

Review Paper

# Tax Policy: Impact on Business Development and Economic Dynamics of the Country

Igor Sopronenkov<sup>1</sup>, Nataliia Zelisko<sup>2\*</sup>, Orysia Vasylyna<sup>3</sup>, Iryna Lutsenko<sup>4</sup> and Volodymyr Saienko<sup>5</sup>

<sup>1</sup>Interregional Academy of Personnel Management, Kyiv, Ukraine

<sup>2</sup>Department of Business and Trade, Faculty of Management, Economics and Law, Lviv National Environmental University, Lviv, Ukraine

<sup>3</sup>Department of Economy, Faculty of Management, Economics and Law, Lviv National Environmental University, Lviv, Ukraine

<sup>4</sup>Department of Finance, Faculty of Finance and Banking, Odesa National Economic University, Odesa, Ukraine

<sup>5</sup>Department of Innovation Management, Faculty of Social Sciences, Academy of Applied Sciences – Academy of Management and Administration in Opole, Poland

\*Corresponding author: zeliskon@ukr.net (ORCID ID: 0000-0002-2467-5585)

Received: 14-08-2023

Revised: 26-11-2023

Accepted: 05-12-2023

## ABSTRACT

The optimal system, structure, and effectiveness of the tax system depend on many factors and are characterized by several differences depending on the country's social and economic development. The purpose of the academic paper is to identify the features of the impact of the EU-27 countries' tax policy on business development and economic dynamics to determine the differences in this correlation. Methodology. The statistical and regression analysis of the tax structure of the EU-27 countries is used in the scientific article to evaluate its correlation with economic dynamics for the period 2000-2022 based on the average values for the following periods: 2000-2005, 2006-2010, 2011-2015, and 2016-2022. The results demonstrate a slowdown in economic growth in the EU-27 in the long run from 2000 to 2019 and economic growth in 2021 to 2022 with no significant changes in the tax structure. The dynamics of tax revenues were revealed to be stable, despite their different shares in GDP. In general, it is possible to assert a low level of correlation between the share of tax revenues in GDP and the annual GDP growth rate. The established regression model shows only a 9% change in GDP dynamics depending on the change in the share of tax revenues to the budgets of the EU-27 countries. The research has identified three groups of countries by the share of tax revenues, by the share of taxes on income, profit and capital gains, and by the share of taxes on goods and services in the EU-27.

## HIGHLIGHTS

- ① **Low Correlation Between Tax Structure and Economic Growth:** The research shows that there is a low level of correlation between the share of tax revenues in GDP and annual GDP growth rates in the EU-27 countries. The constructed regression model indicates that only a 9% change in GDP dynamics is dependent on changes in the share of tax revenues to the budgets of these countries.
- ① **Complex Relationship Between Tax Structure and Growth:** The academic paper reveals that the relationship between tax structure and economic growth is complex and ambiguous. It identifies three groups of countries based on the share of tax revenues, taxes on income, profit, and capital gains, and taxes on goods and services. This differentiation emphasizes the varying impact of tax policies on economic dynamics, with different countries exhibiting different patterns.

**Keywords:** Tax policy, tax structure, economic dynamics, business development, economic growth

**How to cite this article:** Sopronenkov, I., Zelisko, N., Vasylyna, O., Lutsenko, I. and Saienko, V. (2023). Tax Policy: Impact on Business Development and Economic Dynamics of the Country. *Econ. Aff.*, 68(04): 2025-2034.

**Source of Support:** None; **Conflict of Interest:** None



The optimal system, structure, and effectiveness of the tax system depend on many factors and are characterized by several differences depending on the country's social and economic development (Stoilova, 2017). Numerous countries have achieved high rates of economic growth due to the reduction of particular types of tax rates (Kindsfaterienė *et al.* 2008). However, there are still discussions in the academic literature about the interconnection of tax policy, growth, and business development (Neog and Gaur, 2020). Many studies have empirically proven the varying degree of impact of taxes and the tax structure on the economy, and various types of activities of economic agents in different periods (Liu *et al.* 2015; Ojong *et al.* 2016; Stoilova, 2017; Zhang *et al.* 2018). Scientific works also argue that economic growth can be stimulated by simultaneously increasing consumption taxes and reducing taxes on labour and capital (Stoilova, 2017; Neog *et al.* 2020). The publications have also revealed no changes in the economic dynamics and activities of business entities due to changes in taxes in the short- or long-term (Prillaman *et al.* 2014; Neog *et al.* 2020). Few empirical studies have documented the long-term impact of tax policy on various aspects of business and economic development. Therefore, there is uncertainty about the real impact of the level of business taxation on the state's economy (Prillaman *et al.* 2014).

Thus, the researchers' standpoints differ not only on the impact of taxes on the economy and business development but also on the importance of different types of taxes. According to (Kindsfaterienė *et al.* 2008), some scholars pay attention to corporate income taxes, while others focus on the level of capital or labour taxes. In general, one can agree that any type of tax is generally contrary to the economic principles of business development and GDP growth (Kindsfaterienė *et al.* 2008).

Despite various empirical findings of scholars, the level of tax burden and its distribution among business entities, or tax policy in general, is one of the most significant factors determining the attractiveness of the business environment and economic dynamics (Kindsfaterienė *et al.* 2008).

Given the aforementioned, the purpose of the academic paper is to identify the features of the impact of the EU-27 countries' tax policy on

business development and economic dynamics to determine the differences in this interaction.

## LITERATURE REVIEW

Studies of particular types of taxes, the impact of tax policy on business activities, companies, economic dynamics, and certain economic indicators predominate in the scientific literature (Bazaluk *et al.* 2020; Kotenko *et al.* 2020; Kryshchanovych *et al.* 2021). For instance, Liu and Lu (2015) study the impact of carbon tax policy on social-economic indicators in China. On the whole, the carbon tax is effective forasmuch as it contributes to the reduction of carbon emissions and has a moderate impact on China's macroeconomy. Zhang and Zhang (2018) proved that a carbon tax can significantly influence economic growth in China. Murray and Rivers (2015) revealed that the carbon tax had a minor influence on the economy in North America (British Columbia) as a whole and had little impact on the income distribution of the population. Yagan (2015) examines how the reform of the US dividend tax rate in 2003, in particular, its reduction, stimulated corporate investment and labour income growth. According to empirical estimates, the reduction in dividend taxes resulted in zero changes in corporate investment and employees' compensation (Yagan, 2015). Backholer *et al.* (2016) estimate the differential impact of taxes on sweetened beverages, including on their purchase and social and economic status, revealing a consistent financial regression of this type of tax and different impacts on the social and economic status of various segments of the population.

Vegh and Vuletin (2015) study the cyclicity of tax rates and tax policy by creating a new database of tax rates for 62 countries for the period 1960-2013, including rates on corporate income, personal income, and value-added tax rates. The authors have concluded that tax policy in industrialized countries is acyclical, while it is predominantly procyclical in developing countries (Vegh and Vuletin, 2015).

At the same time, a significant number of publications in the scientific literature are devoted to tax revenues, tax structure, and the impact of certain types of taxes on the economy (Vegh and Vuletin, 2015; Stoilova, 2017; Adam *et al.* 2015; Neog and Gaur, 2020; Iatsyshyn *et al.* 2020; Latysheva *et*

*al.* 2020; Kovaleva *et al.* 2020; Ostapenko *et al.* 2020). Stoilova (2017) examines the impact of tax structure on economic growth in the EU-28 countries over the period 1996-2013, aiming to identify differences between states in terms of overall tax burden and tax structure. The author concludes that a tax structure based on particular types of consumption, personal income and property taxes is more conducive to economic growth. Neog and Gaur (2020) examined the short- and long-term correlation between tax structure and economic growth in India over the period 1980-2016. Based on the analysis, it was found that the share of income tax, the share of corporate tax, and the share of excise tax have negative effects on growth in the long run, while the share of consumption tax contributes to growth. The share of corporate income tax also reduces economic growth in the short term. The authors have also discovered the existence of a long-term correlation between the variables under study.

Adam, Kammas and Lapatinas (2015) found that countries with higher levels of inequality rely more heavily on capital taxation than on labour income taxation. Prillaman and Meier (2014), using panel data for 50 US states for 1977-2005, found no effect of reducing business taxes on the following indicators: gross state product, job creation, personal income, poverty rate, and business start-ups (Prillaman and Meier, 2014). Ojong, Anthony and Arikpo (2016) revealed a significant link between oil income tax and economic growth in Nigeria, between non-oil revenues and economic growth. At the same time, there is no significant correlation between corporate income tax and the growth of the Nigerian economy (Ojong *et al.* 2016). The scientific article by Kindsfaterienė and Lukaševičius (2008) describes the economic development of Lithuania after the regaining of independence, the patterns of formation of the tax system, and changes in the tax system before the accession to the EU. The authors pay the greatest attention to the level of estimation of enterprises' income. According to the results of the budget formation, the reduction of corporate income tax rates has led to positive changes in economic dynamics. State budget revenues from income taxes increased, and the shadow economy decreased (Kindsfaterienė and Lukaševičius, 2008). Giroud and Rauh (2019) estimate the impact of state taxes on the business activity of multinational

firms and their organizational forms. As a result, it was found that for corporations of category C, employment and the number of enterprises are characterized by a short-term elasticity of the corporate tax (from -0,4 to -0,5), which does not depend on changes in personal income tax rates. The cross-cutting activities of business entities demonstrate a tax elasticity ranging from -0,2 to -0,4 concerning personal income tax rates while being stable concerning corporate tax rates (Giroud and Rauh, 2019).

## METHODS

The statistical analysis of the tax structure of the EU-27 countries and its correlation with economic dynamics is used in the academic paper. To evaluate the correlation, the following indicators have been analyzed:

1. GDP growth (annual %) is the annual percentage growth rate of GDP in market prices based on aggregated data in constant prices of 2015 in USD. GDP is the sum of the gross value added of all resident producers in the economy, including any taxes on products and excluding any subsidies that are not included in the value of products (World Bank, 2023a).
2. Tax revenues (as a share of GDP) are mandatory payments and transfers to the central government for public purposes, excluding fines, penalties, and most types of social security contributions (World Bank, 2023b).
3. Taxes on income, profits and capital gains (as a percentage of total taxes), which are levied on actual or estimated net income of individuals, corporate and business profits, capital gains (implemented or not), land, securities and other assets, excluding intra-budgetary payments (World Bank, 2023c).
4. Taxes on goods and services – a set of general sales and turnover taxes or value-added taxes, selective excise taxes on goods, selective taxes on services, taxes on the use of goods or property, taxes on mining and production of minerals, and profits of fiscal monopolies (World Bank, 2023d).

The statistical analysis of the variables was conducted for the period 2000-2022 and based on the average values for the following periods: 2000-2005, 2006-2010, 2011-2015, and 2016-2022. This ensured an evaluation of the long-term dynamics of economic growth and the share of the respective type of tax. The author uses the Excel data analysis software to study the dynamics of variables for 2019-2022, creating models of their dependence to evaluate the short-term correlation. The EU-27 countries were selected for analysis due to several similar characteristics in social and economic development and, at the same time, reflecting the different impacts of tax policy on the economy and business.

The following indicators were used to evaluate changes in the business environment: Firms visited or required meetings with tax officials (% of firms) 9 World Bank (2023e), New businesses registered (number) (World Bank (2023f), Start-up procedures to register a business (number) (World Bank, 2023g), Time spent dealing with the requirements of government regulations (% of senior management time) (World Bank, 2023h).

## RESULTS

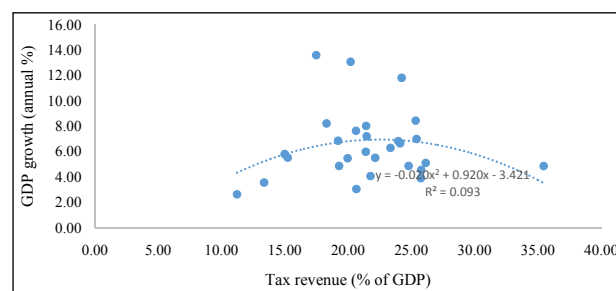
In general, the EU countries have been experiencing a slowdown in economic dynamics since the early 2000s, although some member states (Estonia, Ireland, Hungary, Lithuania, Luxembourg, Latvia, Malta, Poland, Romania, the Slovak Republic and Slovenia) have experienced dynamic GDP growth in certain periods.

In particular cases, GDP growth was driven by European integration, changes in institutional conditions, tax policy, and the country's system. As a result, high annual economic growth rates were observed in the member states during the period of approximation and accession, as well as after accession. The examples of Estonia, Latvia, and Lithuania (which acceded to the EU in 2004) demonstrate how high GDP growth rates were achieved in the period of preparation for accession before 2004 and after accession. In particular, in the period 2000-2005, Estonia's GDP averaged 7,8%, Latvia's GDP 7,75%, and Lithuania's GDP – 6,97%. At the same time, in the post-European integration period, the average GDP growth rate for the period 2006-2010 slowed down, constituting 0, 01%, -0,01% and 1,59%, respectively. This decrease

was caused by the financial crisis and the economic decline in all countries by about 14% in 2009. Therefore, since the beginning of 2011, these three countries have ensured an annual average GDP growth rate of about 3,3%, except Latvia in 2016-2022. In general, there are differences in economic growth rates in the EU countries. It is also worth noting a significant decline in 2020 and a rapid economic recovery in 2021-2022: by 5,47% in 2021 and 3,54% in 2022 on average across the EU-27.

The dynamics of tax revenues in the EU-27 shows the stability of tax payments to state budgets in the member states, despite the different share. The largest share of tax revenues was observed in the following countries (based on the average value of 2016-2022): Denmark, Luxembourg, Greece, Austria, Italy, France, the Netherlands, and Malta (more than 24% of GDP). The average (medium) share of tax revenues was revealed in the following countries: Norway, Cyprus, Belgium, Hungary, Portugal, Latvia, Estonia, Croatia, Lithuania, Bulgaria, and Finland (from 20% to 24% of GDP). The lowest share of revenues was revealed in the following countries: the Slovak Republic, Poland, Slovenia, Ireland, Romania, Spain, the Czech Republic, and Germany (from 11% to 20% of GDP).

There is no correlation between the annual GDP growth rate for 2021 and the share of tax revenues in the GDP, according to an analysis conducted (Fig. 1). The regression model shows only a 9% change in GDP dynamics depending on the change in the share of tax revenues to the budgets of the EU-27 countries.



Source: Compiled by the author based on World Bank data (2023a; 2023b).

Fig. 1: Linear dependence of the share of tax revenues in GDP and GDP growth (annual %) according to data of 2021

Taxes on income, profits and capital gains (as a share of total taxes) account for the largest share in the structure of tax payments in most of the member

**Table 1:** GDP growth (annual %), 1991-2022

	Country Name	2000-2005*	2006-2010*	2011-2015*	2016-2022*	2020	2021	2022
1	Austria	2,04	1,34	1,06	1,61	-6,45	4,56	5,00
2	Belgium	2,24	1,50	1,30	1,59	-5,36	6,29	3,25
3	Bulgaria	5,51	3,56	1,34	2,79	-3,96	7,63	3,36
4	Cyprus	4,36	2,75	-1,60	4,48	-4,37	6,64	5,63
5	The Czech Republic	3,94	2,56	1,72	2,07	-5,50	3,55	2,46
6	Germany	0,93	1,25	1,70	1,09	-3,70	2,63	1,79
7	Denmark	1,74	0,25	1,29	2,32	-1,99	4,86	3,82
8	Spain	3,61	1,00	0,01	1,42	-11,33	5,52	5,45
9	Estonia	7,80	0,01	3,36	3,24	-0,55	8,01	-1,29
10	The European Union	2,10	1,03	1,00	1,72	-5,67	5,47	3,54
11	Finland	3,14	1,04	0,09	1,59	-2,35	3,05	2,08
12	France	2,06	0,84	1,03	1,24	-7,78	6,82	2,56
13	Greece	3,90	-0,24	-3,89	1,36	-9,00	8,43	5,91
14	Croatia	4,33	0,69	-0,14	3,43	-8,58	13,07	6,33
15	Hungary	4,44	-0,06	2,07	3,42	-4,54	7,20	4,58
16	Ireland	6,03	0,48	6,99	8,10	6,18	13,59	11,97
17	Italy	1,40	-0,25	-0,67	0,86	-8,98	6,99	3,67
18	Lithuania	6,97	1,59	3,80	3,32	-0,02	5,98	1,89
19	Luxembourg	3,76	2,87	2,15	2,24	-0,80	5,10	1,55
20	Latvia	7,75	-0,01	3,48	2,30	-2,20	4,06	1,98
21	Malta	4,78	3,10	5,46	5,36	-8,61	11,81	6,85
22	The Netherlands	1,82	1,42	0,75	2,12	-3,89	4,86	4,48
23	Norway	2,40	0,94	1,75	1,64	-1,28	3,90	3,28
24	Poland	3,31	4,63	3,13	4,03	-2,02	6,85	4,87
25	Portugal	1,36	0,61	-0,82	2,14	-8,30	5,50	6,69
26	Romania	5,14	3,03	2,80	3,98	-3,68	5,79	4,79
27	The Slovak Republic	4,39	5,23	2,50	2,09	-3,34	4,86	1,67
28	Slovenia	3,59	2,01	0,43	3,60	-4,32	8,21	5,37

Source: Compiled by the author based on World Bank data (2023a); \* - average values for the corresponding period.

**Table 2:** Tax revenues (% of GDP), 2000-2021

	Country Name	2000-2005	2006-2010	2011-2015	2016-2022	2019	2020	2021
	Austria	26,61	25,41	26,20	25,34	25,58	24,41	25,78
	Belgium	25,24	25,04	24,16	22,68	22,63	22,06	23,35
	Bulgaria	21,26	18,48	20,08	20,45	20,47	20,27	20,62
	Cyprus	41,77	23,26	24,02	23,28	23,30	22,42	24,11
	The Czech Republic	14,56	14,35	14,79	14,17	14,77	14,37	13,36
	Germany	10,96	11,50	11,43	11,07	11,41	10,56	11,23
	Denmark	32,48	33,19	33,87	34,90	34,83	34,41	35,46
	Spain	—	12,69	14,01	14,19	13,75	13,58	15,23
	Estonia	19,77	20,14	21,21	21,14	21,29	20,69	21,42
	The European Union	19,45	19,24	19,54	19,71	19,75	19,44	19,96
	Finland	21,44	19,66	20,69	20,40	20,67	19,87	20,66
	France	22,21	22,04	23,44	24,40	24,51	24,72	23,97
	Greece	19,93	22,21	25,96	25,42	26,18	24,74	25,34
	Croatia	20,57	19,46	20,67	20,48	21,12	20,11	20,20
	Hungary	20,90	22,53	22,95	22,23	22,36	22,87	21,46
	Ireland	25,21	22,23	19,45	17,16	17,70	16,30	17,48
	Italy	22,92	24,23	24,71	24,92	24,58	24,76	25,41
	Lithuania	19,92	15,92	16,58	20,46	19,98	20,00	21,39
	Luxembourg	24,31	24,12	24,60	25,92	26,48	25,13	26,14

Latvia	21,06	20,35	22,85	21,64	21,27	21,90	21,77
Malta	52,63	25,71	25,13	24,07	24,43	23,55	24,23
The Netherlands	21,02	20,25	21,97	24,40	24,05	24,37	24,78
Norway	27,67	26,41	22,61	23,43	23,28	21,25	25,75
Poland	17,07	16,26	16,39	18,01	17,34	17,48	19,21
Portugal	20,66	20,65	22,56	22,12	22,20	22,02	22,14
Romania	17,49	16,73	16,79	14,58	14,56	14,18	14,99
The Slovak Republic	17,16	15,74	18,15	18,90	18,78	18,64	19,29
Slovenia	20,47	17,93	18,43	17,84	18,33	16,89	18,30

*Source: Compiled by the author based on World Bank data (2023b).*

**Table 3: Taxes on income, profits and capital gains (% of total taxes), 2000 – 2021**

Country Name	2000-2005	2006-2010	2011-2015	2016-2021	2020	2021
Austria	47,129	47,026	47,016	47,216	46,701	48,339
Belgium	58,883	58,388	58,589	55,081	54,744	54,910
Bulgaria	30,503	25,987	25,195	27,917	27,832	29,977
Cyprus	37,851	38,916	39,438	38,814	41,026	41,500
The Czech Republic	38,087	37,833	32,729	36,024	38,241	35,127
Germany	40,443	40,039	40,438	45,734	47,875	46,225
Denmark	44,777	48,936	52,305	53,548	54,122	57,026
Spain	—	—	41,659	41,578	40,967	43,656
Estonia	38,341	35,677	34,571	35,772	36,987	38,998
The European Union	39,061	39,633	37,895	39,088	39,332	40,525
Finland	38,121	33,400	27,980	28,307	26,197	29,520
France	45,990	47,255	48,795	49,722	50,006	51,467
Greece	38,113	36,491	33,653	32,949	32,034	32,106
Croatia	13,834	16,617	12,542	11,982	11,654	10,629
Hungary	34,247	37,657	28,123	28,587	28,589	25,394
Ireland	50,098	50,189	52,262	56,862	59,768	60,048
Italy	54,065	55,660	53,376	52,743	54,874	53,060
Lithuania	41,635	39,823	30,765	38,433	43,116	45,202
Luxembourg	45,677	46,698	47,665	51,180	51,605	50,695
Latvia	22,519	21,967	17,778	14,653	12,434	14,863
Malta	40,973	44,503	47,579	51,192	52,320	54,100
The Netherlands	44,784	46,540	46,413	49,819	49,897	50,618
Norway	51,230	56,244	53,096	46,656	40,259	56,504
Poland	27,605	26,702	25,110	25,864	26,485	26,574
Portugal	38,129	38,562	42,003	40,375	41,211	39,580
Romania	33,011	34,731	31,470	33,040	30,946	32,083
The Slovak Republic	32,864	36,272	35,986	38,261	37,521	39,786
Slovenia	26,678	28,347	20,383	25,548	26,195	29,325

*Source: Compiled by the author based on World Bank data (2023c).*

states, including Ireland, Belgium, Denmark, Italy, Malta, Luxembourg, the Netherlands, France, Austria, Norway, Germany, Spain, Portugal (more than 40% of total taxes on the average value for 2016-2021). The average (medium) share of the indicator was revealed in the following countries: Cyprus, Lithuania, the Slovak Republic, the Czech Republic, Estonia, Romania, and Greece (from 30% to 40% of total taxes based on the average value for 2016-2021). In Hungary, Finland, Bulgaria, Poland,

Slovenia, Latvia, and Croatia, the share of taxes on income, profits, and capital gains was less than 30%, in particular, in Latvia – 14,65%, Croatia – 11,82% in 2016-2021.

Taxes on goods and services also account for a significant share of tax revenues in the EU states. In particular, they are the most important in the following countries: Croatia, Latvia, Bulgaria, Finland, Hungary, Estonia, Poland, and Denmark

(more than 35% in 2016-2021). The average (medium) share of taxes on goods and services was observed in the following countries: Slovenia, Cyprus, Romania, Lithuania, Greece, Malta, Portugal, and the Slovak Republic (30-35% for the period 2016-2021). The lowest share of taxes on goods and services was observed in the following states: Ireland, the Czech Republic, Spain, the Netherlands, Luxembourg, Austria, Belgium, Norway, Italy, France, and Germany (from 20% to 30% for the period 2016-2021).

The percentage of businesses that have visited or needed to interact with tax inspectors varies across the EU27. Over the past three years (2019-2021), the highest value of the indicator was recorded in the countries as follows: Bulgaria – 55, the Czech Republic – 38, Greece – 39, Romania – 36, Hungary – 35, Belgium – 28, Estonia – 24, Croatia – 23, Luxembourg – 24, the Slovak Republic – 29, Slovenia

– 24, Poland – 22, Germany – 21. The lowest ratings were recorded in the following states: Austria – 17, Cyprus – 11, Denmark – 6, Finland – 4, France – 15, Ireland – 10, Italy – 9, Latvia – 17, Lithuania – 16, Malta – 14, the Netherlands – 13, Portugal -10, Spain – 9, Sweden – 7 (World Bank, 2023e).

The number of registered new businesses also varies across the EU. The available data on registrations for 2006-2020 reflect the different dynamics of this indicator in various Member States. Positive dynamics was observed in the following countries: Austria since 2012, Belgium since 2013, the Czech Republic for 2006-2017 period, Denmark, Estonia since 2009, Finland since 2014, France since 2013, Germany for 2014-2019 period, Greece since 2015, Ireland, Italy, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, the Slovak Republic, Sweden. At the same time, the number of registrations decreased in Bulgaria, Cyprus,

**Table 4:** Taxes on goods and services (% of revenue), 2000 – 2021

Country Name	2000-2005	2006-2010	2011-2015	2016-2022	2019	2020	2021
Austria	27,829	26,908	26,875	26,554	26,46	26,14	25,94
Belgium	25,264	25,141	24,586	26,452	26,82	26,32	27,01
Bulgaria	42,206	44,293	44,798	43,573	41,40	43,64	44,42
Cyprus	34,065	35,409	34,227	34,127	33,92	31,71	31,65
The Czech Republic	27,232	27,362	30,464	28,454	28,35	27,00	26,50
Germany	22,219	23,974	23,929	20,925	21,00	18,86	20,35
Denmark	40,582	38,103	35,473	35,161	33,95	34,82	32,21
Spain	–	–	26,402	27,425	27,43	25,73	26,25
Estonia	35,306	35,561	36,655	37,000	37,58	35,18	35,37
The European Union	33,158	33,757	33,555	33,126	33,56	31,71	32,19
Finland	34,750	35,034	38,017	38,801	38,73	39,99	38,15
France	25,198	23,032	22,114	22,585	23,46	23,19	20,81
Greece	30,967	31,162	31,071	32,672	33,56	31,48	32,19
Croatia	44,515	44,384	46,722	46,810	48,22	45,10	45,91
Hungary	35,765	34,476	37,114	37,399	36,99	38,06	39,10
Ireland	38,221	35,655	30,777	29,993	30,26	28,02	28,69
Italy	23,663	22,379	23,686	23,968	24,20	22,64	23,84
Lithuania	34,660	33,151	33,676	33,817	33,21	33,40	33,36
Luxembourg	31,376	30,755	29,894	27,108	26,63	26,50	28,14
Latvia	40,540	39,325	41,318	43,986	44,75	43,09	42,40
Malta	34,510	36,994	34,599	32,474	33,13	30,89	30,74
The Netherlands	28,903	27,646	25,549	27,187	27,49	27,82	28,01
Norway	27,000	23,677	24,132	25,844	25,09	27,82	22,70
Poland	33,311	37,416	35,931	36,544	36,17	35,72	37,37
Portugal	32,629	31,846	30,844	32,276	32,90	31,12	31,04
Romania	34,228	35,018	38,970	33,855	33,93	32,63	33,63
Slovak Republic	32,282	30,905	28,955	31,029	31,66	31,33	30,60
Slovenia	32,230	33,710	35,982	34,486	34,85	32,29	32,40

*Source:* Compiled by the author based on World Bank data (2023d).

Hungary, Latvia, Lithuania, Portugal, Slovenia, Spain, and Spain. The multi-vector dynamics of the indicator indicate a change in the economic environment (World Bank, 2023f). The decrease in the number of initial procedures for registering a business in the EU-27 from 8 to 5 between 2003 and 2019 is a favourable trend. However, in some countries, the indicator was stable over the same period (for example, Finland - 3, Austria - 8, Germany - 9, Luxembourg - 5) (World Bank, 2023g).

## DISCUSSION

The results demonstrate a slowdown in economic growth in the EU-27 in the long run from 2000 to 2019 and an increase in economic growth in 2021-2022 in the absence of significant changes in the tax structure. However, in some member states (Estonia, Ireland, Hungary, Lithuania, Luxembourg, Latvia, Malta, Poland, Romania, the Slovak Republic, Slovenia, and Spain), there was a dynamic GDP growth in particular periods. The dynamics of tax revenues were found to be stable, despite their different shares in GDP. Three groups of countries are distinguished by the share of tax revenues based on the average value of the indicator in 2016-2022: countries with a share of more than 24% of GDP, countries with a share of 20% to 24% of GDP, and countries with a share of 11% to 20% of GDP. In general, it is possible to assert a low level of correlation between the share of tax revenues in GDP and annual GDP growth rates. The developed regression model shows only a 9% change in GDP dynamics depending on the change in the share of tax revenues to the budgets of the EU-27 countries. At the same time, certain dependencies can be identified in particular groups of countries. For instance, the Czech Republic has a low tax revenue share of 13,36 and a medium GDP growth rate of 3,55% in 2021, as well as Germany and Germany – 11,23% and 2,63%, respectively.

In another group of countries, the average (medium) share of tax revenues and high GDP growth rates in 2021 is observed (Malta – 24,23% and 11,81%, Croatia – 20,20% and 13,07%, Ireland – 17,48% and 13,59%, Estonia – 21,42% and 8,01%, Slovenia – 18,30% and 8,21%, Hungary – 21,46% and 7,20%, Bulgaria – 20,62% and 7,63%, respectively), which indicates a high efficiency of tax policy. Some countries have a high share of tax revenues and

the average (medium) GDP growth rates in 2021 (Austria – 25,78% and 4,56%, Denmark – 35,46% and 4,86%, the Netherlands – 24,78% and 4,86%, respectively). Other countries have a low or below-average share of tax revenues and average (medium) GDP growth rates in 2021 (Portugal – 22,14% and 5,50%, Spain – 15,23% and 5,52%, Romania – 14,99% and 5,79%, Lithuania – 21,39% and 5,98%, Belgium – 23,35% and 6,29%, respectively). Such differences can be explained by the fact that most taxes have a positive impact on GDP growth; however, not all taxes have the same impact on economic growth (Gashi, Asllani and Boqolli, 2018).

Within the EU27, a differentiation in the share of taxes on income, profits, and capital gains from total taxes is also evident. At the same time, the indicator generally maintains stable dynamics in different countries, which indicates the absence of significant changes in tax policy. Three groups of countries are distinguished by the share of taxes on income, profit and capital gains: countries with a share of more than 40% of total taxes by average value for 2016-2021 (mostly the most developed countries of the first to third stages of European integration); countries with a share of 30% to 40% of total taxes based on the average value for 2016-2021; countries with a share of less than 30% (mostly the countries of the fourth stage of European integration: Hungary, Finland, Bulgaria, Poland, Slovenia, Latvia, Croatia, Latvia, Croatia). In this context, it is worth noting that higher corporate income and profit tax rates may reduce the pace of economic growth (Lee and Gordon, 2005). In particular, according to the results of our research, this correlation can be traced in some countries in the long term.

The academic paper has also revealed three groups of countries in terms of the share of taxes on goods and services in the EU-27, which also accounts for a significant share in the structure of tax revenues. In particular, the following countries were singled out: countries with a share of more than 35% in 2016-2021; countries with a share of 30-35% in 2016-2021; countries with a share of 20% to 30% in 2016-2021 (mostly the most developed countries, except the Czech Republic). The first two groups include mostly countries in the fourth stage of European integration, except Finland, Portugal, and Denmark. It is worth noting that McNabb and LeMay-Boucher



(2014) state that richer countries use relatively more taxes on consumption and income. However, if we use the EU as an example, their percentage is not as high as in less developed states. It is true that for the most developed member states, GDP growth can be negatively influenced by increases in income taxes (particularly personal income taxes) balanced out by decreases in trade or consumption taxes (McNabb and LeMay-Boucher, 2014). Similar conclusions have been made by Arnold (2008): income taxes tend to be related to lower economic growth compared to consumption and property taxes (Arnold, 2008).

In general, the results correlate with the findings of other studies on the long- and short-term correlation between tax structure and growth indicators. In particular, the scientific article also fails to provide convincing evidence of the advantages of consumption taxes over taxes on corporate profits and incomes of individuals (Xing, 2011). At the same time, the academic paper also lacks unequivocal evidence that the income tax and the tax on goods and services have a significant impact on economic growth. Meanwhile, Neog and Gaur (2020) have revealed a negative impact of these variables on economic growth in their study. Indeed, a U-shaped correlation between the tax structure and growth performance is also observed in this research (Neog and Gaur, 2020).

## CONCLUSION

The results demonstrate a slowdown in economic growth in the EU-27 in the long run from 2000 to 2019 and an increase in economic growth from 2021-2022 with no significant changes in the tax structure. The dynamics of tax revenues were found to be stable, despite their different shares in GDP. In general, it is possible to assert a low level of correlation between the share of tax revenues in GDP and annual GDP growth rates. The constructed regression model of dependence shows only a 9% change in GDP dynamics depending on the change in the share of tax revenues to the budgets of the EU-27 countries. Within the EU-27, a differentiation in the share of taxes on income, profits and capital gains from total taxes can be observed. At the same time, the indicator generally maintains stable dynamics in different countries, which indicates the absence of significant changes in tax policy. The academic paper has identified three groups of

countries by the share of tax revenues, by the share of taxes on income, profit and capital gains, and by the share of taxes on goods and services in the EU-27. As a result, the differentiation of countries by these variables is revealed, which explains the conclusion about the ambiguity of the long-term and short-term correlation between the tax structure and growth indicators.

## REFERENCES

- Adam, A., Kammas, P. and Lapatinas, A. 2015. Income inequality and the tax structure: Evidence from developed and developing countries. *J Comparative Econ.*, **43**(1): 138-154.
- Arnold, J.M. 2008. Do tax structures affect aggregate economic growth?: Empirical evidence from a panel of OECD countries. OECD Economics Department Working Papers. Available at: <https://doi.org/10.1787/18151973>
- Backholer, K., Sarink, D., Beauchamp, A., Keating, C., Loh, V., Ball, K., ... and Peeters, A. 2016. The impact of a tax on sugar-sweetened beverages according to socio-economic position: a systematic review of the evidence. *Public Health Nutrition*, **19**(17): 3070-3084.
- Bazaluk, O., Yatsenko, O., Zakharchuk, O., Ovcharenko, A., Khrystenko, O. and Nitsenko, V. 2020. Dynamic development of the global organic food market and opportunities for Ukraine Journal. *Sustainability (Switzerland)*, **12**(17).
- Gashi, B., Asllani, G. and Boqolli, L. 2018. The effect of tax structure in economic growth. *Int. J. of Econ. Business Administration*, **6**(2): 56-67.
- Giroud, X. and Rauh, J. 2019. State taxation and the reallocation of business activity: Evidence from establishment-level data. *J. Pol. Econ.*, **127**(3): 1262-1316.
- Iatsyshyn, A., Iatsyshyn, A., Kovach, V., Zinovieva, I., Artemchuk, V., Popov, O., . . . Turevych, A. 2020. Application of open and specialized geoinformation systems for computer modelling studying by students and PhD students. Paper presented at the CEUR Workshop Proceedings, 2732 893-908.
- Kindsfaterienė, K. and Lukaševičius, K. 2008. The impact of the tax system on business environment. *Engineering Econ.*, **57**(2).
- Kotenko, S., Nitsenko, V., Hanzhurenko, I. and Havrysh, V. 2020. The mathematical modeling stages of combining the carriage of goods for indefinite, fuzzy and stochastic parameters. *Int. J. Integrated Engineering*, **12**(7): 173-180.
- Kovaleva, V., Bukhteeva, I., Kit, O.Y. and Nesmelova, I.V. 2020. Plant defensins from a structural perspective. *Int. J. Mol. Sci.*, **21**(15): 1-23.
- Kryshchanovych, M., Akimova, L., Akimov, O., Kubiniy, N. and Marhitich, V. 2021. Modeling the process of forming the safety potential of engineering enterprises. *Int. Safety and Security Engineering*, **11**(3): 223-230.

- Latysheva, O., Rovenska, V., Smyrnova, I., Nitsenko, V., Balezentis, T. and Streimikiene, D. 2020. Management of the sustainable development of machine-building enterprises: A sustainable development space approach. *J. Enterprise Information Manage.*, **34**(1): 328-342.
- Lee, Y. and Gordon, R.H. 2005. Tax structure and economic growth. *J. Pub. Econ.*, **89**(5-6): 1027-1043.
- Liu, Y. and Lu, Y. 2015. The economic impact of different carbon tax revenue recycling schemes in China: A model-based scenario analysis. *Appl. Energy*, **141**: 96-105.
- McNabb, K. and LeMay-Boucher, P. 2014. Tax structures, economic growth and development. *ICTD Working Paper 22*. Available at: [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2496470](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2496470) Last Accessed on 12<sup>th</sup> June, 2023
- Murray, B. and Rivers, N. 2015. British Columbia's revenue-neutral carbon tax: A review of the latest "grand experiment" in environmental policy. *Energy Policy*, **86**: 674-683.
- Neog, Y. and Gaur, A.K. 2020. Tax structure and economic growth in India: insights from ARDL model. *Ind. Growth and Dev. Rev.*, **13**(3): 589-605.
- Ojong, C.M., Anthony, O. and Arikpo, O.F. 2016. The impact of tax revenue on economic growth: Evidence from Nigeria. *IOSR J. Econ. and Finance*, **7**(1): 32-38.
- Ostapenko, R., Herasymenko, Y., Nitsenko, V., Koliadenko, S., Balezentis, T. and Streimikiene, D. 2020. Analysis of production and sales of organic products in Ukrainian agricultural enterprises. *Sustainability (Switzerland)*, **12**(8).
- Prillaman, S.A. and Meier, K.J. 2014. Taxes, incentives, and economic growth: Assessing the impact of pro-business taxes on US state economies. *J. Politics*, **76**(2): 364-379.
- Stoilova, D. 2017. Tax structure and economic growth: Evidence from the European Union. *Contaduría y Administración*, **62**(3): 1041-1057.
- Vegh, C.A. and Vuletin, G. 2015. How is tax policy conducted over the business cycle? *Am. Econ. J. Econ. Policy*, **7**(3): 327-370.
- World Bank 2023a. GDP growth (annual %). World Bank national accounts data, and OECD National Accounts data files. Available at: <https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?view=chart>. Last Accessed on 13<sup>th</sup> April, 2023.
- World Bank. 2023b. Tax revenue (% of GDP). International Monetary Fund, Government Finance Statistics Yearbook. World Bank and OECD GDP estimates. Available at: <https://data.worldbank.org/indicator/GC.TAX.TOTL.GD.ZS>. Last Accessed on 18<sup>th</sup> April, 2023.
- World Bank 2023c. Taxes on income, profits and capital gains (% of revenue). International Monetary Fund, Government Finance Statistics Yearbook. Available at: <https://data.worldbank.org/indicator/GC.TAX.YPKG.RV.ZS>. Last Accessed on 19<sup>th</sup> April, 2023.
- World Bank. 2023d. Taxes on goods and services (% of revenue). International Monetary Fund, Government Finance Statistics Yearbook. Available at: <https://data.worldbank.org/indicator/GC.TAX.GSRV.RV.ZS>. Last Accessed on 15<sup>th</sup> April, 2023.
- World Bank, 2023e. Firms visited or required meetings with tax officials (% of firms). World Bank, Enterprise Surveys. Available at: <https://data.worldbank.org/indicator/IC.FRM.METG.ZS>. Last accessed on 12<sup>th</sup> April, 2023.
- World Bank, 2023f. New businesses registered (number). World Bank's Entrepreneurship Database. Available at: <https://data.worldbank.org/indicator/IC.BUS.NREG?view=chart>
- World Bank, 2023g. Start-up procedures to register a business (number). World Bank, Doing Business project. Available at: <https://data.worldbank.org/indicator/IC.REG.PROC?view=chart>. Last Accessed on 8<sup>th</sup> April, 2023.
- Xing, J. 2011. Does tax structure affect economic growth? Empirical evidence from OECD countries. Oxford University Centre for Business Taxation Saïd Business School, Park End Street, Oxford.
- Yagan, D. 2015. Capital tax reform and the real economy: The effects of the 2003 dividend tax cut. *Am. Econ. Rev.*, **105**(12): 3531-3563.
- Zhang, J. and Zhang, Y. 2018. Carbon tax, tourism CO<sub>2</sub> emissions and economic welfare. *Annals of Tourism Res.*, **69**: 18-30.