# THE RELATIONSHIP BETWEEN TAXATION AND ECONOMIC GROWTH. STUDY CASE: CEE COUNTRIES

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*Abstract: Economists argue that macroeconomic activity can be affected differently, through direct taxes and indirect taxes. the impact of tax levies on the economy is contradictory, there are studies that show their negative influence, and others support the positive influence of taxes on the economy of a state. These debates and contradictory results are a consequence of the way of using fiscal policy instruments, within each state, but also of the level of development, as well as of the research method used and the variables included in the model. The objective of the present research refers to the investigation of the impact of tax revenues, but also of social security contributions on the gross domestic product, the main measure of the size of the economy. The reference period within the panel study, it covers the years q12005-q42020, and the empirical results cover both developing and developed nations in the CEE. The choice of year 2005 as the starting period is motivated by highlighting the period before and after the economic-financial crisis, regarding the analysis of the existing interaction between the fiscal system and the economy of the states in the sample. The research methodology involves the study of three heterogeneous panel groups. The analysis method is the random effect panel regression, on the basis of which it was demonstrated that there are significant and positive correlations between the fiscal variables and the gross domestic product. The research results draw attention to the fact that the fiscal effect on the economic growth is lower, but not negligible, in relation to other influencing factors, which were not taken into account in the present analysis.*

*Keywords: indirect taxes, direct taxes, social security contributions, economic growth, panel regression analysis*

*JEL classification: H20, O11, O23, O41*

## 1. Introduction

Over time, a large body of theoretical and empirical literature examining the relationship between taxation and economic growth has accumulated. If we look at the taxation-economy relationship only from a theoretical point of view, we can consider that there are two main effects that can exist: on the one hand, the financing of government expenditure through taxation, which attracts beneficial effects in the economy, and on the other hand, in depending on the structure and level of taxation within states, taxation can have negative macroeconomic effects. On this line, changing the standard of living in the long term can be influenced by the practice of low tax rates, even if they do not have an immediate and significant impact on economic growth (Brașoveanu-Obreja, 2007). It has been found that reductions in tax rates, which are related to labour, income and capital, and increases in consumption tax rates make it possible to amplify growth within an economy, and on the other hand, a possible increase in tax rates that is related to income will negatively affect the participation of individuals in the labour market and enterprises. As for excise duties, they are imposed to influence the consumer's choice towards a healthier lifestyle, that contributes to his overall well-being (Spirakis and Sarantidis, 2017). On the other hand, other research has found that low tax rates have a weak impact on economic growth, while high tax rates have negative and immediate effects on growth (Jaimovich and Rebelo, 2017).

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The dynamics of tax rates can stimulate the entrepreneurial activity of the population, but also the activity of the business environment and can represent a means of attracting foreign and domestic capital, which attracts an increase in the use of labour force. And this, in turn, influences the dynamics of unemployment in a rather favourable way for the country's economy. Therefore, the link between the level of unemployment, as an economic category, and taxation, was studied within 131 countries and it was concluded that the level of taxation of a country is not able to change the level of employment within developed economies, because within these countries a saturation level has been reached in terms of labour productivity and entrepreneurial potential within the national economy and therefore there is no need to attract additional labour. On the other hand, within emerging economies, the situation has been found to be quite similar, but not because of saturation in terms of labour productivity, but rather in the sense of devaluation of labour and practice of underground economy or low wages (Ushakov, 2019).

In order to assess the impact of different types of taxes on economic growth, within OECD member countries, for the period 2000-2011, it was concluded that a reduction in the tax rate in the case of profit tax is necessary, since it affects the most the economic development, being then followed by personal income tax, but also by social security contributions (Macek, 2015). In research at the level of 24 member countries of the European Union, a positive effect of consumption taxes on economic growth was observed, but a negative effect in the case of labour taxes, respectively income tax and social security contributions (Szarowska, 2013). In contrast to these results, but within 28 EU member countries, positive results were obtained on economic growth, in terms of income tax and social security contributions and even in the case of corporate profit taxes, which is in contradiction with previous empirical results. On the other hand, the impact of taxes on production and consumption is in line with other research, being favourable to economic growth (Stoilov, 2017).

As a complement to the last two researches presented, Topal (2019) has study the long-term relationship between the structure of taxes and the gross domestic product, within 13 European economies in transition, and came to the conclusion that the high fiscal burden of direct taxation (tax on income, corporate and property taxes) is associated with weak long-term GDP growth, while the tax burden of indirect taxation is associated with significant long-term GDP growth; and consumption taxes are the most growth-promoting, while all other taxes affect long-term growth. It was also concluded that the developed countries in the EU tend to increase the gross domestic product, and the emerging countries focus on better debt management, in the context of the increase in revenues to the state budget, considering the positive relationship between tax revenues, expenditures and public debt (Vodă and Dobrotă, 2018).

Regarding the impact of indirect taxes on economic growth, Rehman et al. (2020) demonstrated at the level of several Asian countries, that in the period 1996-2018, taxes on goods and services have an encouraging and significant effect on economic growth in 8 Asian countries, while they have negative and significant consequences on economic growth economic within the 4 analysed states. This study concluded that the effect of indirect taxes differs from one country to another, due to the economic situation. An interesting result of this study, refers to the fact that political stability also has a significant effect on economic growth, which can attract efficient revenue collection. Also, through the research of Kalas et al. (2020), it was aimed to estimate the long-term relationship between indirect taxes and economic growth, based on the Johansen cointegration test. Their empirical findings confirm that the revenues obtained from the value added tax and excise duties have a positive and statistically significant effect on the economic growth, measured by the gross domestic product per capita, in the long term.
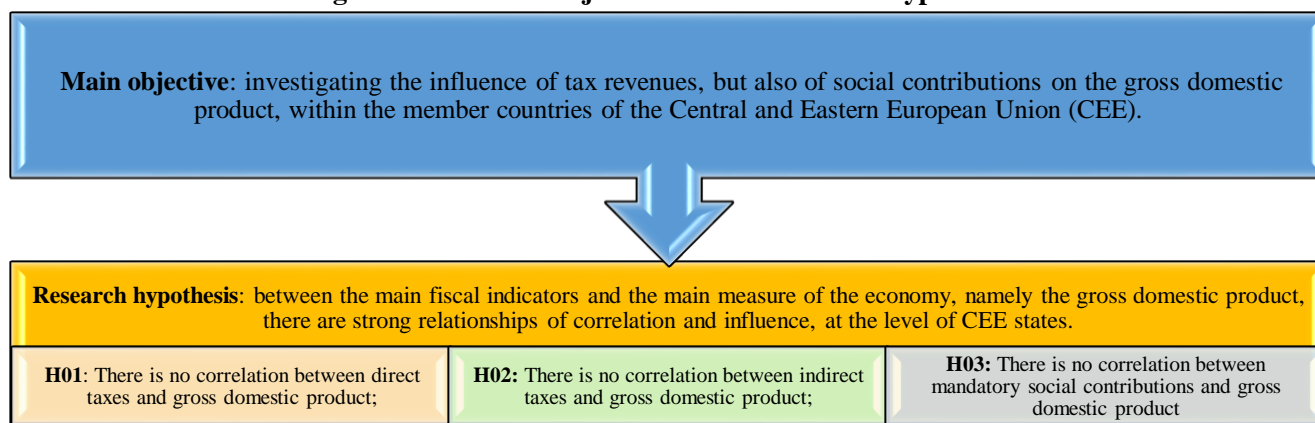
Regarding the impact of direct and indirect taxes on economic growth, Đurović-Todorović (2019) showed that there is a significant relationship between personal income tax, profit tax and gross domestic product in OECD countries, as a result of group correlation matrix analysis with annual data for the 1996-2016 period. This study allows a certain contribution to a better understanding of the relationship between taxation and economic growth in OECD countries. The results also provide guidance to decision makers on taxes and their correlation with economic growth and identify which forms of taxation are essential. Also, through research conducted by Basha (2022), the results of the

study indicate that direct taxes have a significant negative effect on economic growth. This research has significant implications for the government and policy makers and it is recommended that they make significant changes in levying direct and indirect taxes in a way that will contribute positively to the economic development of the country.

Hakim (2020), in his research, aimed to examine direct and indirect taxes at the level of 51 emerging and developed countries. The findings of his study suggest that direct taxes have a negative and significant effect on economic growth, while indirect taxes have a positive but insignificant relationship with economic growth. Furthermore, this study found a mixed result regarding the significant contribution of both direct and indirect taxes to tax revenue collection in a country. It indicates that indirect taxes such as consumption taxes and taxes on goods and services are insignificant and ineffective in maximizing tax revenue collection due to the existence of high hidden economy. Also, Stermugu and Ballkoçi (2022) analysed the impact of taxes on economic growth, obtaining relevant results for the period 2012-2021, respectively the results of the statistical analysis indicate that direct taxes and indirect taxes both have a significant positive impact on economic growth. But, the impact of direct taxes is more positive, than the impact of indirect taxes. On the other hand, Korkmaz and Korkmaz (2023), through the research carried out, obtained relevant results regarding the taxation-economy relationship, respectively direct taxes have a negative impact on economic growth, while indirect taxes have a positive impact on economic growth.

According to the many studies carried out in the literature, regarding the influences exerted by taxes on the economy, it was found that taxes with a direct influence on the taxpayer, respectively income and profit taxes, but also social security contributions have negative effects on economic growth, while consumption taxes, which are part of the category of invisible taxes, are much easier to manage, because at the level of nations the resistance to their payment is not very high. Also, with regard to tax rates, it has been observed that their decrease has weak influences on economic growth, while their increase exerts a strong, but negative influence on the economy.

**Figure 1: Research objective and the research hypotheses**



**Main objective**: investigating the influence of tax revenues, but also of social contributions on the gross domestic product, within the member countries of the Central and Eastern European Union (CEE).

**Research hypothesis**: between the main fiscal indicators and the main measure of the economy, namely the gross domestic product, there are strong relationships of correlation and influence, at the level of CEE states.

| **H01**: There is no correlation between direct taxes and gross domestic product; | **H02**: There is no correlation between indirect taxes and gross domestic product; | **H03**: There is no correlation between mandatory social contributions and gross domestic product |

Source: made by authors

Regarding the main objective of this research, it aims to investigate the influence of tax revenues, but also of social contributions on economic growth, within the member countries of the Central and Eastern European Union (CEE). Thus, in order to achieve the general objective, the research hypothesis refers to the fact that, between the main fiscal indicators and the main measure of the economy, namely the gross domestic product, there are strong relationships of correlation and influence, at the level of CEE states. For this reason, the main hypothesis of the research is broken down into 3 secondary null hypotheses, according to figure 1.

## 2. Research methodology

The objective of this research is to investigate the influence of fiscal revenues, but also of social security contributions on the gross domestic product, within the six member countries of the Central and Eastern European Union (CEE). Thus, in order to achieve the general objective, the hypothesis of the research refers to the fact that, between the main fiscal indicators and the main measure of the economy, namely the gross domestic product, there are strong relationships of correlation and influence, at the level of CEE states.

For the study of the existing relationship between the gross domestic product (PIB) and taxation, the variables are mentioned in table 1. As can be seen in the table, the variables of this research were extracted from the Eurostat database. Direct taxes (DIR) are composed of current taxes on the income and wealth of individuals, households, but also on the income or profit of corporations, to which capital taxes are added. Indirect taxes (INDIR) are composed of taxes on production and imports, of which we mention the most important ones, namely value added tax, customs duties and excise duties. Regarding social security contributions (SSC) we have taken into account net social contributions, which are composed of the actual social contributions of employers, of households, imputed contributions and supplementary social contributions of households. The category of actual social contributions of households includes social contributions payable under social insurance systems, in their own name, by employees, self-employed workers or those who are not employed.

**Table 1: Presentation of the variables included in the study of taxation and the economy of CEE states**

| VARIABLE | NOTATION | UNIT OF MEASURE | CLASSIFICATION ACCORDING TO THE EUROPEAN SYSTEM OF ACCOUNTS 2010 | SOURCE |
|---|---|---|---|---|
| Gross domestic product | PIB | Millions of euros | B1.GQ Gross domestic product | namq_10_gdp, Eurostat |
| Direct taxes | DIR | Millions of euros | D.5 Current taxes on income, wealth, etc. D.91 Taxes on capital | gov_10q_ggnfa, Eurostat |
| Indirect taxes | INDIR | Millions of euros | D.2 Taxes on Production and Imports | gov_10q_ggnfa, Eurostat |
| Social security contributions | SSC | Millions of euros | D.61 Net social contributions | gov_10q_ggnfa, Eurostat |

Source: made by the author

The present study aims to investigate the impact of tax revenues, but also of social security contributions on the gross domestic product, the main measure of the quantitative size of the growth economy (Cristea et al., 2021), with the help of the statistical program EViews 2010. Reference period in the panel study, it is between the years Q12005 and Q32020, the data being quarterly, and the empirical results cover both nations with developing economies, namely Romania, Poland and Hungary, as well as those with developed economies within CEE, namely the Czech Republic, Slovakia and Slovenia. The choice of 2005 year, as the starting period, is motivated by highlighting the period before and after the economic-financial crisis, regarding the analysis of the existing interaction between the fiscal system and the economy of the member states of the Central and Eastern European Union.

In the present study, we deal with three panel groups, of heterogeneous type, because the number of sections is smaller than the number of observations over time. In our case, we have a panel with 6 sections and 63 time series, respectively 379 observations (hereinafter referred to as the "ECE Panel", which includes all six CEE member countries) and two panels of 3 sections and 63 time series each, first it is related to the three emerging countries (hereinafter referred to as "Panel E") and the second it is related panel of developed countries (hereinafter referred to as "Panel D"), totaling 189 observations per panel.

For a better accuracy of the model, the quarterly data extracted from the Eurostat database, initially expressed in millions of euros, were transformed into real terms, by dividing them by the GDP

deflator (2015=100). The time series related to fiscal revenues and contributions also included seasonal fluctuations, thus the STL Decomposition seasonal adjustment procedure was applied, from the Eviews program, which is a seasonal adjustment method, with the help of which a series is decomposed into seasonal components. This method is having two main advantages over other seasonal adjustment methods, namely: it folds on panel data and works on any frequency of data with irregular patterns and missing values. Also, all data series were transformed into logarithmic form, to mitigate the differences in variables between the analyzed countries.

Starting from the fact that there are significant correlations between the fiscal variables and the gross domestic product, in the following part we will use the regression analysis at the level of all six countries. Using panel data regression analysis will help us estimate the relationships between the dependent variable (economic variable) and the independent variables (fiscal variables). Panel data refers to a multidimensional data series over a 15-year time period. In order for the variables to be included in the regression analysis, it is necessary that the value of p to be lower than α (α=0.05). The regression equation for panel data is of the form: $Y_{it}=a+bX1_{it}+\ldots+Xn_{it}+e_{it}$, where:
- Y represents the dependent variable;
- X1..Xn represent the independent variables;
- a, b - the regression coefficient (the amount by which Y changes when X changes by one unit);
- e – the error term
- i, t- the index i shows the cross-sectional dimension and the index t the temporal one.

## 3. Descriptive analysis

In order to achieve the proposed objective, a preliminary step in terms of the interdependence between the dependent variable GDP and the independent fiscal variables, refers to the analysis of the correlation between them, with the help of the Eviews program, starting from the previously mentioned research hypothesis, which will be divided into 3 null hypotheses, namely:

H01: There is no correlation between direct taxes and gross domestic product;
H02: There is no correlation between indirect taxes and gross domestic product;
H03: There is no correlation between mandatory social contributions and gross domestic product.

**Table 2: Correlation between the variables included in the study, at the level of CEE countries**

| CEE emerging economies | | | | | CEE developed economies | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Observations included: 189 | | | | | Observations included:189 | | | | |
| Correlation | | | | | Correlation | | | | |
| Probability | L_PIB | L_INDIR | L_DIR | L_SSC | Probability | L_PIB | L_INDIR | L_DIR | L_SSC |
| L_PIB | 1.0000 | | | | L_PIB | 1.0000 | | | |
| | ----- | | | | | ----- | | | |
| L_INDIR | 0.948189 | 1.0000 | | | L_INDIR | 0.983914 | 1.0000 | | |
| | 0.0000 | ----- | | | | 0.0000 | ----- | | |
| L_DIR | 0.942702 | 0.938793 | 1.0000 | | L_DIR | 0.975224 | 0.981494 | 1.0000 | |
| | 0.0000 | 0.0000 | ----- | | | 0.0000 | 0.0000 | ----- | |
| L_SSC | 0.968833 | 0.971408 | 0.951958 | 1.0000 | L_SSC | 0.986877 | 0.990700 | 0.986984 | 1.0000 |
| | 0.0000 | 0.0000 | 0.0000 | ----- | | 0.0000 | 0.0000 | 0.0000 | ----- |

Source: made by the authors, through the Eviews program

According to table 2, within emerging countries as well as within developed countries, there are significant correlations between the variables chosen in the model. The probability value is 0.000 in all cases, i.e. the value of p<0.05, which means that there is a statistically significant correlation between the analyzed variables, so the three null hypotheses are rejected. In both emerging and developed countries there is a significant positive correlation between direct, indirect taxes, social security contributions and gross domestic product, greater than 97% in developed countries and greater than 94% in emerging countries.

The values of the variables were transformed into real data and seasonally adjusted, for a better comparison in time and space. Regarding the evolution of the fiscal variables within the states with emerging economies, according to figure no. 2, we can see that in all three countries, Romania, Poland and Hungary, indirect taxation and social contributions, are bringing significant amounts to the state budget, over the years analyzed, with an upward trend, with slight fluctuations between quarters. The tendency of the state to resort predominantly to taxation on consumption, but also on work, is thus highlighted, because these two segments are the easiest to manage, considering that taxes on consumption are part of the category of invisible taxes, and at the level of population, the resistance to paying consumption taxes is not very high.

**Figure 2: Quarterly evolution of fiscal revenues and social contributions (millions of euros) in CEE states**



Source: made by the authors, through the Eviews program

As for the social security contributions, even if their destination is established and known in advance, the quotas applied at the state level dictate their trend. This is very clearly observed in the case of Romania, where starting from year 2018, the level of social security contributions had an upward jump, mostly caused by the transfer of contributions to the responsibility of the employee. It can be seen, in the case of Poland, that their value is almost equal, with social security contributions exceeding indirect taxation, which can translate into more social benefits granted to the population, while in the case of Hungary, they represent the country's second source of income, following the example of the other two states, where consumption taxation prevails.

Regarding direct taxation, in the case of emerging states, it can be observed that at the beginning of the economic crisis, after 2008, there was a downward curve of it, which had a tendency to maintain until 2015, and then followed a trend ascending until the 2nd quarter of 2020, where in the case of Poland the sharpest decrease is observed. The downward trend of direct taxation, during the economic crisis, is not as visible in developed states.

Regarding the evolution over time, of the fiscal variables within the states with developed economies according to figure no. 2, we can see that in the case of all three countries, Czechia, Slovakia and Slovenia, the largest contribution to the national budget is made by social security contributions, which are superior to indirect taxation. This fact it is justified of the need for sufficient resources for government expenditures related to social benefits. A sudden downward trend, in the case of indirect taxation, can be observed in the second quarter of 2020, when the value brought to the state budget by this type of taxation experienced the uncertainty launched by the worldwide pandemic, which according to the graphs, made the consumption decision more frugal for all six countries studied. But, at the moment, no more data can be provided regarding the impact of this shock on CEE economies.

## 4. Regression analysis within CEE states and research results

The first step in carrying out the regression analysis refers to the choice of the type of analysis, namely the panel analysis or simple regression analysis (Baltagi, 2008), namely the choice between: the simple regression model, the regression model with fixed effect and the model with random-effect, shown in table 3.

**Table 3: Simple, fixed-effect and random-effect regression models**

| Periods included: 63 | | | |
|---|---|---|---|
| Cross sections included: 6 | | | |
| Total observations: 378 | | | |
| *The simple regression model* | | | |
| **Variable** | **Coefficient** | **Standard error** | **Prob.** |
| **LOG_INDIR** | 0.448924 | 0.031783 | 0.0000 |
| **LOG_DIR** | 0.195858 | 0.042315 | 0.0000 |
| **LOG_SSC** | 0.365802 | 0.041548 | 0.0000 |
| **C** | 2.064216 | 0.083580 | 0.0000 |
| **$R^2$** | 0.971509 | | |
| *The random effect regression model* | | | |
| **LOG_INDIR** | 0.307349 | 0.023243 | 0.0000 |
| **LOG_DIR** | 0.093033 | 0.015446 | 0.0000 |
| **LOG_SSC** | 0.411270 | 0.021300 | 0.0000 |
| **C** | 3.650569 | 0.155483 | 0.0000 |
| **$R^2$** | 0.879801 | | |
| *The fixed effect regression model* | | | |
| **LOG_INDIR** | 0.303356 | 0.023351 | 0.0000 |
| **LOG_DIR** | 0.091564 | 0.015464 | 0.0000 |
| **LOG_SSC** | 0.411793 | 0.021319 | 0.0000 |
| **C** | 3.690615 | 0.136420 | 0.0000 |
| **$R^2$** | 0.996840 | | |

Source: made by the authors, based on data from the Eviews program

As can be seen in the centralizing table 3 of the three methods, the value of p is below 5% in all cases. In the case of the simple model, according to the coefficient of determination $R^2$ of 97.14% there is a highly significant and positive correlation, from a statistical point of view, between the analyzed variables. However, in this situation, it is necessary to apply the Wald test, from Eviews, result in table 4, to see if the null hypothesis $H_0$ is rejected, respectively "the simple regression model is accepted" and if the alternative hypothesis is accepted, according to which " the fixed-effect regression model is the most appropriate".

**Table 4: Wald Test**

Wald Test:

| Test Statistic | Value | df | Probability |
|---|---|---|---|
| t-statistic | 14.12470 | 374 | 0.0000 |
| F-statistic | 199.5071 | (1, 374) | 0.0000 |
| Chi-square | 199.5071 | 1 | 0.0000 |

Source: made by the authors, based on data from the Eviews program

According to the table above, in our case the null hypothesis is rejected, so the alternative hypothesis is accepted, namely "the regression model with fixed effect is the most suitable". And in the case of the fixed effects model, according to the coefficient of determination $R^2$ there is a statistically significant and positive correlation.

To test which model is most compatible in analyzing existing panel data, i.e., the choice between the fixed-effect regression model and the random-effect model, it is necessary to apply the Durbin-Hausman test in Eviews, the result of which is centralized in the table 5. If the null hypothesis $H_0$: "the random effect model is close" is rejected, the alternative hypothesis Ha: "the fixed effect regression model is the most suitable" will be accepted.

**Table 5: Durbin-Hausman Test**

Hausman Test

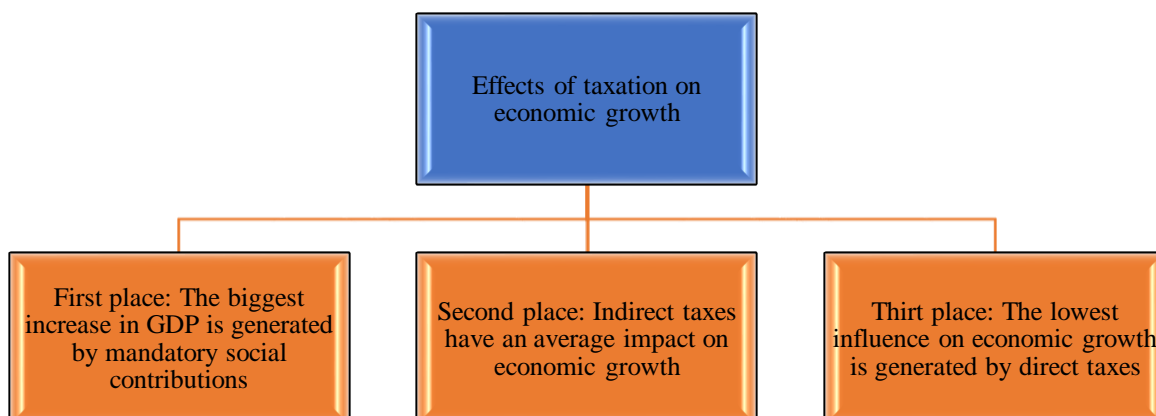| Test summary | Chi-Sq. Statistic | Chi-Sq. d.f. | Prob. |
|---|---|---|---|
| Random cross section | 3.882737 | 3 | 0.2744 |

Source: made by the authors, based on data from the Eviews program

According to the Hausman test, the p-value of 0.2744 is greater than 5%, so the null hypothesis was not rejected, and the most appropriate model for the analysis in question is the random-effects regression model, in which the error is assumed to be totally random and uncorrelated (Baum, 2001). According to the random effect model, there is a positive and significant relationship between the analyzed variables, according to the coefficient of determination $R^2$ of 87.98%. This means that the fiscal variables, within the Central and Eastern European Union member states, contribute to the growth of the gross domestic product according to equation (1), below.

$$LOG\_PIB = 0.3073*LOG\_INDIR + 0.093*LOG\_DIR + 0.411*LOG\_SSC + 3.650 \qquad (1)$$

According to equation (1) and figure 3, regarding the economic dependent variable and the fiscal variables there is a positive relationship of influence, the research hypothesis being accepted, considering that the three previously formulated null hypotheses were rejected. Through this consideration, it can be concluded that both direct and indirect taxes and social contributions have a positive influence on the economy of the member states of the Central and Eastern European Union.

**Figure 3: The results of the regression analysis between taxation and economic growth**

Effects of taxation on economic growth

First place: The biggest increase in GDP is generated by mandatory social contributions

Second place: Indirect taxes have an average impact on economic growth

Thirt place: The lowest influence on economic growth is generated by direct taxes

Source: made by authors

Through the regression analysis, it was possible to establish a model regarding the links that are made between the variables, being analyzed the regression relationship between the fiscal variables and economic growth, at the level of the six countries, respectively a single panel with 6 sections and 63 series of time, resulting in a total of 378 observations. By interpreting the equation (1), the greatest increase is generated by social contributions, whose surplus by 10 units will bring an economic growth of 4.11 units, followed by indirect taxes, whose increase by ten units of measure, will bring an increase of 3,073 units to the GDP. The lowest economic growth, respectively of 0.93 units, is generated by direct taxes. By analogy, the decrease of independent variables will bring minus changes in the economy of the member states of the Central and Eastern European Union.

In conclusion, the general objective of the research was achieved, because it was possible to investigate the influence of tax revenues, but also of social contributions on the gross domestic product, through the regression analysis. As for the constant obtained in the analysis, it is superior to the regression coefficients related to the independent variables. This draws attention to the fact that the fiscal effect of the variables included in the model on economic growth is lower, but not negligible, in relation to other influencing factors, which were not taken into account in the present analysis. Other influencing factors that can bring important economic changes include: unemployment rate, human development index, level of investment, level of education, government efficiency, shadow economy and corruption etc.

## 5. Conclusions

The evaluation and measurement of the economy has always been a topical element among economists, with the period in which any society could be seen as a complex system and whose management had to be carried out in the timeliest manner. Being the most recognized way of sizing the economic performance, the analysis of the gross domestic product in relation to the main fiscal variables can represent a point of reference for the understanding, in the first phase, of the existing interactions between the economy and taxation. In the second phase, based on existing relationships, it could represent the starting point in highlighting the relationship between taxation and general welfare of the country, because it is the main material and quantitative factor, whose component elements are useful and provide information closely related to well-being (Cristea, 2019).

With the help of the regression analysis, within this research, it was demonstrated that there are significant, positive correlations between the fiscal variables and the gross domestic product, in the analyzed period, in which the regression coefficients related to the independent variables were lower than the constant in the model. This draws attention to the fact that the fiscal effect of the included variables on the gross domestic product is lower, but not negligible, in relation to other influencing

factors, which were not taken into account in the present analysis. Also, the main hypothesis of the research was tested and accepted, considering that between the main fiscal indicators and the main measure of the economy, there are strong relationships of correlation and influence, at the level of CEE states. Considering this aspect, the general objective of the research was fulfilled, by investigating the influence of tax revenues, but also of social contributions on the gross domestic product, influences which, according to the random effect regression analysis, were positive and significant, at a relevance level of 87.98%.

Through this research, one of the most well-known things has been reinforced, namely the fact that government revenues are obtained in the largest proportion from taxes and social contributions. Therefore, we believe that governments should aim for revenues in excess of expenditures, so that investments in quality public goods and services, such as those allocated to investment, infrastructure, education and health, to be possible. All this with the aim of achieving a general well-being of society. As methods of action in this direction, would be the reduction of tax rates. Because in this way, the disposable income of individuals will increase, the level of their expenditure on goods and services will also increase, and in this way the production and income created in the economy will also increase. In this way, the decrease in tax rates will increase the profitability of companies, and there will be an increase in the number of investments that they will make. And an increase in investment will directly increase the rate of economic growth. We can conclude that the economic and fiscal situation of a state is in a continuous cycle, whereby any movement of a fiscal nature will cause positive or negative effects on the general economy. Also, through the effects of taxation on the economy, the expenditure for the development of human capital can be directed, which can have long-term results, translated by increasing the social and economic well-being of the population.

The results obtained in this research are in line with other studies, which showed that most taxes have a positive impact on economic growth, but not all taxes have the same impact on it, being more or less significant. Among the most relevant studies are those of the researchers also mentioned in the introduction part, respectively: Andrašić (2018), Rehman et al. (2020), Kalas et al. (2020), Stermugu and Ballkoçi (2022), Korkmaz and Korkmaz (2023), etc. However, the results reached by this research are opposite to Grdinić et al. (2017) study, given that they concluded that all forms of taxation have a negative impact on economic growth. These diametrically opposed results can be caused by the data used within the applied models, namely the focus of the research on tax categories (income tax, profit tax, consumption tax, etc.) and not their treatment by types of taxes, namely direct taxes, indirect and social contributions. Also, the research carried out by Gashi et al. (2018), through the empirical analysis of 35 OECD member countries, highlights the fact that personal income tax has a positive effect on economic growth, while profit tax and social security contributions have a negative, but weakly significant, impact on growth economic. Interesting results were obtained by Werekoh (2022), who through his research showed that taxation and tax compliance promote economic development. The findings demonstrated that in formulating strategies to improve voluntary tax compliance, it is essential for authorities to know, understand and appreciate the tax compliance behavior of taxpayers, as there is a need to build trust between citizens and the state.

Regarding the limitations of the research, they refer to the rather small sample of countries, which may affect the results obtained. But, considering the objective of the research, the limitation of the sample is justified, aiming only at the study of the existing situation within the former communist countries of Central and Eastern Europe, members of the European Union. Another important limitation of the research refers to the fact that the results of the study can differ greatly, in the long term, given the dynamic nature of the legislative changes in the tax field. Another limitation is the fact that our study period does not include the period affected by the COVID-19 pandemic, and for this reason, the continuation of the study regarding the influence of taxation on the economy, as well as the general well-being of society, is strengthened.

In order to reduce the limits of the research, the main directions of future action are directed towards focusing attention on the study of taxation, by focusing on the structure and level of taxation,

for example: the analysis of the main types of taxes in relation to the welfare elements; the expansion of the study sample, respectively all the member states of the European Union, in order to be able to give a broad picture, regarding the existing situation within the developed and emerging states; as well as the extension of the analyzed period, by offering forecasts over time, with the aim of creating an index to measure the well-being of society, by taking into account the relationship mentioned above, between the three elements studied in this research.

**Authors` contributions**
LAC and DMU conceived the study and were responsible for the design and development of the data analysis. LAC and DMU were responsible for data collection, analysis and data interpretation. LAC wrote the first draft of the article; DMU was responsible for resources and validation.

**References**
- Andrašić, J., Kalaš, B., Mirović, V., Milenković, N., & Pjanić, M. (2018). Econometric Modelling of Tax Impact on Economic Growth: Panel Evidence from OECD Countries. *Economic Computation & Economic Cybernetics Studies & Research*, 52(4)
- Baltagi, Badi H. (2008).*Econometric Analysis of Panel Data*. Chichester: John Wiley & Sons
- Basha, M. H, (2022). Evaluating the Impact of Direct Taxes on Economic Growth: Empirical Evidence from Jordan. *Asian Economic and Financial Review*, 12 (8), 627–635
- Baum, C. F. (2001). Residual diagnostics for cross-section time series regression models; *The Stata Journal,* Vol. 1, No. 1, pp. 101–104
- Cristea, L. A., Voda, A. D., & Ungureanu, D. M. (2021). Economic growth and development, promoters of national well-being. *Revista Economica*, 73(Special), 86-99
- Cristea, L. A. (2019). Increasing the Quality of the Taxes and Fees Impact Assessment on the Romanian Economy. *Quality-Access to Success*, 20, WOS:000459686300087
- Đurović-Todorović, J., Milenković, I. and Kalaš, B. (2019).The Relationship between Direct Taxes and Economic Growth in OECD Countries. *Economic Themes*, 57 (3), 273–286
- Gashi, B., Asllani, G., & Boqolli, L. (2018). The effect of tax structure in economic growth. https://www.um.edu.mt/library/oar/bitstream/123456789/43727/1/The_Effect_of_Tax_Structure_in_Economic_Growth_2018.pdf
- Grdinić, M., Drezgic, S., & Blažić, H. (2017). An Empirical Analysis of the Relationship between Tax Structures and Economic Growth in CEE Countries. *Ekonomicky Casopis*, 65, 426-447
- Hakim, T. A. (2020). Direct Versus Indirect Taxes: Impact on Economic Growth and Total Tax Revenue. *International Journal of Financial Research.* 11 (2). 146–153
- Jaimovich, N., and Rebelo, S. (2017). Nonlinear effects of taxation on growth, *Journal of Political Economy*, 125(1), 265-291
- Kalaš, B., Mirović, V. and Andrašić, J. (2020). Cointegration Analysis of Indirect Taxes and Economic Growth in the Republic of Serbia. *Anali Ekonomskog fakulteta u Subotici*, 56 (44), 3–10
- Korkmaz, S., & Korkmaz, Ö. (2023). The Effect of Direct and Indirect Taxes on Economic Growth in the Turkish Economy: The Ardl Boundary Test Approach. available at Research Square https://doi.org/10.21203/rs.3.rs-2493055/v1

- Macek, R. (2015). The impact of taxation on economic growth: case study of OECD countries. *Review of economic perspectives*, *14*(4), 309-328
- Spirakis G., Sarantidis A. (2017).The Impact of Tax Policy on the Economic Growth of Greece. In: Thomakos D., Nikolopoulos K. (eds) Taxation in Crisis. *Palgrave Macmillan Studies in Banking and Financial Institutions*. Palgrave Macmillan, Cham, https://doi.org/10.1007/978-3-319-65310-5_16
- Rehman, Z. U., Khan, M. A. and Tariq, M. (2020). Indirect Taxation and Economic Growth Relationship: Empirical Evidence from Asian Countries. *Pakistan Journal of Humanities & Social Sciences Research*, 03 (01), 131–144
- Stermugu, A. and Ballkoçi, V. (2022).The Impact of Direct Tax and Indirect Tax on the Economic Growth in Albania. *American International Journal of Business Management*, 5 (09), 82–87
- Stoilov, D. (2017). Tax structure and economic growth: Evidence from the European Union, *Contaduría y Administración*, Volume 62, Issue 3, Pages 1041-1057 , https://doi.org/10.1016/j.cya.2017.04.006
- Szarowska, I. (2013). Effects of taxation by economic functions on economic growth in the European Union (No. 59781). University Library of Munich, Germany
- Topal, M, H. (2019).An analysis of the relationship between tax structure and gross domestic product in European transition economies. *Journal of European Theoretical and Applied Studies*, 7(2), pp. 1-19.
- Ushakov, D. (2019).Tax System As A Factor Of Unemployment Dynamics. *Actual Economy: local solutions for global challenges*, 83-88
- Vodă, A., D. & Dobrotă, G. (2018): Implications of fiscal stimuli in macroeconomic plane at the level of some developed and emerging countries. *Annals of Constantin Brancusi University of Targu-Jiu*. Economy Series. Special Issue
- Werekoh, E. A. (2022).The Effects of Taxation on Economic Development: the Moderating Role of Tax Compliance Among SMEs