Административно-управленческие проблемы налоговых реформ

Do the Effective Tax Incentives Reduce Tax Revenues? Investigating the Paradox of Corporate Income Tax in Serbia

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ABSTRACT

The aim of this paper is to examine the impact of tax incentives as determinants of economic development on revenues from corporate income tax in Serbia. The study uses data from secondary resources of the Ministry of Finance for the period 2007–2018 by employing regression and factor analysis. The research includes 10 tax incentives that were used in Serbia in the analyzed period. The methodology of empirical verification involves the implementation of correlation analysis, regression analysis and factor analysis. We opted for the application of Principal Component Analysis (PCA) because this method extracts the important data in order to present a set of new variables called main components. The model obtained in this way formed the determined components of tax incentives as independent variables. The model considers tax incentives grouped into four components. The results of empirical research indicate that there is a positive impact of certain tax incentives on revenues from corporate income tax and proved the paradox of tax collection initiated by tax incentives. The model proved that tax incentives explaining the first component had a positive effect on revenues from corporate income tax. Namely, the incentives for investments, incentives exempting the taxpayer from paying corporate income tax for work training, professional rehabilitation and employment of disabled persons, as well as a reduction based on the elimination of double taxation have a positive effect on revenues from corporate income tax. The positive impact of tax incentives can be explained by their effectiveness. The results show that tax incentives policy must be defined in detail for the purpose of achieving the economic and social goals.

KEYWORDS

corporate income tax, tax incentives, tax revenues, economic development, corporate income tax reform

JEL H21, H25, G30, G38

Снижают ли эффективные налоговые льготы налоговые поступления? Исследование парадокса корпоративного подоходного налога в Сербии

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АННОТАЦИЯ

В статье рассматривается влияние налоговых льгот на доходы от корпоративного подоходного налога в Сербии. В исследовании используются регрессионный и факторный анализ вторичных данных Министерства финансов Сербии за период 2007–2018 гг. В исследование включены 10 налоговых льгот, которые действовали в Сербии в анализируемый период. Методология эмпирической

верификации включает корреляционный, регрессионный и факторный анализ. Метод главных компонент был выбран, чтобы представить набор новых переменных, так называемых основных компонент. Полученная таким образом модель позволила сформировать определяемые компоненты налоговых льгот как самостоятельные переменные. Модель рассматривает налоговые льготы, сгруппированные в четыре компонента. Результаты эмпирических исследований свидетельствуют о положительном влиянии некоторых налоговых льгот на поступления от корпоративного подоходного налога и демонстрируют парадокс роста собираемости налогов в ответ на введение налоговых льгот. Модель доказала, что налоговые льготы, объясняющие первый компонент, положительно влияют на доходы от корпоративного подоходного налога. Данный компонент включает в себя: льготы для инвестиций, льготы, освобождающие налогоплательщика от уплаты корпоративного подоходного налога за профессиональную подготовку, профессиональную реабилитацию и трудоустройство инвалидов, а также снижение налога на основе исключения двойного налогообложения. Положительное влияние налоговых льгот можно объяснить их эффективностью. Полученные результаты показывают, что политика налоговых льгот должна быть детально определена для достижения экономических и социальных целей.

КЛЮЧЕВЫЕ СЛОВА
корпоративный подоходный налог, налоговые льготы, налоговые поступления, экономическое развитие, реформа корпоративного подоходного налога

1. Introduction

Contemporary literature particularly emphasizes two goals that justify the existence of corporate income tax – collecting tax revenues and stimulating economic growth [1, p. 77]. Although the structure of the tax system greatly affects economic growth, corporate income tax can be a significant element in achieving this goal.

Corporate income tax contributes to the realization of economic goals with its important element – special tax treatment of taxpayers. In other words, the best way to stimulate economic growth with corporate income tax is by acting on the productivity of factors of production [2]. On that basis, the purpose of introducing corporate income tax incentives into the tax system of a country is to increase the overall economic activities.

The policy of tax incentives includes government measures and instruments in order to encourage growth and development as well as international competitiveness [3, p. 34]. According to Đurović Todorović et al. [4], corporate income tax is expected to achieve the development goals of macroeconomic policy, such as: stimulating economic growth, mitigating regional and sectoral economic disparities, improving the environmental conditions, and improving international competition. It is estimated that these goals can be achieved through tax incentives. This is supported by the fact that, in the last two decades, tax incentives have been used as a measure to build competitiveness in a large number of tax systems. Therefore, tax incentives can be defined as benefits aimed at modifying a taxpayer's business environment with the ultimate purpose of increasing their investments.

In that context, China's economy stands out. In China, tax incentives have contributed to the investment rate being extremely high and one of the main drivers for the economic development of certain parts of China [5]. One of the theoretical explanations for such an outcome is that tax incentives can make tax competition less harmful because there is less pressure on corporate income tax rates [6].

Although they can make a country's tax system more competitive, tax incentives cannot eliminate disadvantages in the design of the tax system or some of the infrastructures such as legal, financial, or institutional. "The efficiency of tax incentives is directly related to the investment climate" [7, p. 7]. If a country has an inadequate tax structure, a poorly functioning legal system, or a high

level of corruption, these disadvantages should be addressed instead of providing additional relief to investors.

The specificity of tax incentives as a tax norm is that they lead to a decrease in revenues from corporate income tax. Since the state waives part of the potential revenues, they are also found in the literature under the name "tax expenditures" or "tax expenses" [8]. That is why their structure is approached with great reserve.

The effects achieved by tax incentives are very difficult to measure. They also lead to high administrative costs. All these reasons initiated theoretical suggestions that a good tax policy is based on broadening the tax base, that is, with a few special tax treatments as possible.

However, having in mind the numerous dilemmas related to corporate income tax, the theoretical suggestions and views were "shaken" by the "paradox of collection" [9]. Although the increase in corporate income tax collection was explained by various arguments, where the most emphasized one was the impact of tax rates, the policy of tax incentives opened a new dilemma of their impact on the collection of revenue from corporate income tax. Bearing in mind that globalization has made this instrument even more important, as countries have become similar in terms of the conditions they can offer in terms of tax obligations, tax incentives have received new attention, not only in terms of their design but also in order to improve the consistency of profit taxation systems. Given that taxes are part of operating costs, and that new international tax rules provided by Base Erosion and Profit Shifting on the introduction of a minimum income tax rate are being considered around the world, tax incentives can be an effective fiscal policy instrument.

As the effectiveness of tax incentives can be affected by many factors, ranging from inefficient tax administration to complex laws and opinions that can further complicate their implementation and affect the attraction of foreign direct investment, the performances of tax incentives will be analyzed in detail. Although the view of some authors in the literature is that more restrictive tax incentives reduce the possibilities for tax evasion and other distortive effects that they initiate, dilemmas related to them should be considered before reaching conclusions.

Serbia, as well as other countries in the world, faced a crisis caused by the Covid 19 pandemic. The health sector required unplanned and unexpected expenditures, which had to be provided by the public sector. The sharp economic downturn in the world has led to an automatic reduction in public revenues, an increase in the budget deficit and, consequently, to borrowing by almost all countries. Given that governments are drafting potential reforms, tax incentives can be a vital instrument to influence financial and investment activities.

The main purpose of the study is to analyze the corporate income tax incentives through: (1) theoretical foundations and the most influential studies about the effectiveness of the tax incentives; (2) empirical estimations of the impact of tax incentives on revenues from corporate income tax in Serbia; (3) formulation of recommendations for successful tax reform.

Therefore, the aim of this study is to estimate the impact of tax incentives on revenues from corporate income tax and to provide guidelines for the implementation of potential tax incentive reforms. Our assessment should solve the corporate income tax incentives – revenues puzzle. The results of the work should create a basis for considering this policy in other countries as well.

In order to fulfil the aim of the study, the following hypothesis is tested.

H1. Tax incentives can increase the revenues from corporate income tax.

The paper is structured as follows. After the introduction, the main trends and characteristics of tax incentives are elaborated, followed by the literature review of the most influential studies about the effectiveness of the tax incentives. After this part, the data and methodology are presented, followed by the discussion of the empirical results. In the last part of the paper, the main findings of the research are presented along with the recommendations for the policymakers.

2. Literature review: Are CIT incentives an effective instrument of fiscal policy?

In recent years, in the context of globalization, corporate income tax has become one of the important instruments of tax policy of the countries in competition for foreign capital [10, p. 99]. Corporate income tax, through tax incentives, influences investment decisions and property structure decisions and is one of the key components of the tax system with a strong influence on company decisions.

Although the tendency of some countries is to simplify this form of taxation while reducing the gap between the effective tax rate and the standard tax rate in order to maintain income, tax incentives have not lost their significance capital [11]. While some modern tax systems claim tax neutrality, some countries use the mechanism of tax incentives as a powerful tool for developing fiscal policy, but also as a tool for achieving economic and social goals. Many countries use tax incentives as one of the tax regulation tools and offer various forms of tax relief in order to attract foreign investors and stimulate economic growth. Given that there is a discrepancy in the opinions of theorists, the following is an overview of the literature where authors' views are supported by empirical evidence.

Before considering the literature, it is important to note that, despite the differences in attitudes, there is a consensus of researchers in this field. Their common position is that ineffective tax incentives can have a significant negative impact on budgetary revenues, especially in countries with medium or low national income. This can have even greater repercussions if tax policymakers notice that investors go to neighboring countries in the region driven by tax incentives. Then tax policymakers, guided by the competition policy, introduce additional tax incentives, as an ineffective instrument. For this reason, it is important to structure them with precision and with an evaluation of their effectiveness.

Renowned economist Michael P. Devereux, who has been dedicated to researching corporate income taxes since 1998, has addressed the factors influencing a company's decision to invest in a competitive market. He was among the first economists to differentiate the effective rate as a significant factor in the implementation of investment decisions and began an analysis of the role of the effective tax rate which, in his opinion, has a significant effect on site selection capital [12]. In later papers, this economist points to a paradox that arises due to lower tax rates caused by tax breaks and increased tax revenues, and thus further emphasizes the importance of tax incentives. His theoretical views were followed by most theorists who had studied this phenomenon, as well as the methods of calculating the effective tax rate that Devereux and his associates had defined.

On the other hand, the views of the critics of such a policy also emerged. Given the empirical evidence present in some countries, the EU recommended the approximation of corporate income tax rates among its members by introducing a lower limit to reduce tax incentives [13, p. 133]. In other words, the EU expressed the tendency to increase the harmonization of tax systems and to achieve a more neutral tax system within the Union.

However, a discussion on the complete abolition of tax incentives has not yet opened, and members continue to apply this instrument with varying intensity. It is considered that their serious disadvantage is the fact that there are large losses of revenues from corporate income tax without creating benefits for the host country. However, these costs can be reduced if funds are found to encourage certain desired activities that would not be realized without incentives [14]. This means that incentives should be precisely linked to goals such as job creation, research and development, etc.

Opponents of tax incentives, who believe they can be effective in achieving fiscal, economic, and social goals, came to different conclusions. Investigating tax incentives in the area of corporate income tax, Zee et al. [15] concluded that the

justification for tax incentives should be limited to eliminating market failures, and those tax forms that lead to faster recovery from investment costs should be a priority in tax policymaking. Many countries in the world offer various incentives in the hope that they will attract investors and stimulate economic growth. However, there is evidence that calls into question the effectiveness of certain corporate income tax incentives, which suggests that they should be approved with great precaution. There are claims that tax incentives distort investment decisions and may be ineffective, as well as contribute to increasing levels of corruption in a country. Also, driven by tax competition, fearing that investors might choose neighboring countries with more favorable conditions, governments apply either tax incentives or lower tax rates.

However, ineffective tax incentives cannot compensate for the unfavorable business environment and can actually reduce government revenues in a destructive "race to the bottom" [16]. That is also proved in the regional tax competition example. The main drawbacks of the consolidated tax regime introduced in Russia in 2012, were increased losses in tax revenues caused by regional tax competition [17].

Kovač [18] pointed out that the effectiveness of tax incentives in attracting foreign direct investment comes only after creating a favorable investment climate, and according to this author, tax incentives are not considered a cost-effective instrument until this climate is established.

In the work by Ivanov et al. [19], the authors pointed out that the investment activity of a company largely depends on the life cycle of that legal entity and the sector in which it operates. Therefore, the impact of tax incentives depends on many variables. In addition, the results of the research conducted by these scientists showed that it is necessary to reform tax incentives in the Russian tax system. The researchers argued that the domestic practice of tax incentives does not meet the interest of Russia and it is not with the declared principles of economic development. Authors conclude that the policy of

tax incentives must be a "targeted" tool and not a unified approach.

On the other hand, many OECD member countries often use corporate income tax breaks to encourage investment. Many capital expenditure incentives increase the present value of depreciation and reduce the cost of capital, which ultimately provides a greater incentive to invest. The authors of [20] confirmed that the effects of the depreciation tax incentives are very substantial, especially for investment in structures. Authors of [21] concluded that a decrease in the tax rate increases manufacturing gross investment. Summers [22] presented the analysis of the influence of tax policy on capital accumulation and investment. The author analyzed the investment and distributional effects of tax incentives and concluded that through an adequate combination of tax policies it is possible to spur investment. The authors of [23] take into account the actual US tax system and estimate a simple linear investment function. They point out the that optimal rate of investment is a function of corporate tax rate and depreciation allowances.

There are examples of positive effects of tax incentives in the United States when the use of tax incentives after the financial crisis (Bonus depreciation deduction) was approved, in the post-crisis periods 2002–2004 and 2008-2017 [24, p. 361].

Azhar & Sharif [25] analyzed tax incentives and concluded that developing countries that used various tax incentives to attract resources benefited greatly from them. In Pakistan, during the period from 1959 to 1972, a tax relief scheme (introduced in Pakistan in April 1959) was used to increase the overall level of investment in the industrial sector and encourage industry in the less developed regions of the country.

Governments in developing countries typically adopt tax breaks to encourage investment and investigate tax incentives provided by corporate income taxes [26]. Therefore, investment promotion is an important goal of tax policy in both developing and industrialized countries.

Shah [27] concluded that governments are active in this matter, but little informa-

tion is available to policymakers in developing countries on how effective these measures are in achieving their goals.

Most researchers view tax incentives as an effective tool for developing the economy of some regions, sectors or specific industries of the country. Đurović Todorović et al. [28] pointed out the effects of tax incentives on the regional development of Serbia. They examined state aid provided by tax incentives, subsidies and soft loans. The results of their research showed a strong positive correlation between the gross domestic product and tax incentives, as well as the fact that they have a positive effect on unemployment.

Holland & Vann [29] proved that developing countries and countries in transition introduce incentives for various reasons. In some cases, incentives aim to compensate for disadvantages that investors may face, such as a lack of infrastructure, complex and outdated laws, or poor tax administration.

The effectiveness of using tax incentives varies in different business sectors and regions, and it is advisable to evaluate the effectiveness of the tools of sector or region based and target specific tax incentives [30].

The use of tax incentives is widespread, although the available empirical evidence on the effectiveness of such incentives is very inconclusive. Accordingly, one should not jump to conclusions about their effectiveness. There is no unified system for evaluating their effectiveness. One of the indicators that can be used in the analysis of the effectiveness of tax incentives is the tax revenue from taxpayers who benefit from tax incentives [31, p. 173]. If tax revenues show a tendency to grow, and the state achieves higher tax collection with tax incentives, then we can talk about their effectiveness.

There are many theorists who have examined the effects of tax incentives on achieving the economic goals of the state. The authors of [32] investigated how effective are tax incentives in attracting investment as one of the main economic goals of the state. Their study analyzed the dataset of over 40 Latin American,

Caribbean, and African countries for the period 1985–2004. The authors conclude the boosting effects of tax holidays in attracting investments.

Gordon & Li [33] pointed out the positive effects of tax incentives on local government activities in China. Bearing in mind that China has a federal system of government, the effects of tax incentives on the local level are crucial for the economic goals of China.

The research of [34] documented facts about the influence of tax incentives on economic activities. The authors noted that changes in tax incentives affect economic activities. The main contribution of this paper is the detected relationship between corporate tax incentives and economic activity across all U.S. countries.

Mauda & Saidu [35] confirmed the economic effects of tax incentives on listed companies in Nigeria. The authors noted that tax incentives can be useful to control and enhance economic activities in one country. According to them, governments should use fiscal policy and tax incentives whenever wants to trigger and increase economic activities [35, p. 22].

However, very few authors have examined their impact on tax revenues. Given that it is logical that tax incentives negatively affect the movement of corporate income tax revenues, a different conclusion would indicate a paradox. Tax incentives reduce revenues to the budget, and according to official statistics of the Russian Federal Tax Service, tax incentives in 2016 resulted in reduced revenues to the budget in the amount of almost 2 bln. rubles [30, p. 159].

The functionality of fiscal policies and their fundamental role in balancing are especially emphasized today, in the period of the current crises. And again, in academic circles that are considering solutions for economic recovery, the dilemmas of corporate income tax are opening up. One of them is related to the effectiveness of tax incentives. Tax incentives have great importance for ensuring the growth and productiveness of the economy because socio-economic development and modernization of the

subjects directly depend on effective tax regulation tools [30, p. 160].

Daniela et al. [36] point to important aspects of fiscal policy regarding the protection and development of the business environment. The wrong kind of fiscal policy can have a major impact on the economic growth and development of countries.

Stoilova & Patanov [37] had similar conclusions, pointing to the importance of fiscal policy in stimulating economic growth in Bulgaria.

To examine the effectiveness of corporate income tax incentives, and to provide a framework for potential reforms, we analyzed the impact of this macroeconomic instrument on corporate income tax revenue trends. Given that empirical analyzes do not provide a clear relationship between these two variables due to data that are non-transparent and problems that arise in relation to measuring the tax base [38], our assessment should create a picture of their effectiveness and solving the corporate income tax incentives – revenues puzzle.

3. Methods

The analysis of tax incentives in Serbia looks at tax incentives in the field of corporate income tax, which are of great importance for tax expenditures. The analysis was performed using secondary data obtained by the Tax Administration of the Ministry of Finance of Serbia. The research on the effective burden is based on the data from the records of the Tax Administration stated in the corporate income tax return form (PDP Form). Since the data on the types and amounts of tax incentives that are stated in the tax returns for the advance-final determination of corporate income tax are not transparent, their identification is of great importance for the analysis.

The empirical research also used relevant secondary data collected by accessing reports on the websites of the Statistical Office of Serbia[1] and the Ministry of Finance of Serbia[2]. Therefore, they represent secondary data that are valid, reliable, homogeneous, current and impartial.

The research includes tax incentives listed in Table 1, for which the Tax Administration of Serbia submitted quantitative data on the total amounts of tax incentives that were used in Serbia in the analyzed period from 2007-to 2018. These indicators will represent independent variables in the research and will be expressed in millions of dinars.

It is important to note that the research also includes tax incentives that were deleted from the Law on Corporate Income Tax[3], but were available to taxpayers in accordance with the permitted period of use of these tax incentives. Bearing in mind that some of the tax incentives had a legally determined transferability, i.e., a legally deferred application, the analysis also includes tax incentives that are no longer provided by law.

The dependent variable will be the revenue from corporate income tax expressed in millions of dinars (CIT). Given that the sample in the Table 1 consists of 10 tax incentives, and that the analysis is performed over a period of 12 years (2007–2018), the analysis of the impact of tax incentives on CIT will be based on the analysis of several variables using the appropriate econometric tests and methods.

We opted for the application of Principal Component Analysis (PCA) because this method extracts the important data in order to present a set of new variables called main components[4]. Namely, since there is multicorrelation among predictors, instead of using individual predictors obtained by regression analysis, we will reduce the dimensionality through Factor analysis to draw conclusions. The task of Factor analysis is to describe the variance of variables that are observed using several factors, i.e., random variables, and which are grouped according to their correlations.

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[1] Available at: https://www.stat.gov.rs
[2] Available at: https://www.mfin.gov.rs

[3] Available at: https://www.purs.gov.rs/sr/pravna-lica/pregled-propisa/zakoni/307/zakon-o-porezu-na-dobit-pravnih-lica.html
[4] Available at: https://knowledge4policy.ec.europa.eu/sites/default/files/jrc-competence-centre-composite-indicators_en_0.pdf

Table 1

Overview of independent variables

No.	Variable	Decription	Symbol
1.	Article 45	Tax exemption in case of concession investment from payment of income tax on the income from the subject of concession	a45
2.	Article 46	Tax exemption of legal entities for vocational training, vocational rehabilitation and employment of disabled persons	a46
3.	Article 47	Amount of deduction for profits made in a newly established business unit in underdeveloped areas	a47
4.	Article 48	Reduction of accrued income tax on taxpayers who make investments in fixed assets owned by them	a48
5.	Article 48a	Reduction of the calculated tax on the realized profit of a taxpayer who makes investments in fixed assets in their own property mainly performing one of the activities mentioned in Article 48a	a48a
6.	Article 50a	Tax exemption for investing in fixed assets in the amount of more than 600/800 million or one billion dinars and additional permanent employment of at least 100 persons	a50a
7.	Article 51	Deduction of tax on the amount of income tax paid by operating in another country	a51
8.	Article 52	Deduction of income tax paid by a non-resident branch in another country on dividend income and withholding tax on dividends paid	a52
9.	Article 50b	Tax Exemption for Profits Made by a Taxpayer Engaged in an Underdeveloped Area	a50b
10.	Article 53a	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.	a53a

Source: Prepared by the authors
Data: Ministry of Finance of the Republic of Serbia-Tax Administration

In this way, groups and variables will be obtained in groups that will be strongly correlated with each other, but weakly correlated with variables from other groups. Each of the obtained factors will represent a unique factor that affects a certain group.

On the example of tax incentives, this method was applied in order to transform the initial set of predictors, all tax incentives, into a new set. In that way, it is possible to reduce the dimensionality, which is achieved by reducing it to several predictors. Interpretability is also enabled, due to the limitation created by the application of this statistical tool.

This method made it possible to transform the initial tax incentives into a set of uncorrelated components. Based on the results, when the dimensionality was reduced, linear regression was performed, and significant predictors were

determined. In this way, an orthonomic database was determined in a large area of collected data. Accordingly, predictors which best explain the variability of corporate income tax revenues were identified.

The research has to be viewed with a certain reserve, since the analysis did not take into account other factors which could imply different findings. Hypothesis testing should contribute to a better understanding of the structure of tax incentives and provide a basis for tax policy reform in the area of corporate income tax.

Although tax systems around the world are constantly being reformed, it should be borne in mind that changes in the tax system and the basic elements of taxation take place in an environment interwoven with numerous contradictions. In a globalizing economy, in which a number of paradoxes are being considered, the

direction and priorities of corporate income tax reform should be based on analyzes of its key elements.

The methodology of empirical verification involves conducting the following analyzes:

1. Correlation analysis, which will determine the relationship and strength of the relationship between tax incentives and corporate income tax revenues. In this way, the connection between the independent and dependent variables will be determined, but also the relations between the independent variables themselves.

2. Regression analysis, which will provide a model with the most correlated indicators, but which will not include all tax incentives as indicators of corporate income tax revenues.

3. Factor analysis, which will include all tax incentives and group them into factors. The grouping will be based on correlation analysis, where each obtained factor will be conceived from the indicators that have the strongest connection with that factor. Finally, by assigning a weight, the

factor load matrix will explain the overall model variance. The model obtained in this way will form the determined components of tax incentives as independent variables.

4. Results

4.1. Correlation analysis

Correlation analysis was performed using Pearson's correlation coefficient. The results of the correlation analysis, which describe the relationship between tax incentives and CIT are shown in Table 2.

Pearson's correlation coefficient indicates that there is a strong positive statistically significant correlation at the significance level of 5% between the tax incentives defined in Article 46 ($r = 0.821$, $p < 0.05$), Article 50a ($r = 0.847$, $p < 0.05$), Article 51 ($r = 0.647$, $p < 0.05$) and Article 53a ($r = 0.829$, $p < 0.05$) and CIT.

The results of the Pearson coefficient show that there is a strong negative statistically significant correlation between the tax incentive defined in Article 48 ($r = -0.650$, $p < 0.05$) and CIT at the significance level of 5%. Other tax incentives did

Table 2

Matrix of Correlation with CIT

	a45	a46	a47	a48	a48a	a50a	a51	a52	a50b	a53a	CIT
a45	1	0.016 (0.960)	–0.194 (0.545)	–0.573 (0.052)	–0.251 (0.431)	–0.008 (0.981)	–0.013 (0.967)	0.242 (0.448)	–0.182 (0.572)	0.292 (0.358)	0.252 (0.429)
a46		1	–0,232 (0,468)	–0.366 (0.243)	0.461 (0.131)	0.920 (0.000)	0.563 (0.057)	0.354 (0.259)	–0.140 (0.665)	0.769 (0.003)	0.821 (0.001)
a47			1	0.124 (0.702)	–0.127 (0.695)	–0.177 (0.581)	–0.147 (0.648)	–0.414 (0.181)	–0.131 (0.685)	–0.412 (0.183)	–0.403 (0.194)
a48				1	0.371 (0.235)	–0.359 (0,252)	–0.236 (0.460)	0.034 (0.915)	0.256 (0.423)	–0.380 (0.223)	–0.650 (0.022)
a48a					1	0.482 (0.113)	0.560 (0.059)	0.658 (0.020)	0.299 (0.345)	0.483 (0.112)	0.209 (0.515)
a50a						1	0.708 (0.010)	0.528 (0.078)	0.024 (0.940)	0.876 (0.000)	0.847 (0.001)
a51							1	0.536 (0.072)	0.595 (0.041)	0.646 (0.023)	0.647 (0.023)
a52								1	0.215 (0.501)	0.713 (0.009)	0.369 (0.238)
a50b									1	0.139 (0.666)	0.002 (0.996)
a53a										1	0.829 (0.001)
CIT											1

Note: *p* values in ( )

not show a statistically significant degree of agreement with the dependent variable.

The results of Pearson's coefficient showed that significant levels of agreement can be distinguished among tax incentives. Therefore, the results of the analysis indicate that there is an intercorrelation between the predictors, and that it is not desirable to use individual predictors to examine the relationship between them. In other words, there is a multicorrelation between the predictors.

4.2. Regression analysis

The study of the relationship between tax incentives and CIT will first be conducted on the basis of multiple regression, which is a technique of researching the relationship between independent variables and the dependent variable. Since the basis of regression analysis is a correlation, based on the determined degree of agreement between the analyzed variables, a model of regression analysis was created. Based on the regression, it is possible to investigate the interrelationships of the whole set of predictors in a more sophisticated way.

After all independent variables were entered and the appropriate type of multi-ple regression analysis was used to detect statistically significant variables, a regression model was obtained. The results of the estimated regression model show that the obtained model explained 94.9% of the variance of the dependent variable.

The obtained regression model as a whole has a statistically significant predictive power (Sig. = 0.001). 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 47, 51, 52, 50b, and 53a of the Law on Corporate Income Tax are statistically significant to explain changes in CIT. The significance level obtained with this model is 1% ($p = 0.001$).

The results of the regression model show a negative statistically significant relationship between the tax incentive defined in Article 47 of the Law on Corporate Income Tax (a47) and CIT. 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, CIT will decrease by 305.34 million dinars, ceteris paribus ($p < 0.05$).

Table 3

The predictive power of the model

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
	0.974	0.949	0.907	8968.01480

Dependent Variable: CIT
Predictors: (Constant), a47, a51, a52, a50b, a53a

Table 4

Estimated regression coefficients

Variables B	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	Std. Error	Beta			
1 (Constant)	44101.827	5976.758		7.379	0.000
a47	−0.00030534526595	0.00	−0.287	−2.646	0.038
a51	0.00037298688617	0.00	0.696	4.067	0.007
a52	−0.00003160422690	0.00	−0.527	−3.871	0.008
a50b	−0.00023503935836	0.00	−0.434	−3.343	0.016
a53a	0.00025534343653	0.00	0.697	4.139	0.006

Dependent Variable: CIT
Predictors: (Constant), a47, a51, a52, a50b, a53a

The results of the regression model show a positive statistically significant relationship between the tax incentive defined in Article 51 of the Law on Corporate Income Tax (a51) and CIT. 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, CIT will increase by 372.98 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 (a52) and CIT. 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, CIT will decrease by 31.60 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 50b of the Law on Corporate Income Tax (a50b) and CIT. Namely, if the amount of incentives used by taxpayers pursuant to Article 50b of the Law on Corporate Income Tax increases by one million dinars, CIT will decrease by 235.03 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 53a of the Law on Corporate Income Tax (a53a) and CIT. 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 CIT will increase by 255.34 million dinars, ceteris paribus ($p < 0.05$).

Therefore, based on the results, a regression equation can be created where the variables are expressed in millions, as follows:

$$\text{CIT} = 44101.827 - 305.34 \cdot a47 + 372.86 \cdot a51 - 31.60 \cdot a52 - 235.03 \cdot a50b + 255.34 \cdot a53a + \varepsilon. \quad (1)$$

The conducted analysis points to further empirical tests, before reaching final conclusions about the analyzed predic-

tors. Therefore, it is necessary to conduct an appropriate analysis in which all independent predictors will be included. Further implications of independent predictors are represented by factor analysis.

4.3. PCA analysis

The analysis standardized the range of continuous initial variables, i.e., all tax incentives in the period from 2007-to 2018, in order to conduct further statistics. Then, the described statistical technique was performed – an analysis of the main components (Table 5). The standard approach for PCA involves data analysis based on a data set. The analysis determines the linear combination of components with maximum variance. The values of the variables obtained by the analysis of the principal components are called the result factor and can be geometrically interpreted as projections of the observations about the principal components [39].

The results shown in the Table 5 give the resulting factor (F1, F2, F3, F4) and indicate a poor arrangement of the source variables. Namely, there is no dominant source variable that would explain the last factor F4. A large number of variables belonged to the first factor, while no variables belonged to the fourth factor. In order to achieve the result of this method, in which each variable reads a high value of one factor, while its values for other factors are negligible, it is necessary to rotate to a simpler structure than the obtained one.

Since the factor model has several representations with the same statistical properties, in order to obtain a matrix of factor loads that will simplify the interpretation of the analyzed factors, factor rotation was performed. Orthogonal factor rotation implies that the coordinate axes remain uncorrelated. The motive of rotation has often been compared in the literature with the motive of a scientist who sharpens his focus under a microscope in order to see the object of observation more precisely and better. After the factor rotation, the load matrix shown in the Table 6 was obtained. The PCA took a large set of data and identified a new optimal basis for re-expressing the data. Thus, the values of the compo-

nents obtained by decomposing the individual value are presented as follows.

The results show that each of the factors is now explained by defined variables. The first factor is explained by the tax incentives defined in Article 50a ($r = 0.973$), Article 46 ($r = 0.949$) and Article 53a ($r = 0.798$). The second factor is explained by the tax incentives defined in Article 48 ($r = 0.885$), Article 45 ($r = -0.775$) and Article 48a ($r = 0.758$). The third factor is explained by the tax incentives defined in Article 47 ($r = -0.782$) and Article 52 ($r = 0.758$). The fourth factor is explained by the tax incentives defined in Article 50b ($r = 0.957$) and Article 51 ($r = 0.705$).

Below is a table indicating the percentage of explanations. The results in Table 7 show the explained variance obtained by the principal components method.

The first factor explains 35,330% of the variance of the dependent variable. The second factor explains 18.659% of the variance of the dependent variable. The third factor explains 17.685% of the variance of the dependent variable. The fourth factor explains 15.766% of the variance of the dependent variable. In total, the model explained 87,440% of the variance of the dependent variable. Therefore, the matrix of factor coefficients can be represented as follows (Table 8).

Table 5

Component Matrix

	Component			
	F1	**F2**	**F3**	**F4**
a53a	0.938	–0.187	–0.047	–0.054
a50a	0.905	–0.116	0.366	0.034
a51	0.818	0.226	–0.027	0.480
a46	0.817	–0.206	0.451	–0.092
a52	0.758	0.161	–0.369	–0.307
a48a	0.655	0.586	0.079	–0.261
a48	–0.289	0.843	–0.019	–0.364
a45	0.144	–0.708	–0.513	0.025
a50b	0.249	0.608	–0.444	0.575
a47	–0.401	0.120	0.568	0.367

Extraction Method: PCA
4 components extracted

Table 6

Rotated Component Matrix

	Component			
	F1	**F2**	**F3**	**F4**
a50a	0.973	–0.041	0.115	0.086
a46	0.949	–0.042	0.087	–0.108
a53a	0.798	–0.184	0.472	0.163
a48	–0.367	0.885	0.080	0.058
a45	–0.050	–0.775	0.422	–0.071
a48a	0.521	0.617	0.365	0.246
a47	–0.062	0.128	–0.782	–0.019
a52	0.433	0.137	0.758	0.220
a50b	–0.077	0.167	0.097	0.957
a51	0.665	–0.029	0.105	0.705

Extraction Method: PCA
Rotation converged in 6 iterations.

Table 7

Total Variance Explained

Component	Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	**% of Variance**	**Cumulative %**	**Total**	**% of Variance**	**Cumulative %**
1	4.366	43.662	43.662	3.533	35.330	35.330
2	2.108	21.076	64.737	1.866	18.659	53.988
3	1.267	12.667	77.404	1.769	17.685	71.674
4	1.004	10.036	87.440	1.577	15.766	87.440
5	0.712	7.124	94.564			
6	0.231	2.309	96.873			
7	0.201	2.014	98.887			
8	0.091	0.912	99.799			
9	0.017	0.174	99.973			
10	0.003	0.027	100.000			

Extraction Method: PCA

Table 8

Component Score Coefficient matrix

	Component			
	F1	**F2**	**F3**	**F4**
a45	–0.136	–0.417	0.292	0.030
a46	0.351	0.045	–0.120	–0.201
a47	0.149	0.031	–0.562	0.088
a48	–0.120	0.492	0.178	–0.088
a48a	0.120	0.360	0.161	–0.039
a50a	0.331	0.012	–0.134	–0.057
a51	0.145	–0.111	–0.170	0.462
a52	–0.015	0.103	0.450	–0.020
a50b	–0.154	–0.079	–0.047	0.711
a53a	0.174	–0.073	0.150	–0.004

Extraction Method: PCA

Based on the coefficient matrix, we see that Articles 46 and 50a have the largest contribution in the first factor, while the contribution of Article 53a is smaller. For the second factor there is a uniform influence of all members. When it comes to the third factor, there is also a uniform influence of all members in its explanation. In the fourth factor, there is a greater contribution of Article 50b compared to Article 51.

After identifying the predictors, the analysis of their impact on the dependent variable can be performed. The relationship between CIT and the observed predictors, whose impact is observed through four main components, i.e., factors F1, F2, F3, and F4, was analyzed by multiple linear regression analysis. Using the regression analysis, we obtained a regression model that analyzes the impact of all tax incentives, i.e., factors that are explained by tax incentives. By analyzing the individual relationships of each factor with the dependent variable, the predictive model of linear regression was determined. To investigate the impact of tax incentives on the dependent variable, the following basic model of linear regression is estimated:

$$CIT = \alpha + \beta_1 F1 + \beta_2 F2 + \beta_3 F3 + \beta_4 F4 + \varepsilon, \quad (2)$$

where CIT – corporate income tax revenue, F1 – factor represents the first component, F2 – factor represents the second component, F3 – factor represents the third component, F4 – factor represents the fourth component and ε – standard statistical error.

This model explained 86.7% of the variance of the dependent variable, which proves the adequacy of the model (Table 9).

The obtained regression model as a whole has a statistically significant predictive power (Sig. = 0.003). Based on the determined significance, the results of the regression analysis are shown in Table 10.

Table 9

The predictive power of the model

Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**
	0.931[a]	0.867	0.791	13422.7401029

Dependent Variable: CIT
Predictors: (Constant), F1, F2, F3, F4

Source: Authors' calculations

Table 10

Estimated regression coefficients

Model B	Unstandardized Coefficents		Standardized Coefficients	**t**	**Sig.**
	Std. Error	**Beta**			
(Constant)	60486.883	3874.811		15.610	0.000
F1	23765.089	4047.108	0.810	5.872	0.001
F2	–12004.103	4047.108	–0.409	–2.966	0.021
F3	5467.595	4047.108	0.186	1.351	0.219
F4	2882.255	4047.108	0.098	0.712	0.499

Dependent Variable: CIT
Predictors: (Constant), F1, F2, F3, F4

The Table 10 shows a model that considers the tax incentives grouped as components F1, F2, F3, and F4 as independent variables. The impact of tax incentives on CIT was analyzed. The results of the analysis show that components F1 and F2 have a statistically significant contribution to the predictive power of the regression model. The estimated values of the regression coefficients, shown in Table 10, can be expressed in the equation that follows:

$$\text{CIT} = 60486.883 + 23765.089 \cdot \text{F1} - 12004.103 \cdot \text{F2} + 5467.595 \cdot \text{F3} + 2882.255 \cdot \text{F4} + \varepsilon. \quad (3)$$

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 there is a positive effect of one analyzed factor on CIT (F1) and a negative effect of one analyzed factor (F2). Other factors are not predictors with significant impact.

The results of the research on the analyzed sample of 10 tax incentives in Serbia in the period from 2007-to 2018 indicate that the hypothesis was confirmed. In other words, the positive impact of tax incentives on the collection of revenues from corporate income tax was proved.

The model proved that tax incentives explaining the F1 component had a positive effect on CIT ($p < 0.001$), while individual tax incentives explaining the F2 component had a negative statistically significant impact on CIT ($p < 0.05$). Given that the first factor, or component F1, was explained by 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 CIT. Namely, incentives for investments (a50a), incentives exempting the taxpayer from paying corporate income tax for work training, professional rehabilitation and employment of disabled persons (a46), as well as a reduction based on the elimination of double taxation (a53a) have positive effects on CIT. The second factor, i.e., component F2, was explained by the tax incentives defined in Article 48, Article 45 and Article 48a. Since these tax incentives were abolished, the loss of income on this basis was limited. Namely, the tax incentives defined in Article 45 relate to tax exemptions for concessional investments, while the tax incentives defined in Articles 48 and 48a are related to tax credits by which the state reduces the tax to taxpayers who make investments in fixed assets. Tax credits could be transferred for a maximum of 10 years, and their effects are noticeable even after their deletion from the current law. As for the tax incentives that explain the components F3 (Sig = 0.219) and F4 (Sig = 0.499) are concerned, they had a positive effect on CIT, but their impact is not statistically significant.

The positive effect of tax incentives, or the paradox caused by tax incentives, can be explained by the fact that the policy of effective tax incentives is very important. A large number of tax incentives initiate a large number of controls based on their use and a large administration. This creates a problem of tax evasion, on the one hand, but also less collection of revenue from corporate income tax on the other hand. The empirical analysis of the annual data of the Ministry of Finance of Serbia, which were analyzed by Đurović Todorović et al. [40] showed that the number of tax inspectors and the number of controls with irregularities had a positive, statistically significant impact on the volume of tax evasion in Serbia. Generally speaking, tax incentives in Serbia, in addition to the fact that the possibility of their choice is significantly narrowed, there are active tax incentives that have a positive effect on the collection of CIT and thus contribute to solving the general problem of tax collection.

5. Discussion

Although the Serbian tax system has been subject to numerous reforms with a tendency to attract as many foreign investors as possible and create a favorable business environment for domestic investors, the abolition of the previous tax incentives and the introduction of the new ones has affected CIT and created the image of an unstable tax policy.

Regarding tax incentives, it is important for successful reform that the country does not use tax incentives to reduce the visibility of the disadvantages of its tax system, as well as not to use them as a protection against the tax incentives active in neighboring countries [41]. Therefore, tax incentives must be thoroughly defined and set in the direction of achievable economic and social goals of a certain country.

If a country has a policy of reducing unemployment, development of a certain sector of the economy, economic development, development of information, production, encouragement of research and development, it is necessary to select and analyze the effectiveness of the tax incentives through which these goals could be achieved. The collection of tax revenues should be facilitated in such a manner that the corporate income tax system consists of a number of tax incentives that would not create the high costs of training the tax authorities for their administration.

The degree of fiscal pressure implies the costs of corporate income tax, but also includes the costs that taxpayers would have in connection with the interpretation of the provisions of the Law on Corporate Income Tax. Although tax incentives are seen as a tax policy that simplifies capital flows, such a view should not be accepted for granted. The fact that certain tax incentives lead to tax evasion speaks in favor of that. Namely, if there is frequent abuse of tax incentives in one country, if there is a wide range of discretionary powers of the tax administration, if there is a certain level of corruption and frequent changes in regulations, the collection system will be endangered.

Also, if there is a non-synchronization of tax incentives, an unstable and unfair tax system that causes uncertainty, such a policy will not lead to capital flows. For these reasons, it is necessary to examine the effects of all tax incentives on the variables that are crucial in creating an effective tax policy that leads to a competitive position of our country in the global market. Tax policymakers need to take into consideration both international rules and the control capacities of their tax authorities. In this way, taking into account all the above frameworks, the tax system will be focused on the ultimate goal-achieving economic growth and development.

Based on the results obtained in the empirical research, the tax incentives defined in Articles 51 and 53a of the Law can have positive effects on the collection of CIT. These tax incentives were obtained by regression analysis, while the positive effects of tax incentives 53a, 46 and 50a on corporate income tax revenues were proven by factor analysis and the principal components method. The tax incentive defined by Article 46 of the Law on Corporate Income Tax, according to which taxpayers are exempt from paying income tax if they enable work training, professional rehabilitation and employment of disabled people, is part of our country's social policy.

The positive side of this tax incentive is solving the problem of special categories of the population with the problem of employment. The disadvantage of this tax incentive is, explicitly, its abuse. Therefore, the state, with these tax exemptions, should perform detailed control and administration. In the area of investment tax incentives, empirical results have shown a positive effect of Article 50a on CIT.

Positive effects on the collection of corporate income tax have been noted in the special incentives provided by Serbian legislation to residents in order to eliminate double taxation of profits they make outside the borders of our country. These tax incentives are defined in Articles 51 and 53a. In this way, residents are encouraged to export and do business outside the country, while, on the other hand, they have a positive impact on the collection of CIT. Negative effects on CIT are identified in Article 52, which is also linked to the policy of eliminating double taxation of profits made in another country, with the reduction or tax credit being linked to intercompany dividends and not to the profit of permanent business units of a resident taxpayer.

Therefore, based on the results of this study, it is proposed to reconsider the reform or abolition of this article. The

proposal for the introduction of new tax incentives should be based on new technology and the support of research and development [30; 42; 43]. Since the tax incentives related to tax credits which were aimed at stimulating not only new technologies, but also underdeveloped areas, have been abolished in the Serbian tax system, the current incentives for research and development should be analyzed in more detail.

These incentives can be more than favorable for the investment climate in our country. Also, Article 48a, which had positive effects on economic growth and development because it was focused on long-term goals of economic policy, was abolished. Therefore, the proposal for the introduction of new tax incentives is justified.

6. Conclusion

This study aims to estimate the impact of tax incentives on revenues from corporate income tax and to provide guidelines for the implementation of potential tax incentive reforms. Bearing in mind the results, the hypothesis was confirmed. In other words, the positive impact of tax incentives on the collection of revenues from corporate income tax was proved, which indicates the existence of a paradox.

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, the political stability and efficiency of the legal system should not be left out. These aspects are the prerequisites for the corporate income tax instruments to affect its balance sheet yield, fairness and economic growth.

The research underlines that the policymakers must evaluate the effectiveness of tax incentives to improve the taxation policy. Theoretically, work on the investment climate through tax policy and tax incentive instruments provides the basis for further research that is necessary, but they should not be the only aspects of state intervention to stimulate economic growth.

References

1. Arsić M., Altiparmakov N., Ranđelović S., Bućić A., Vasiljević D., Levitas T. *Poreska politika u Srbiji–pogled unapred*, Beograd: Fond za razvoj ekonomske nauke; 2010.

2. Klimek A. Determinants of foreign direct in advanced business services. *Acta Oeconomica*. 2020;70(3):407–421. https://doi.org/10.1556/032.2020.00020

3. Momirović D.M. Uloga poreskih podsticaja iz poreza na dobit u izgradnji konkurentosti. *Ekonomski horizonti*. 2008;10(1-2):33–51. Available at: http://www.horizonti.ekfak.kg.ac.rs/sites/default/files/Casopis/2008/3_Dragan_Momirovic.pdf

4. Đurović T. J., Marina Đ., & Ristić C. M. The determinants of tax evasion: empirical evidence from Serbia. *Economics. Information Technologies*. 2021;48(3):514–527. https://doi.org/10.52575/2687-0932-2021-48-3-514-527

5. Bingyang Lv., Yongzheng Liu., Yan Li. Fiscal incentives, competition, and investment in China. *China Economic Review*. 2020; 59:101371. https://doi.org/10.1016/j.chieco.2019.101371

6. Keen M. Preferential regimes can make tax competition less harmful. *National Tax Journal*. 2002;54(2):757–762. https://doi.org/10.17310/ntj.2001.4.04

7. United Nations and CIAT. *Design and Assessment of Tax Incentives in Developing Countries: selected issues and a country experience*, New York; 2018. Available at: https://www.ciat.org/Biblioteca/Estudios/2018_design_assessment_tax_incentives_UN_CIAT.pdf

8. Brauner Y., Stewart, M., *The future of tax incentives for developing countries. In Tax, law and development,* 2013, Edward Elgar Publishing. https://doi.org/10.4337/9780857930026

9. Ibáñez E.A. *Impuesto sobre Sociedades: la investigation economica y los criterios para su reforma en España document 13/10*. Instituto de Estudios Fiscales, Madrid; 2010. Available at: https://www.ief.es/docs/destacados/publicaciones/documentos_trabajo/2010_13.pdf

10. Sokolovska O.V. Race to the bottom in international tax competition: some conceptual issues. *Journal of Tax Reform*. 2016;2(2):98–110. https://doi.org/10.15826/jtr.2016.2.2.018

11. Delgado F., Fernandez-Rodrıguez E., Martınez-Arias A. Corporation effective tax rates and company size: evidence from Germany. *Economic research*. 2018;31(1):2081–2099. https://doi.org/10.1080/1331677X.2018.1543056

12. Devereux M.P., Griffith R. *The Taxation of Discrete Investment Choices,* Institute for Fiscal Studies, Working Paper Series No. W98/16, 1999. Available at: https://ifs.org.uk/wps/wp9816.pdf

13. Elschner C., Overesch M., Trends of corporate tax levels in Europe. *Intereconomics.* 2007;42(3):127–132. https://doi.org/10.1007/s10272-007-0215-x

14. Kalaš B., Đurović-Todorović J., Đorđević M. Panel estimating effects of macroeconomic determinants on tax revenue level in European Union. *Industrija.* 2020;48(3):41–57. https://doi.org/10.5937/industrija48-27820

15. Zee H.H., Stotsky J.G., Ley E. Tax incentives for business investment: a primer for policymaker in developing countries. *World Development.* 2002;30(9):1497–1516. https://doi.org/10.1016/S0305-750X(02)00050-5

16. Abbas S.A., Klemm, A., A partial race to the bottom: corporate tax developments in emerging and developing economies. *International Tax and Public Finance.* 2013;20(4):596–617. https://doi.org/10.1007/s10797-013-9286-8

17. Kostrykina N.S., Korytin A.V. Why Did the Consolidated Tax Regime Cause Massive Losses in Tax Revenue in Russia?. *Journal of Tax Reform.* 2020;6(1):6–21. https://doi.org/10.15826/jtr.2020.6.1.072

18. Kovač M. Analiza poreskih podsticaja za privlačenje SDI u Srbiji, Bugarskoj i Hrvatskoj. *Industrija.* 2003;31(1-2):53–60. Available at: https://scindeks.ceon.rs/article.aspx?artid=0350-03730302053K

19. Ivanov V.V., Lvova N.A., Pokrovskaia V., Naumenkova S.V. Determinants of tax incentives for investment activity of enterprises. *Journal of Tax Reform.* 2018;4(2):125–141. https://doi.org/10.15826/jtr.2018.4.2.048

20. Jorgenson D. Capital Theory and Investment Behavior. *American Economic Review.* 1963;53(2):247–259. Available at: https://www.aeaweb.org/aer/top20/53.2.247-259.pdf

21. Hall R.E., Jorgenson D.W. Tax Policy and Investment Behavior. *American Economic Review.* 1967;57(3):391–414.

22. Summers L.H. *Taxation and Corporate Investment: A q-Theory Approach.* Brookings Papers on Economic Activity. 1981;1981(1):67–140. Available at: https://www.brookings.edu/wp-content/uploads/1981/01/1981a_bpea_summers_bosworth_tobin_white.pdf

23. Hayashi F. Tobinís Marginal q and Average q: A Neoclassical Interpretation. *Econometrica.* 1982;50(1):213–224. Available at: https://econpapers.repec.org/article/ecmemetrp/v_3a50_3ay_3a1982_3ai_3a1_3ap_3a213-24.htm

24. Maffini G., Xing J., Devereux M. The Impact of Investment incentives: Evidence from UK corporation tax returns. *American Economic Journal: Economic Policy.* 2019;11(3):361–389. https://doi.org/10.1257/pol.20170254

25. Azhar B.A., Sharif S.M. The effects of tax holiday on investment decisions: an empirical analysis. *The Pakistan Development Review.* 1974;13(4):409–432. Available at: https://www.pide.org.pk/pdf/PDR/1974/Volume4/409-432.pdf

26. Mintz J.M. Corporate tax holidays and investment. *The World Bank Economic Review.* 1990;4(1):81–102. Available at: https://documents1.worldbank.org/curated/en/158441468771884622/pdf/multi-page.pdf

27. Shah A. *Fiscal incentives for investment and innovation.* Washington, D.C.: The World Bank, 1995. Available at: https://digitallibrary.un.org/record/195506?ln=en

28. Đurović Todorović J., Đorđević M., Ristić M. *Struktura savremenih poreskih sistema.* Niš: Ekonomski fakultet; 2019.

29. Holland D., Vann R. Income Tax Incentives for Investment. *Tax Law Design and Drafting.* 1998;2(23):1–32. https://doi.org/10.5089/9781557756336.071

30. Steshenko J.A., Tikhonova A.V. An integral approach to evaluating the effectiveness of tax incentives. *Journal of Tax Reform.* 2018;4(2):157–173. https://doi.org/10.15826/jtr.2018.4.2.050

31. Sinenko O.A. Methods of assessing of tax incentives effectiveness in special economic zones: an analytical overview. *Journal of Tax Reform.* 2016;2(3):168–179. https://doi.org/10.15826/jtr.2016.2.3.022

32. Klemm A., Van Parys S. *Empirical Evidence on the Effects of Tax Incentives.* IMF Working paper No. 09/136, 2009. Available at: https://www.imf.org/external/pubs/ft/wp/2009/wp09136.pdf

33. Gordon R.H., Li W. *Provincial and local governments in China: Fiscal institutions and government behavior,* NBER working paper no. W16694, 2011. Available at: https://www.nber.org/system/files/working_papers/w16694/w16694.pdf

34. Suárez Serrato J.C., Zidar O. The structure of state corporate taxation and its impact on state tax revenues and economic activity. *Journal of Public Economics*. 2018;167(C):158–176. Available at: https://www.nber.org/system/files/working_papers/w23653/w23653.pdf

35. Mauda A.B., Saidu S.A. Impact of Tax Incentives on Firms performance: Evidence from Listed Consumer Companies in Nigeria. *Sri Lankan Journal of Business Economies*. 2019;8(2):21–32. Available at: https://mgt.sjp.ac.lk/bec/wp-content/uploads/2020/02/Sri-Lankan-Journal-of-Business-Economics-SLJBE-Vol.-08-2-2019-Nov-Article-02.pdf

36. Vodă A.D., *Dobrotă* G., Cristea L.A. Heterogeneity of fiscal policies. *Annals of the University of Oradea, Economic Science Series*. 2020;1(2):257–264.

37. Stoilova D., Patanov N. Fiscal policy and growth in a small emerging economy: The case of Bulgaria. *Society and Economy*. 2020;42(4):386–402. https://doi.org/10.1556/204.2020.00015

38. Nicodème G., Majewski I. *What happened to CIT collection? Solving the rates-revenues puzzle,* CESifo Working Paper Series 7412, CESifo, 2018. Available at: https://www.cesifo.org/DocDL/cesifo1_wp7412.pdf

39. Abdi H., Williams L.J. Principal component analysis. *Wiley interdisciplinary reviews: computational statistics*. 2010;2(4):433–459. https://doi.org/10.1002/wics.101

40. Đurović Todorović J., Đorđević M., Ristić, M. Estimating the determinants of tax evasion using empirical data. *Proceedings of the Faculty of Economics in East Sarajevo*. 2018;7(16):11–19. https://doi.org/10.7251/ZREFIS1716011D

41. Cotrut M., Munyandi, K. *Tax incentives in the BEPS era*, 2018, IBFD. Available at: https://www.ibfd.org/shop/book/tax-incentives-beps-era

42. Brauner Y. The future of tax incentives for developing countries. Chapters. In: *Tax, law and development*. Edward Elgar Publishing; 2013. https://doi.org/10.4337/9780857930019.00011

43. Belomyttseva O.S., Grinkevich L.S., Grinkevich A.M., Bobek S., Tominc, P., Tax incentives for bond-oriented individual investors: evidence from the Russian Federation. *Journal of Tax Reform*. 2018;4(2):108–124. https://doi.org/10.15826/jtr.2018.4.2.047

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