paid by a non-resident branch in another country on dividend income and withholding tax on dividends paid	2007-2020
12.	Impairment under the provisions of the Law on Corporate Income Tax[2] and the Law on Corporate Income Tax[3]	▪ tax incentive for a newly established legal entity established in underdeveloped areas and in free zones ▪ tax incentive for a foreign taxpayer ▪ tax incentive for newly employed full-time workers	2007-2009
13.	Article 53a (art53a)	Reduction of accrued tax by the amount of withholding tax paid by its non-resident branch in another country on interest, royalties, fees on the lease of real estate and movable property, and dividends that do not qualify for the application of Article 52.	2010-2020

Source: Đurović Todorović et al. (2021)

[2] (Official Gazette of the RS, No. 43/94, ..., 54/99).
[3] (Official Gazette of the RS, No. 25 / 01, .., 43/03).

The methodology of empirical verification involves conducting the following analyses: correlation analysis, regression analysis and factor analysis. Correlation analysis will determine the type and strength of the relationship between tax incentives and GDP. Regression analysis will provide a model with the most correlated indicators. However, this model will not include all tax incentives as indicators of corporate income tax revenues. Factor analysis will include all tax incentives and group them into factors. The model obtained in this way will form the determined components of tax incentives as independent variables.

As shown in the figure, the empirical analysis contains two levels of relation testing. In the first level, regression analysis will be applied, wherein an optimal model with predictors that are statistically significant will be obtained. However, since regression analysis excludes predictors that do not show statistical significance, but are mutually correlated, factor analysis will be conducted at the second level. Factor analysis will cover all tax incentives and provide a basis for concluding remarks. Therefore, factor analysis will be the basic statistical tool for obtaining results, while Principal Component Analysis will be used as a method of factor extraction. The data will be analyzed using the statistical package SPSS 23.0. Based on the conducted analysis, the efficiency of tax incentives will be determined and a proposal for the reform of tax incentives in Serbia will be given.

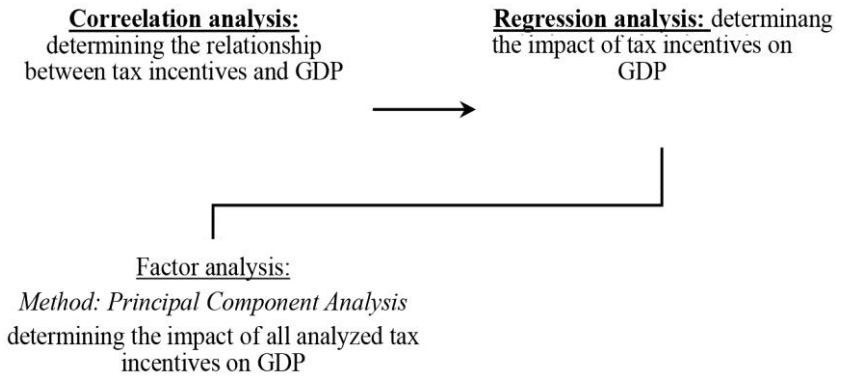

Figure 1. Methodological approach of empirical analysis
Source: Authors' presentation

RESULTS AND DISCUSSION

The empirical examination of the relationship between tax incentives and economic growth should result in either the confirmation of their effectiveness or the confirmation of the current paradox. Correlation analysis was performed using Pearson's correlation coefficient. The Pearson test is applied to parametric quantities. Accordingly, the results of the

correlation analysis describing the relationship between tax incentives and economic growth are shown in Table 2.

Table 2. Correlation analysis

	art45	art46	art47	art48	art48a	art50a	art51	art52	art50b	art53a
GDP	-0,334	0,486	0,490	0,202	0,413	0,412	0,250	-0,159	0,092	0,184
	(0,289)	(0,109)	(0,106)	(0,529)	(0,183)	(0,183)	(0,433)	(0,622)	(0,775)	(0,567)

Note: p value in ()
Source: Authors' calculations

Pearson's correlation coefficient indicates that there is no statistically significant correlation between tax incentives and the dependent variable, GDP. Based on these indicators, it can be concluded that a very low level of correlation is not characterized by statistical significance. However, since such a statistical tool is not sufficient to draw conclusions, further analyses were carried out.

After all independent variables were entered and the appropriate type of multiple regression analysis was used to detect statistically significant variables, a regression model was obtained.

Table 3. Predictive power of the model

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0,990	0,981	0,929	0,74523

Dependent variable: GDP
Predictors: (Constant), art53a, art50b, art45, art47, art48a, art52, art51, art50a
Source: Authors' calculations

The optimal regression model consisting of 8 predictors explains 99% of the variance of the dependent variable. The remaining 2 predictors do not have a statistically significant individual contribution to the prediction model. The obtained regression model as a whole has a statistically significant predictive power (Sig. = 0,017).

Based on the determined statistical significance of the model, the results of the regression analysis are shown in Table 4.

The results of the estimated regression model show that the tax incentives determined by Articles 45, 48a, 50a, 50b, 51, 52 of the Law on Corporate Income Tax are statistically significant in explaining the changes in economic growth rate. The significance level obtained with this model is 5%.

The results of the regression model show a positive statistically significant relationship between the tax incentive defined in Article 45 of the Law on Corporate Income Tax (Article 45) and the real GDP growth rate (GDP). Namely, if the amount of incentives used by taxpayers pursuant to Article 45 of the Law on Corporate Income Tax increases by one

million dinars, the real GDP growth rate will increase by 0.11 million dinars, ceteris paribus (p <0. 05).

Table 4. Estimated regression coefficients

Variables		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	Constant	-5.771773601673	1.124		-5.133	.014
	art45	0.000000110468	.000	.705	3.664	.035
	art47	0.000000032088	.000	.317	2.997	.058
	art48a	0.000000002779	.000	1.029	6.986	.006
	art50a	0.000000002970	.000	2.397	4.513	.020
	art50b	0.000000056301	.000	1.093	4.566	.020
	art51	-0.000000074528	.000	-1.461	-4.638	.019
	art52	-0.000000004444	.000	-.778	-4.988	.015
	art53a	-0.000000039806	.000	-1.142	-2.466	.090

Dependent variable: GDP

Source: Authors' calculations

The results of the regression model show a positive statistically significant relationship between the tax incentive defined in Article 47 of the Law on Corporate Income Tax (Article 47) and the real GDP growth rate (GDP). Namely, if the amount of incentives used by taxpayers pursuant to Article 47 of the Law on Corporate Income Tax increases by one million dinars, the GDP will increase by 0.03 million dinars, ceteris paribus (p <0.10).

The results of the regression model show a positive statistically significant relationship between the tax incentive defined in Article 48a of the Law on Corporate Income Tax (Article 48a) and the real GDP growth rate (GDP). Namely, if the amount of incentives used by taxpayers pursuant to Article 48a of the Law on Corporate Income Tax increases by one million dinars, the GDP will increase by 0.003 million dinars, ceteris paribus (p <0.01) .

The results of the regression model show a positive statistically significant relationship between the tax incentive defined in Article 50a of the Law on Corporate Income Tax (Article 50a) and the real GDP growth rate (GDP). Namely, if the amount of incentives used by taxpayers pursuant to Article 50a of the Law on Corporate Income Tax increases by one million dinars, the GDP will increase by 0.003 million dinars, ceteris paribus (p <0.05).

The results of the regression model show a positive statistically significant relationship between the tax incentive defined in Article 50b of the Law on Corporate Income Tax (Article 50b) and the real GDP growth rate (GDP). Namely, if the amount of incentives used by taxpayers pursuant to Article 50b of the Law on Corporate Income Tax increas-

es by one million dinars, the GDP will increase by 0.06 million dinars, ceteris paribus ($p < 0.05$).

The results of the regression model show a negative statistically significant relationship between the tax incentive defined in Article 51 of the Law on Corporate Income Tax (Article 51) and the real GDP growth rate (GDP). Namely, if the amount of incentives used by taxpayers pursuant to Article 51 of the Law on Corporate Income Tax increases by one million dinars, the GDP will decrease by 0.07 million dinars, ceteris paribus ($p < 0.05$).

The results of the regression model show a negative statistically significant relationship between the tax incentive defined in Article 52 of the Law on Corporate Income Tax (Article 52) and the real GDP growth rate (GDP). Namely, if the amount of incentives used by taxpayers pursuant to Article 52 of the Law on Corporate Income Tax increases by one million dinars, the GDP will decrease by 0.004 million dinars, ceteris paribus ($p < 0.05$) .

The results of the regression model show a negative statistically significant relationship between the tax incentive defined in Article 53a of the Law on Corporate Income Tax (Article 53a) and the real GDP growth rate (GDP). Namely, if the amount of incentives used by taxpayers pursuant to Article 53a of the Law on Corporate Income Tax increases by one million dinars, the GDP will decrease by 0.04 million dinars, ceteris paribus ($p < 0.05$).

Therefore, based on these results, a regression equation can be formulated as follows:

$$GDP = -5{,}7717 + 0{,}11 * art45 + 0{,}03 * art47 + 0{,}003* art48a + 0{,}003 * art50a + 0{,}006 * art50b - 0{,}07 * art51 - 0{,}004 * art52 - 0{,}04 * art53a + \varepsilon \quad (1)$$

The amounts of tax incentives in the equation are stated in millions of dinars. The conducted analysis points to the need to conduct further empirical examinations before making final conclusions about the analyzed predictors. Therefore, it is necessary to conduct an appropriate analysis in which all of the independent predictors will be included. Further implications of independent predictors are represented by factor analysis.

We continued the analysis by applying factor analysis, in which all tax incentives were included in order to measure their efficiency and give final results. However, dimensionality was reduced. The analysis determined the linear combination of components with maximum variance.

The results of the analysis of the main components are shown in the Data Appendix. Therefore, based on the matrix of factor coefficients and the application of the backward selection method, the optimal prediction model, composed of all analyzed predictors, was obtained.

The relationship between economic growth and the observed predictors, whose influence is observed through four main components, i.e. factors F1, F2, F3 and F4, was analyzed using multiple linear regression analysis. Based on the regression analysis, a regression model that analyzes the impact of all tax incentives, i.e. factors that are explained by tax incentives, was obtained. By analyzing the individual relationships of each factor and the dependent variable, the predictive model of linear regression was determined.

This model explains 61.6% of the variance of the dependent variable.

Table 5. Predictive power of the model

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0,785	0,616	0,472	2,02995

Dependent variable: GDP
Predictors: F 1, F 2, F 3, F 4.
Source: Authors' calculations

The obtained regression models as a whole have a statistically significant predictive power (Sig. = 0.044).

Based on the determined significance, the results of the regression analysis are shown in Table 6:

Table 6. Estimated regression coefficients

Model	Unstandardized coefficients		Standardized coefficients	t	Sig.
	B	Std. Error	Beta		
1 Constant	2.025	.586		3.456	.009
F1	1.417	.612	.507	2.315	.049
F2	1.019	.612	.365	1.666	.134
F3	-1.327	.612	-.475	-2.168	.062

Dependent variable: GDP
Source: Authors' calculations

The table shows a model that considers the tax incentives grouped as components F1, F2 and F3 as independent variables. The impact of tax incentives on economic growth was analyzed. Since the Principal Component Analysis returned standardized components, their units of measure are expressed by standard deviations. The results of the analysis show that components F1 and F3 show a statistically significant contribution to the predictive power of the regression model. The estimated values of the regression coefficients, shown in Table 6, can be expressed with the following equation:

$$GDP = 2{,}025 + 1{,}417 * F1 + 1{,}019 * F2 - 21{,}327 * F3 + \varepsilon \quad (2)$$

The results of the evaluated model show that two independent variables in the model have a statistically significant effect on the dependent variable. Based on the estimated results of the regression model, we can conclude that economic growth is positively affected by one of the analyzed factors (F1) and negatively affected by another (F3). Other factors are not predictors with significant influence.

The model proved that tax incentives included in component F1 have a positive effect on economic growth ($p < 0.05$), while tax incentives included in component F3 have a negative statistically significant impact on corporate income tax revenues ($p < 0.10$).

Given that the first factor, or component F1, is comprised of the tax incentives defined in Articles 50a, 46 and 53a respectively, we can conclude that these incentives have positive effects on economic growth. Namely, incentives for investments (Article 50a), incentives exempting the taxpayer from paying corporate income tax for work training, professional rehabilitation and employment of disabled persons (Article 46), and the reduction based on the elimination of double taxation (Article 53a) have positive effects on the economic growth rate.

The second factor, i.e. component F3, is comprised of the tax incentives defined in Articles 47 and 52. Since the tax incentive defined in Article 47 has been abolished, the analysis is limited to only one incentive defined in Article 52. Namely, the tax incentive defined in Article 52 concerns the reduction of the calculated tax in the case of intercompany dividends. According to Article 52, paragraph 1 of the Law on Corporate Income Tax:

> "Parent legal entity - resident taxpayer of the Republic may reduce the calculated corporate income tax by the amount of tax paid by its non-resident branch in another country on the profit from which dividends were paid, which are included in the income of the parent legal entity, as well as by the amount of tax after the deduction paid by the non-resident branch in another state on those dividends paid" (Law on Corporate Income Tax, 2020, Article 52, paragraph 1).

The negative effect of this tax incentive can confirm the paradox caused by tax incentives.

CONCLUSION

Sharp reductions in corporate income tax rates worldwide, the ways in which the tax base is defined, tax incentives, and the rules of avoiding double taxation, caused by corporate income tax competitiveness, have all had a significant impact on economic growth. Although the tax revenue contribution of corporate income tax is limited, its importance is credited to its effects on economic flows.

This study only focused on tax incentives. The paper aimed to examine the effects of the corporate income tax incentives on the economic growth in Serbia in the period between 2007 and 2018. The findings confirm that some corporate tax incentives have a significant positive impact on economic growth. In order to mitigate the consequences of the crisis, tax reform is inevitable. It is estimated that the abolition of some corporate income tax incentives in conditions of low tax rate will contribute to a significant increase in GDP. In this way, administration costs will be also reduced. Bearing in mind that the study identified a considerable positive effect of tax incentives, it is necessary to abolish ineffective tax incentives and exemptions. The authors also examine how tax system can become more neutral and fairer. This means that it is necessary to evaluate the effectiveness of new tax incentives before their introduction.

Based on the estimated results of the regression model, we can conclude that economic growth is positively affected by one of the analyzed factors and negatively affected by another. Other factors are not predictors with significant influence. The model proved that tax incentives included in component F1 have a positive effect on economic growth ($p < 0.05$), while tax incentives included in component F3 have a negative statistically significant impact on corporate income tax revenues ($p < 0.10$). Given that the first factor, or component F1, is comprised of the tax incentive defined in Article 50a, the tax incentive defined in Article 46 and the tax incentive defined in Article 53a, we can conclude that these incentives have positive effects on economic growth. Namely, incentives for investments (Article 50a), incentives exempting the taxpayer from paying corporate income tax for work training, professional rehabilitation and employment of disabled persons (Article 46), and the reduction based on the elimination of double taxation (Article 53a) have positive effects on the economic growth rate. The second factor, i.e. component F3, is comprised of the tax incentives defined in Article 47 and Article 52. Since the tax incentive defined in Article 47 has been abolished, the analysis was limited to only one incentive defined in Article 52.

Considering the results and factors that may affect the general economic climate in Serbia, the analysis of tax incentives can greatly contribute to achieving the desired level of tax competitiveness. Also, political stability and the efficiency of the legal system should not be left out. These aspects are the prerequisites for the corporate income tax instruments to affect fairness and economic growth. Theoretically, work on the investment climate through tax policy and tax incentive instruments provides the basis for further necessary research, but these should not be the only aspects of state intervention to stimulate economic growth and mitigate the adverse effects of the crisis.

Acknowledgment: *This research was financially supported by the Ministry of Education, Science and Technological Development of the Republic of Serbia (Contract No. 451-03-68/2022-14/200371 and Contract No. 451-03-68/2022-14).*

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ЕКОНОМСКИ РАСТ И ПОРЕСКЕ КОМПОНЕНТЕ: АНАЛИЗА ПОДСТИЦАЈА ПОРЕЗА НА ДОБИТ ПРЕДУЗЕЋА И ЊИХОВ УТИЦАЈ НА ЕКОНОМСКИ РАСТ У СРБИЈИ

Јадранка Ђуровић Тодоровић[1], Милица Ристић Цакић[2], Витомир Старчевић[3]
[1]Универзитет у Нишу, Економски факултет, Ниш, Србија
[2]Универзитет у Нишу, Центар за иновације, Ниш, Србија
[3]Универзитет у Источном Сарајеву, Факултет пословне економије, Бијељина, Република Српска, Босна и Херцеговина

Резиме

Порез на добит предузећа доприноси реализацији економских циљева својим значајним елементом – посебним пореским третманом пореских обвезника. Другим речима, најбољи начин да се подстакне привредни раст порезом на добит предузећа је деловањем на продуктивност фактора производње. Према томе, сврха увођења пореских подстицаја у порески систем једне земље је да се њима утиче на повећање привредне активности. Иако је тенденција неких земаља поједностављење овог пореског облика уз смањење јаза између ефективне пореске стопе и законске пореске стопе у циљу одржавања прихода, порески подстицаји нису изгубили на свом значају. Док се код неких савремених пореских система претендује неутралност у опорезивању, поједине земље механизам пореских подстицаја користе као снажно оруђе развојне фискалне политике, али и као оруђе за остваривање економских и социјалних циљева. Међутим, присуство бројних парадокса који су у литератури повезани са пореским подстицајима иницира испитивање њихове ефикасности. Да би се извршило испитивање њихових ефеката на привредни раст у Србији, и тиме испитала њихова ефикасност, спроведене су одговарајуће емпиријске анализе. Истраживањем су обухваћени порески подстицаји, за које је Пореска управа Републике Србије доставила квантитативне податке о укупним износима пореских подстицаја који су били коришћени у Србији у анализираном периоду од 2007. до 2018. године. Анализа пореских подстицаја у Србији посматра пореске подстицаје у домену опорезивања добити који су од великог значаја за пореске расходе. С обзиром да подаци о врстама и износима пореских подстицаја који су исказани у пореским пријавама за аконтационо-коначно утврђивање пореза на добит предузећа нису транспарентни, идентификовање истих је од великог значаја за анализу ефикасности пореских подстицаја. Подаци о привредном расту преузети су из Билтена јавних финансија Републике Србије. Имајући у виду да наведени узорак чини 10 пореских подстицаја, и да се анализа врши у периоду од 12 година (2007-2018.), анализа утицаја пореских подстицаја на приходе од пореза на добит предузећа заснована је на анализи неколико променљивих и истовремено коришћених одговарајућих економетријских тестова и метода. Факторском анализом обухваћени су сви порески подстицаји и дата је основа за закључна разматрања. Примењена је метода Анализа главних компоненти у циљу трансформације почетног скупа предиктора, односно свих пореских подстицаја, у нови скуп. На тај начин омогућено је смањење димензионалности, што је постигнуто свођењем на неколико предиктора. Утврђено је да су одређени подстицаји за порез на добит имали значајан утицај на економски раст. Модел је доказао да порески подстицаји који објашњавају компоненту F1 имају позитиван ефекат на привредни

раст ($p < 0,05$), док порески подстицаји који објашњавају компоненту F3 имају негативан статистички значајан утицај на приходе од пореза на добит предузећа ($p < 0,10$). Негативним дејством пореског подстицаја, може се потврдити парадокс изазван пореским подстицајима у домену пореза на добит предузећа.

APPENDIX

Rotated Component Matrix

	Component			
	F1	F2	F3	F4
art50a	0.973	-0.041	0.115	0.086
art46	0.949	-0.042	0.087	-0.108
art53a	0.798	-0.184	0.472	0.163
art48	-0.367	0.885	0.080	0.058
art45	-0.050	-0.775	0.422	-0.071
art48a	0.521	0.617	0.365	0.246
art47	-0.062	0.128	-0.782	-0.019
art52	0.433	0.137	0.758	0.220
art50b	-0.077	0.167	0.097	0.957
art51	0.665	-0.029	0.105	0.705

Extraction Method: Principal Component Analysis
Rotation converged in 6 iterations.
Source: Authors' calculations