

Original Paper

<https://doi.org/10.15826/jtr.2024.10.1.157>

## Modern Tax Trends and Economic Growth in a Turbulent World: Insights from Developed and Developing Economies

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### ABSTRACT

The article examines recent trends in tax level and structure changes within developed and developing economies in relation to economic growth. The study's significance stems from increasing geo-economic turbulence and emerging risks in the global economy, necessitating fiscal regulation. The analysis spans the period from 2009, post the Great Recession, to the present day.

We tested the hypothesis that discernible patterns could be identified through statistical analysis regarding the relationship between tax indicators (level and structure) and economic growth indicators. However, no such clear patterns were found. In essence, it cannot be definitively concluded that reduced tax levels and/or increased indirect tax shares do explicitly foster national economic growth. Tax impact on economic growth varies significantly across developed and developing economies, presenting a complex and nuanced picture. The nature and strength of this influence are largely shaped by the specific circumstances of each location and period. In order to identify their unique impact, counterfactual analysis is required.

In the course of further research, it is important to consider, firstly, the increased fiscal activism of the post-pandemic period: in this case, the research outcomes may be different from those obtained for the period already examined. Secondly, considering the ongoing processes of geo-economic fragmentation, it is recommended to re-examine the influence of taxes on economic processes. This investigation should adhere to the evolving framework of new macro-regions worldwide, rather than the conventional dichotomy of developed and developing economies. Participants within these macro-regions, interconnected through supply and value chains, will need to work together to align their tax rules and policies for mutual benefits.

### KEYWORDS

taxation, tax policy, fiscal activism, economic growth, developed economies, developing economies

JEL E62, F43, H20, O47

УДК 336.22

## Современные налоговые тренды и экономический рост в нестабильном мире: анализ в разрезе развитых и развивающихся экономик

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### АННОТАЦИЯ

Статья посвящена анализу последних тенденций изменения уровня и структуры налогов в развитых и развивающихся экономиках в связи с проблемами экономического роста. Актуальность исследования объясняется активизацией процессов геоэкономических трансформаций, а также новыми рисками развития миро-

вой экономики, требующими фискального регулирования. Период анализа – с 2009 г., когда Великая Рецессия в основном закончилась, и по настоящее время. Мы проверяли рабочую гипотезу о том, что, опираясь на анализ статистических данных, можно обнаружить явно выраженные регулярности в соотношениях показателей налогов (их уровня и структуры) с показателями экономического роста, которые бы характеризовали вектор влияния налогов в относительно однородных группах стран (отдельно развитых, и отдельно развивающихся). При этом результаты анализа показали, что рабочая гипотеза не подтвердилась: такие явно выраженные регулярности обнаружены не были. То есть нельзя однозначно утверждать, что снижение уровня налогов и/или рост удельного веса косвенных налогов явно способствует национальному экономическому росту. Реальная картина в развитых и в развивающихся экономиках слишком пёстрая и не поддается однозначному трактованию. Из этого следует, что характер и сила влияния налогов на экономический рост во многом определяются обстоятельствами места и времени, и что выявление особенностей их влияния требует проведения специального контрафактического анализа. В ходе дальнейших исследований важно учитывать, во-первых, возросший фискальный активизм постпандемийного периода, так что анализ может показать иные результаты, чем в уже рассмотренном периоде. Во-вторых, что в связи с процессами геоэкономической фрагментации влияния налогов на экономические процессы целесообразно исследовать не в традиционном разрезе развитых и развивающихся экономик, а в составе новых макрорегионов, формирующихся сейчас в мире, участники которых, объединённые цепочками поставок и создания стоимости, должны координировать свои налоговые правила и политики с целью достижения кооперационного эффекта.

#### КЛЮЧЕВЫЕ СЛОВА

налогообложение, налоговая политика, фискальный активизм, экономический рост, развитые экономики, развивающиеся экономики

### 1. Introduction

In recent years, the significance of tax policy for the economy and economic growth has increased, as its impact became particularly pronounced during the COVID-19 pandemic. Many countries turned to fiscal instruments for crisis support, aiding the most affected population groups and economic sectors – a situation reflecting the natural correlation between tax policy and economic dynamics. Monetary policy demonstrates effectiveness in stabilizing economies when nations tackle their internal economic issues autonomously. Nevertheless, in instances where shocks and responses transcend national boundaries, fiscal policy takes precedence, provided that tax and budgetary measures are promptly implemented [1].

Moreover, it is important to note that unlike monetary policy, which focuses on regulating the overall money supply, fiscal policy – using various tax measures – is more easily tailored to the current objectives of the government.

In today's reality, characterized by frequent exogenous shocks and rising

risks<sup>1</sup>, fiscal activism – used, among other things, to deal with the issues of economic growth – has become a dominant trend in many countries worldwide [2].

The relevance of this study is determined by the intensification of geo-economic transformation processes, as well as new risks in the development of the world economy, necessitating fiscal regulation.

This *article aims* to analyze recent trends in the changes of the level, composition, and structure of taxes in developed and developing economies in the context of post-crisis economic growth (following the Great Recession of 2007–2008).

The *hypothesis of the study* is that statistically, it is possible to identify clear patterns in the relationships between tax indicators (the level and structure of taxes) and economic growth indicators. To grasp the nature of tax impact in relatively homogeneous groups of countries, we need to understand the presence or absence of such regularities, while also giving due re-

<sup>1</sup> World Economic Forum. The Global Risks Report 2023. 18<sup>th</sup> ed. Insight Report. Geneva, 2023. 97 p.

gard to the distinction between developed and developing nations.

The *article structure* comprises an analysis of the tax trends and economic growth indicators in developed countries, followed by the discussion of developing (emerging) economies, with the final section summarizing the results and brief conclusions.

## 2. Literature review

Changes in fiscal policy and tax systems are often examined in relation to economic growth challenges, given their significant importance for many countries worldwide. However, research evidence of the precise and substantial impact of taxes on economic dynamics remains contradictory.

On the one hand, while logical and mathematical models simulating tax responses of economic agents often predict a significant impact, many empirical studies do not confirm this prediction.

Myles [3; 4] analyzed a series of theoretical and empirical studies of the impact of taxes on economic growth and found that taxes have an insignificant effect on economic growth.

Saez et al. [5] did not find a clear correlation between changes in tax rates and economic growth.

Burman & Randolph [6] also found no compelling evidence of the influence of changes in tax rates on capital accumulation or economic growth indicators, etc. (see Table 1).

On the other hand, there are studies confirming the influence of taxes on economic growth.

Canto et al. [7] provided analytical evidence confirming the negative impact

of the growing tax burden on production volumes and the intensity of the use of factors of production.

Independent researchers from various countries, analyzing fiscal policies over different time periods, have found consistent evidence that increasing tax rates leads to slower economic growth, while reducing tax rates, on the contrary, tends to boost growth (Engen & Skinner [8], Leibfritz et al. [9], Karras & Furceri [10], Romer & Romer [11], Woldy & Kano [12] (for more on this – see Table 1).

Alongside these studies, a number of economists have sought to determine which taxes are the most distorting and harmful to economic development. As a result, a consensus has been reached that taxes on consumption and property have less negative impact than taxes on personal and corporate incomes. Such conclusion was reached by Kneller et al. [13].

Lee & Gordon [14] argue that an increase in the corporate tax rates leads to a slowdown in the pace of growth, while a reduction in these tax rates by 10 percentage points results in an increase in annual growth rates by 1–2 percentage points.

In general, when it comes to the corporate income tax, it ranks first in the unofficial list of the most detrimental taxes for economic growth.

Johansson et al. [15] show that the corporate income tax has a distorting effect on the overall volume of investments, the type of investment projects, the choice of financing sources (borrowed funds, newly issued shares, or undistributed income), the location of the tax base, the choice of the legal form of business, and other factors.

**Table 1. Summary of research findings: impact of tax increases and reductions on economic growth**

| No. | Author, year        | Empirical foundation   | Findings  |
|-----|---------------------|--|---|
| 1   | Canto et al. [7]    | Data on tax reforms in the USA, 1962 and 1964  | An increase in tax rates has a negative impact on production volumes and the intensity of the use of production factors |
| 2   | Engen & Skinner [8] | Endogenous growth models, general equilibrium models, historical data on the economy, and tax reforms in the USA, spanning from 1959 to 1994 | A decrease in marginal tax rates by 5% and average tax rates by 2.5% increases GDP growth rates on average by 0.2–0.3%  |

End of Table 1

| No. | Author, year                       | Empirical foundation  | Findings  |
|-----|------------------------------------|---|---|
| 3   | Leibfritz et al. [9]               | Simulation econometric models from the European Commission and the Ministry of Finance of Canada; research on the impact of taxation on economic indicators, labor markets, and capital in OECD countries, spanning from 1976 to 1993 | A 10% increase in tax rates leads to a 0.5% decrease in growth rates, while a 10% decrease increases GDP growth by 0.5–1%   |
| 4   | Myles [3]                          | Theoretical models of the impact of tax levels on economic growth, empirical assessments of taxation effects (USA, UK) in economic studies over the past 20 years   | Tax structure has a greater impact on economic growth than the level of taxation  |
| 5   | Karras & Furceri [10]              | Panel methodology. Statistical data from 19 European countries, 1965–2003   | Increasing the overall tax rate by 1% has a negative long-term impact on GDP per capita ranging from –0.5% to –1%   |
| 7   | Gravelle [18]                      | Statistical data on small business income in the USA, spanning from 2006 to 2011.   | Tax rate increases only affect 2% to 3% of small businesses   |
| 8   | Romer & Romer [11]                 | Data on U.S. tax reforms in 1945–2007   | An exogenous increase in taxes by 1% reduces real GDP by almost 2.5%  |
| 9   | Woldy & Kano [12]                  | Statistical data for 40 sub-Saharan countries in 2000–2019  | Budget consolidation reduces real GDP and private demand. Budget consolidation also depends on economic cycles, as production losses become smaller during economic booms   |
| 10  | Saez et al. [5]                    | Data on income tax declarations, tax obligations, and tax rates in the USA, spanning from 1960 to 2006. Tax reform of 1993  | Evidence of the real economic response to changes in tax rates is not found. The expansion of the tax base and the reduction in tax evasion may influence the type of behavioral response   |
| 11  | Burman & Randolph [6]              | Data on the maximum rates of the tax on capital gains and GDP growth rates in the USA, spanning from 1950 to 2011   | No clear connection between the rates of the tax on capital gains and economic growth has been established  |
| 12  | Srithongrung & Sánchez-Juárez [19] | Data on subnational state finances of 32 Mexican states, spanning from 1993 to 2011   | Every 1% increase in taxes in Mexico leads to a 0.9% decrease in GDP in the short term perspective  |
| 15  | Alinaghi & Reed [20]               | Metadata of 49 studies on the impact of taxes on economic growth in OECD countries, spanning the period from 1993 to 2020   | In OECD countries, a 10% increase in taxes is associated with a decrease in annual GDP growth of approximately 0.2%, or an increase in this parameter by 0.2%, depending on the specifics of the «taxes – government spending – budget deficit» relationships |
| 16  | Stoilova & Todorov [21]            | Annual Eurostat data for 2007–2019 on ten new EU member states from Central and Eastern Europe – Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, and Slovenia                           | The growth rate of production is negatively affected by receipts from direct taxes, while receipts from indirect taxes do not have a significant impact on it   |

Moreover, Ljungqvist & Smolyan-sky [16], whose study focused on the experience of the USA, did not find any compelling evidence that a reduction in the corporate tax stimulates economic activity, except during a recession.

Hanappi et al. [17] showed that the sensitivity of enterprises to the corporate income tax, and the negative aspects of its application, significantly depend on the type of business, the assets used, national tax mechanisms, and other factors.

It is evident that much of the results obtained, and their differences, depend on the circumstances of place and time.

Gruen & Sayegh [1] argue that it is important to consider the consequences of the complex and contradictory processes observed in the global economy as a whole and in the economies of several countries around the world after the Great Recession of 2007–2008.

Aiyar et al. [22] show that this period in the global economy is characterized by a transition from globalization to fragmentation, including increased geopolitical risks.

In this context, it would be logical to adopt a conceptual approach and analyze recent trends in global tax levels and structures, with a specific focus on economic growth from 2009 to the present.

### 3. Methodology

The analysis was conducted separately for developed and developing economies, given their distinctly disparate fiscal capacities and different approaches in the tax sphere.

Out of the 40 developed countries included in the IMF classification<sup>2</sup>, 17 were selected for analysis. The remaining countries were excluded for the following reasons:

- for 10 countries no statistical data were available (Andorra, Cyprus, Puerto Rico, San Marino, Hong Kong, Macao, Malta, Taiwan, the Republic of Korea, Singapore);

- 13 countries have lower GDP per capita at PPP than the selected ones (Greece, Israel, Spain, Italy, Latvia, Lithuania, Slovakia, Slovenia, the Czech Republic, Estonia, Japan, Portugal, New Zealand);

- Luxembourg was not included in our graphs because its indicators significantly differ from the average values of other developed countries.

Out of the developing and emerging economies, we selected 12 countries, including Eastern European (Bulgaria, Poland, Hungary), post-colonial South American and African (Argentina, Brazil, Colombia, Mexico, Chile, South Africa), Muslim (Indonesia, Turkey), and China. Other countries are not included in the analysis due to the lack of necessary statistical data.

As previously mentioned, the analysis covers the period from 2009 onwards, when the Great Recession largely ended or began to decline (in the second half of 2009, many countries around the world overcame the economic downturn and entered a trajectory of economic growth) until present, considering the available statistical data.

This is a relatively long period, which IMF experts [1] characterize as “slowbalization” (a word coined from the combination of “slow” and “globalization”). Slowbalization is characterized by a shift from offshore policies (transferring business operations from developed industrial countries to less developed/developing countries to reduce costs) to reverse processes (“onshoring”, “reshoring”, “nearshoring”, “friendshoring”). It is also characterized by the rapid advancement and integration of digital technologies and AI in tax administration, which is a critical aspect of fiscal policy.

Methodologically, this study relies on various methods of analysis such as comparison (horizontal, vertical, trend), grouping, and graphical analysis. We deliberately chose simple and visual methods as they were most suitable for testing our hypothesis about the existence of clear patterns in the relationships between tax indicators (level and structure) and

<sup>2</sup> IMF. World Economic and Financial Surveys. World Economic Outlook Database – WEO Groups and Aggregates Information. 2022. Available at: <https://www.imf.org/external/pubs/ft/weo/2022/01/weodata/groups.htm#ae> (accessed: 24.01.2024).

economic growth indicators. This exploration aims to characterize the vector of tax influence in relatively homogeneous groups of countries, with developed and developing nations considered separately.

The study also involves the search for hypothetical patterns based on common assumptions. Specifically, we examine the potential correlation between higher growth rates, lower taxes, and a reduced proportion of direct taxes compared to indirect taxes, assuming that other factors remain constant. The study aims to shed light on how these variables affect the incomes of economic entities and their capacity for savings and investment.

Before applying more advanced mathematical tools, such as Romer’s model of endogenous technological change [23], Vishnevsky & Polovyan’s mathematical model of coevolution [24], Gross & Klein’s simulation model [25], etc., it would make sense to first gain a comprehensive understanding of the global status of tax systems, including prevailing trends in tax levels, composition, and structure,

particularly in relation to concerns about economic growth.

It is clear that the mere existence of such regularities (if they indeed occur), or their absence, will not serve as proof of the positive or negative impact of taxes on economic growth, but may serve as a starting point for further, more advanced analysis.

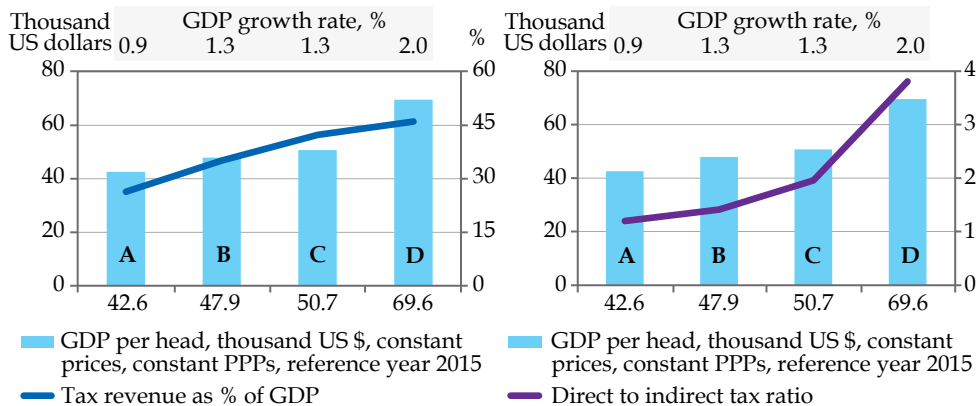
## 4. Results

### 4.1. Developed economies

#### 4.1.1. Tax level

As states become more prosperous, they can increase their spending on public goods, leading to a higher overall tax-to-GDP ratio. This trend aligns with Wagner’s law, where government expenditures grow faster than national income [26]. Remarkably, direct taxes usually play a more significant role in this process.

Figure 1 illustrates the correlation between the tax level and GDP for 17 developed countries over the past 14 years. The entire dataset is divided into deciles based on GDP per capita (in constant prices and



**Figure 1. Relationship between tax levels and income across groups of developed countries, 2009–2022**

*Note:* By income level (GDP per capita at PPP), in 2009–2022, developed countries were divided into four groups: Group A, comprising the UK, Canada, France, and Finland; Group B, comprising Australia, Belgium, Germany, and Sweden; Group C, comprising Austria, Denmark, Iceland, the Netherlands; and Group D, comprising Ireland, Norway, the United States, and Switzerland. The GDP growth rates are calculated by taking the average of the GDP growth rates per capita based on PPP for each group of countries.

Compiled by the authors by using the data from: OECD. Tax revenues as a percentage of GDP.

Global Revenue Statistics Data Set. 2024. Available at: <https://stats.oecd.org/viewhtml.aspx?datasetcode=REV&lang=en#>; OECD. Revenue Statistics – OECD countries: Comparative tables. Global Revenue Statistics Data Set. 2024. Available at: <https://stats.oecd.org/index.aspx?DataSetCode=REV#>; OECD. Regional GDP. Regional Economy – OECD. Stat. 2024. Available at: [https://stats.oecd.org/Index.aspx?DataSetCode=REGION\\_ECONOM#](https://stats.oecd.org/Index.aspx?DataSetCode=REGION_ECONOM#) (accessed: 24.01.2024).

PPP-adjusted) and the tax level for the corresponding period. Figure 1 shows the median GDP and tax levels for each decile.

Each group of countries exhibits a distinct correlation between tax levels and economic growth rates: for example, in Group D, characterized by the highest incomes and taxes, including direct taxes, the average GDP per capita growth rates at PPP were 2.0%, while in Group A, with lower incomes and taxes, it was 0.9%. Groups B and C occupy intermediate positions.

This picture clearly contradicts the common view that, all else being equal, small taxes are better for economic growth than large ones, and indirect taxes are preferable to direct ones (see, for example, [10; 12; 13]). While this notion may generally hold true over extended periods under normal development conditions, the unprecedented strain of the pandemic has introduced new circumstances. It has demonstrated that wealthier countries with a more developed public sector are better equipped to handle exogenous shocks.

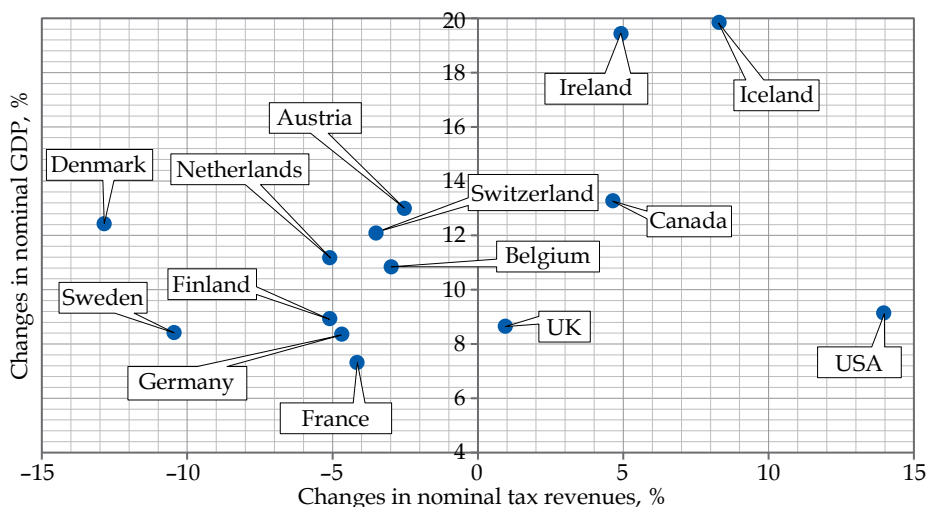
The pandemic adversely affected economic growth worldwide, including many developed countries, which led to an unforeseen reduction in tax revenues due to decreased production volumes, especially

in service sectors, as well as a decline in the purchasing power of many households.

As a result, in 2019, there was a downward trend in the total amount of nominal (and even more so, real) tax revenues. In 2020, despite a noticeable decrease in nominal tax revenues, the decline in GDP was even more significant, showing negative dynamics. In 2021–2022, nominal and real GDP growth was restored, but during this time, the level of nominal tax revenues continued to decrease in several countries (see Figure 2).

This clearly was a result of fiscal stimulus measures implemented as part of government economic support programs such as the American Rescue Plan Act of 2021 [27] and EU post-Coronavirus recovery plan [28], which helped overcome the pandemic-induced slump. However, real growth rates in developed countries remain sluggish, with 1.6% in 2023 and an expected further decrease to 1.5% in 2024<sup>3</sup>.

<sup>3</sup> IMF. World Economic Outlook Update, January 2024: Moderating Inflation and Steady Growth Open Path to Soft Landing, 2024. Available at: <https://www.imf.org/en/Publications/WEO/Issues/2024/01/30/world-economic-outlook-update-january-2024> (accessed: 24.01.2024).



**Figure 2.** Changes in nominal tax revenues and nominal GDP in developed countries in 2022 compared to 2021

Compiled by the authors by using the data from: OECD. Revenue Statistics – OECD countries: Comparative tables Global Revenue Statistics Data Set, 2024. Available at: <https://stats.oecd.org/index.aspx?DataSetCode=REV#>; OECD. Regional GDP. Regional Economy – OECD. Stat, 2024. Available at: [https://stats.oecd.org/Index.aspx?DataSetCode=REGION\\_ECONOM#](https://stats.oecd.org/Index.aspx?DataSetCode=REGION_ECONOM#) (accessed: 24.01.2024).

Thus, according to statistical data, differences in historically established tax levels and the dynamics of the tax burden in developed countries have not demonstrated a clearly pronounced influence (or this influence has been insignificant) on the pace of economic growth. At first glance, this contradicts the results of theoretical research. However, it is important to take into account that the main instrument of macroeconomic regulation in the period under consideration (after the financial-economic crisis of 2007–2008) was monetary, not fiscal policy. The situation changed significantly only in recent years, as central banks such as the Federal Reserve and the European Central Bank, along with other regulators, were compelled to sharply raise key interest rates to combat inflation. In light of these circumstances, the results of the analysis can be deemed understandable and consistent.

#### 4.1.2. Composition and structure of taxes

While tax systems in different countries may vary, all of these systems impose taxes on personal income, corporate income, sales, and property. The elements of taxes (tax base, rates, exemptions, etc.) are determined depending on the specifics of the current economic situation, as well as each country's historical, institutional, socio-cultural conditions, and traditions.

The analysis of the relationship between GDP and tax structures in developed countries showed that as GDP increases, the growth in revenues from corporate income taxes is not as significant as the growth in revenues from personal income taxes. However, the differences in the percentages of corporate income taxes and individual income taxes as a share of GDP vary depending on the income groups of the countries: for countries whose incomes (GDP) fall within the top three deciles, corporate income taxes and individual income taxes make up to 7.4% and 24.3% of GDP, respectively, while countries in the bottom three deciles collect 2–2.4% and 8.1–10.0%, respectively.

The high level of income tax revenues in the upper deciles can be partially attributed to countries like the USA, Germa-

ny, the UK, and France, which boast high GDP levels and host numerous multinational corporations, attracting substantial foreign direct investments and thus generating significant income.

The new OECD rules on taxing multinational corporations, coupled with corporate income taxation reforms in Europe (including the introduction of a tax on unforeseen income), may lead to some changes in this distribution. However, substantial alterations to income taxation are unlikely.

Until 2020, taxes on goods and services, including VAT, as well as property taxes, had been growing alongside economic prosperity. In the post-pandemic years of 2021–2022, the level of taxes on goods and services quite expectedly decreased while GDP was growing.

Developed countries with lower GDP levels have the highest rates of indirect taxes: in this study, these are Finland, Denmark, and Ireland with VAT rates of 24%, 25%, and 23%, respectively<sup>4</sup>.

As for countries with high GDP levels (such as the USA, Germany, the United Kingdom, France), they have achieved significant results in taxing digital goods and services, as well as in ensuring efficient tax administration and combating fraud. Recent reductions in indirect tax rates or exemptions of specific goods from VAT in European countries have been limited to a relatively short period and are intended to alleviate the consequences of a significant inflation spike [29].

Certain disparities between the tax structures of the developed countries typically result from historically established economic relationships, institutional and national factors, including differences in tax objects, tax rates, the breadth of the tax base, and so on.

For example, in 2022, the largest share of total tax revenues from income tax was found in Denmark, the United States, Iceland, Canada, Switzerland, and Ireland; taxes on goods and services predominated in Iceland, Finland, the United Kingdom,

<sup>4</sup> OECD. Consumption Tax Trends 2022: VAT/GST and Excise, Core Design Features and Trends. OECD Publishing, Paris, 2022. <https://doi.org/10.1787/6525a942-en> (pp. 265–266).

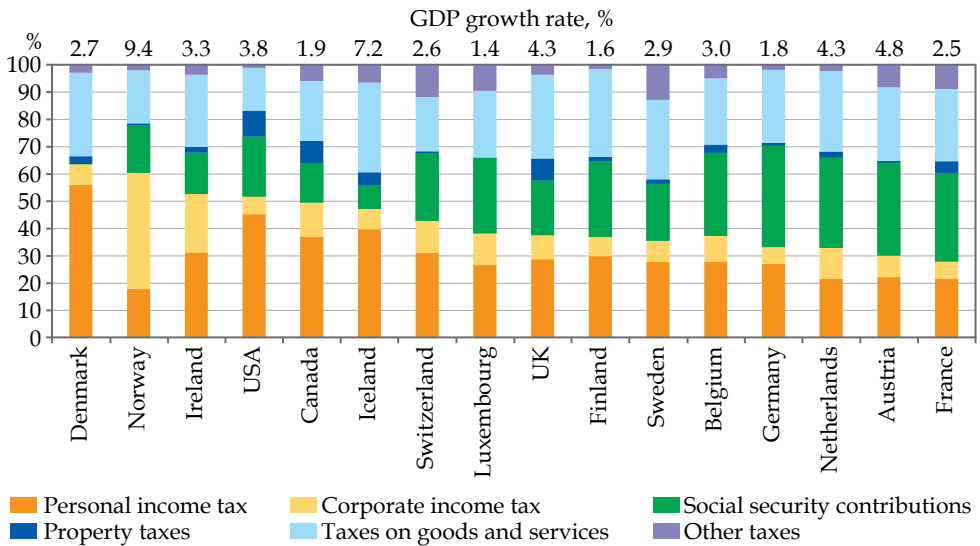


and Denmark; social security contributions were highest in Germany, Austria, the Netherlands, France, and Belgium. Property taxes played a less significant role in all countries (Figure 3).

There is a widely held view that economic growth is better promoted by a revenue structure characterized by a smaller proportion of taxes on the income of persons and businesses [1; 31; 32]. However, the data in Figure 3 do not confirm this, as no clearly defined dependence of this kind is observed

here. This can be explained by the fact that consistently high levels of revenue from income taxes deter governments from making drastic changes to the tax structure, due to the lack of opportunities for quick compensation. Additionally, the inertia of tax relationships makes such patterns more visible over longer time intervals.

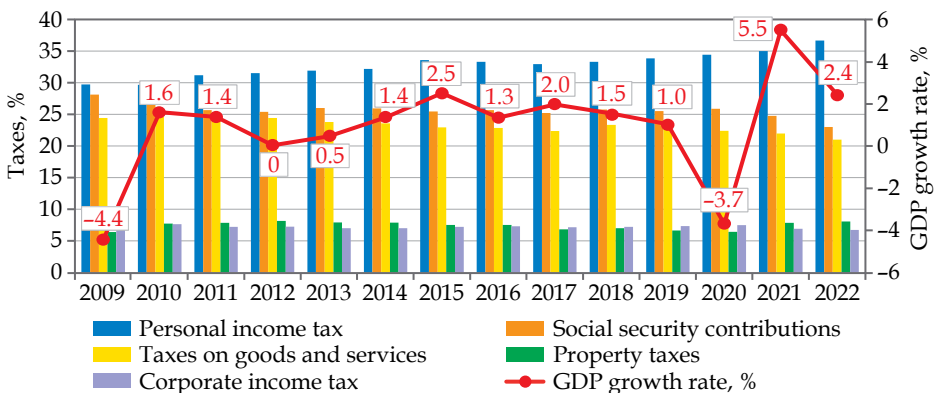
The dynamics of major tax revenues from 2009 to 2022 indicate that, overall, the corresponding tax bases and effective tax rates remained relatively stable (Figure 4).



**Figure 3. Tax structure of developed countries, 2022**

Compiled by the authors by using the data from: OECD. Revenue Statistics – OECD countries: Comparative tables. Global Revenue Statistics Data Set. 2024.

Available at: <https://stats.oecd.org/index.aspx?DataSetCode=REV#> (accessed: 24.01.2024).



**Figure 4. Revenues from major taxes in developed countries from 2009 to 2022**

Compiled by the authors by using the data from: OECD. Revenue Statistics – OECD countries: Comparative tables. Global Revenue Statistics Data Set. 2024.

Available at: <https://stats.oecd.org/index.aspx?DataSetCode=REV#> (accessed: 24.01.2024).

The increase in revenues from income tax reflects the positive effects of income support policies. The decrease in corporate income tax revenues is attributed to lower economic activity and poor financial performance during the COVID-19 pandemic. Additionally, measures aimed at easing the tax burden, such as tax payment deferrals and reductions in tax advances, contributed to this decline.

No significant changes were observed in other types of taxes, while the proportion of taxes on goods and services continued to gradually decrease. Revenues from fuel excise taxes decreased due to mobility restrictions, and VAT rates were temporarily reduced during the COVID-19 pandemic.

The analysis of tax rates reveals a consistent trend in many developed countries toward decreasing the burden of direct taxation while enhancing its progressivity. Maximum income tax rates were raised in Austria, the UK, Denmark, Canada, Iceland, Luxembourg, Norway, Finland, France, and corporate income tax rates in Iceland and the Netherlands<sup>5</sup>.

<sup>5</sup> OECD. Statutory corporate income tax rate. 2023. Available at: [https://stats.oecd.org/index.aspx?DataSetCode=TABLE\\_III1#](https://stats.oecd.org/index.aspx?DataSetCode=TABLE_III1#); OECD. Top statutory personal income tax rates. 2023. Available at: [https://stats.oecd.org/index.aspx?DataSetCode=TAX\\_RATES\\_I7#](https://stats.oecd.org/index.aspx?DataSetCode=TAX_RATES_I7#); California Department of Tax and Fee Administration. History of Statewide Sales and Use Tax Rates. 2023. Available at: <https://www.cdtfa.ca.gov/taxes-and-fees/sales-use-tax-rates-history.htm>; OECD. Consumption Tax Trends 2022: VAT/GST and Excise, Core Design Features and Trends. OECD Publishing, Paris, 2022. <https://doi.org/10.1787/6525a942-en> (accessed: 24.01.2024).

Despite the changes described above, the overall tax structure evolves slowly. Direct taxation continues to outweigh indirect taxation in most of the countries examined. The statistics show no clear signs of any transformations in the tax structure (Table 2).

Recent tax reforms aim to preserve and mobilize tax revenues, while also protecting businesses and households from high inflation. This is achieved by reducing value-added tax and excise duties, indexing income tax to account for price increases, lowering tax rates for low-income families while simultaneously increasing property taxes for high-income individuals, and so forth.

However, such reforms are unlikely to significantly change the general situation. The introduction of broad tax incentives and preferences for innovation and investment, crucial for maintaining international competitiveness in the face of global fragmentation, may somewhat narrow the tax base. Nevertheless, the development of digital solutions for tax administration will help increase the revenues from indirect taxes, potentially shaping a new tax structure that better meets the need to stimulate economic growth.

## 4.2. Developing (emerging) economies

### 4.2.1. Tax level

Similar to developed countries, many emerging economies are implementing reforms that increase the overall tax burden as a percentage of GDP as their prosperity grows.

**Table 2.** Types of tax structure in developed countries

| Type of tax structure                                    | Countries   |
|--|---|
| Prevalence of direct taxation over indirect taxation     | Australia, Belgium, Canada, Denmark, Ireland, Luxembourg, Sweden, Switzerland, the United States, and Norway (in recent years, these countries have been transitioning to equal tax revenues) |
| Prevalence of indirect taxation over direct taxation     | France, the Netherlands (in recent years, these countries have been transitioning to equal tax revenues)  |
| Relatively equal revenues from direct and indirect taxes | Austria, Finland, Great Britain; Germany and Iceland (in recent years, direct taxation has been dominant over indirect taxation in these countries)   |

*Note:* Indirect taxes can be defined as taxes related to the production and import of goods and services. They include VAT, import duties, excise duties and other specific taxes on services as well as financial and capital transactions. Direct taxes are defined as current taxes on incomes and wealth, such as personal income tax, corporate income tax, as well as capital acquisitions tax (a tax on gifts and inheritances). See: European Commission. Data on Taxation Trends. Methodological and Explanatory Notes. 2023. (p. 6) Available at: <https://taxation-customs.ec.europa.eu/system/files/2023-06/Methodology2023.pdf> (accessed: 24.01.2024).

As our calculations show, the higher is the country's income, the more significant is the role of its direct taxes. The entire dataset is divided into deciles based on GDP per capita (in constant prices adjusted for PPP) relative to the level of taxes for the corresponding period. Figure 5 shows the medians GDP and tax levels for each decile.

As can be seen from Figure 5, there is no clearly pronounced correlation between the level of taxes and the rate of economic growth in this case. For example, the average GDP per capita growth rates at PPP in groups A and D (the poorest and the richest countries) in the given period were comparable, standing at 3.2% and 3.7%, respectively. These groups include large Asian countries with high population density such as China (147 people/sq. km) and Indonesia (141 people/sq. km), as well as "modest Europeans" – Poland, Hungary, and the distinctive case of Turkey. Meanwhile, in groups B and C, the average GDP per capita growth rates at PPP were significantly lower – 0.2% and 1.5%, respectively.

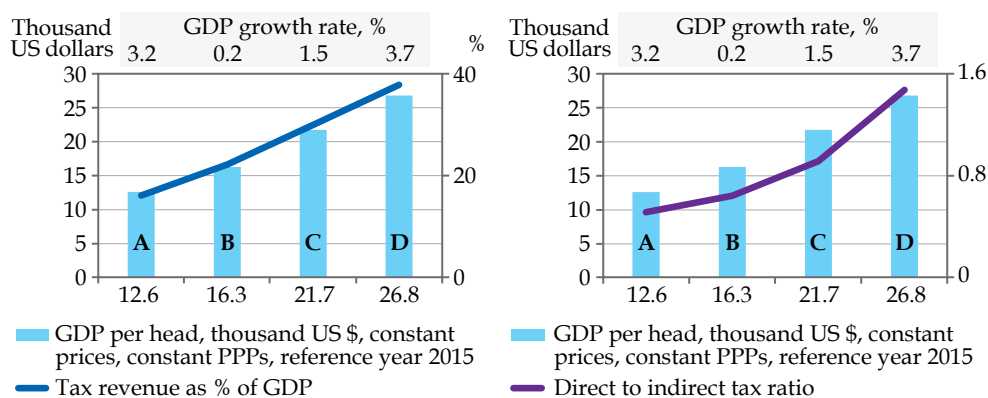
In China, which ranks among the top countries with the highest GDP in

the world at PPP, the tax level increased slightly, reaching 20.1% in 2021, which is close to the average value in the selected sample of developing countries (the lowest being in Indonesia at 10.0% and the highest in Hungary at 35.5%).

A tax burden level similar to that of China is observed, for example, in Colombia (19.2%). However, Colombia faces significantly higher unemployment and inflation rates compared to China, with Colombia's GDP per capita being only half of China's. Moreover, the proportion of the population living below the poverty line in Colombia is close to 50% (42.5% in 2020), whereas in China, it is 0%<sup>6</sup>.

Indonesia has the lowest level of taxes among developing countries. In 2020, its value was the lowest (10.1%) amid the general economic downturn (-2.1%), driven by the economic consequences of the COVID-19 pandemic. In 2021, the country managed to restore economic growth

<sup>6</sup> The World Bank. Poverty headcount ratio at national poverty lines (% of population) - China | Data. 2023. Available at: <https://data.worldbank.org/indicator/SI.POV.NAHC?locations=CN> (accessed: 24.01.2024).



**Figure 5. Relationship between the level of taxes and income in developing countries, 2009–2021**

*Note:* By income level (GDP per capita at PPP), from 2009 to 2021, developing countries were divided into four groups: Group A, comprising Indonesia, China, Colombia, and South Africa; Group B, comprising Brazil; Group C, comprising Argentina, Bulgaria, Mexico, and Chile; and Group D, comprising Hungary, Poland, and Turkey. The GDP growth rates are calculated by taking the average of the GDP growth rates per capita based on PPP for each group of countries.

*Compiled by the authors by using the data from:* Tax revenues as a percentage of GDP. Global Revenue Statistics Data Set. 2024. Available at: <https://stats.oecd.org/viewhtml.aspx?datasetcode=REV&lang=en#>; Revenue Statistics. Global Revenue Statistics Data Set. 2024. Available at: <https://stats.oecd.org/index.aspx?lang=en>; Regional GDP. Regional Economy – OECD. Stat. 2024. Available at: [https://stats.oecd.org/Index.aspx?DataSetCode=REGION\\_ECONOM#](https://stats.oecd.org/Index.aspx?DataSetCode=REGION_ECONOM#) (accessed: 24.01.2024).

(+3.7%), thanks to the stimulus package aimed at supporting infrastructure development and consumption growth, as well as allocated social assistance<sup>7</sup>. This inevitably led to a slight increase in the overall tax level (10.9%), which partially resulted from the increase in the top income tax rate and excise taxes<sup>8</sup>.

The highest level of taxes among the developing countries in 2021 was recorded in Hungary (33.7%) and Poland (36.7%), which is hardly surprising since they are in the same socio-economic field as developed European economies, where such a level of taxes is the norm.

At the same time, Poland and Hungary have shown different trends in terms of the tax burden: in Poland, since 2010, there has been a gradual increase in the tax burden (from 31.3% to 36.7%), while in Hungary, the dynamics of changes from 2009 to 2016 were somewhat chaotic, however, since 2016, there has been a gradual decrease in the tax-to-GDP ratio (from 39% to 33.7%).

Brazil has a relatively high level of taxation (35.5%). In this country, about 45% of all tax revenues come from taxes on goods and services, which is why the rise in prices of fuel, minerals, and food products in 2021 became one of the key factors influencing the growth of tax revenues<sup>9</sup>.

In general, the level of taxes in developing countries varies significantly, ranging from 10.0% (Indonesia) to 36.7%

of GDP (Poland, a moderately developed European country) in 2021.

Measures to prevent mass layoffs and preserve jobs in sectors hit by the pandemic have allowed national governments to restore economic activity, resulting in GDP growth in all developing countries. However, unlike developed countries, in 2021, there was also an increase in nominal tax revenues (Figure 6), resulting from by less stringent restrictions on economic activity, as well as relatively strict fiscal or quasi-fiscal measures<sup>10</sup>.

Thus, judging by the macroeconomic data, developing countries are following their own, often distinct paths in developing fiscal systems and tax policies, where measures taken to regulate taxes have helped mitigate emerging issues but have not significantly impacted economic growth (at least in the medium term). Instead, governments tailored fiscal policies to follow changes in the economy.

#### 4.2.2. Composition and structure of taxes

Similar to developed countries, in emerging economies, the main taxes include personal income tax, corporate income tax, sales taxes, and property taxes. However, unlike developed countries, the share of these taxes in GDP varies significantly. For example, in 2021, the share of personal income taxes in GDP ranged from 1–1.2% (Indonesia, China) to 8.7% (South Africa); consumption taxes ranged from 4.8% in Indonesia to 15.9% in Hungary; social insurance contributions ranged from 0.3% in South Africa to 13% in Poland. Corporate income tax shares in GDP were more similar, ranging from 1.4% in Hungary to 5.0% in South Africa, and property taxes ranged from 0.1% in Indonesia to 3.1% in Argentina.

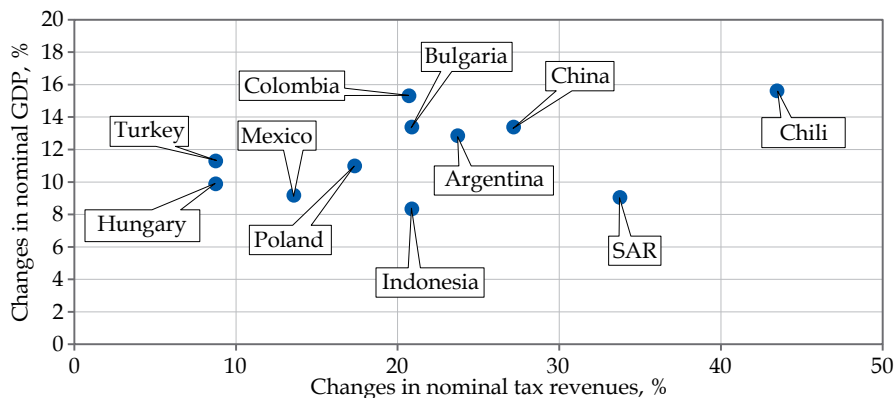
The analysis of the relationship between GDP and tax structures in developing countries revealed a positive correlation between revenues from the personal income tax and GDP in most such countries (with the exception of Hungary, Brazil, and Turkey).

<sup>7</sup> The World Bank. Economic Reforms and Investments in Health, Social Protection and Infrastructure Will Support Indonesia Sustainable Recovery. 2020. Available at: <https://www.worldbank.org/en/news/press-release/2020/07/16/economic-reforms-and-investments-in-health-social-protection-and-infrastructure-will-support-indonesia-sustainable-recovery> (accessed: 24.01.2024).

<sup>8</sup> The World Bank. Indonesia: Support for Public Health and Affected Households and Firms Critical for a Secure and Fast Recovery. 2020. Available at: <https://www.worldbank.org/en/news/press-release/2020/12/17/indonesia-support-for-public-health-and-affected-households-and-firms-critical-for-a-secure-and-fast-recovery> (accessed: 24.01.2024).

<sup>9</sup> Xinhuanet. Brazil sees record-high tax collection in 2022. 2023. Available at: <https://english.news.cn/20230125/036bb31a1fc945a6b8e91ad01c7aa61f/c.html#> (accessed: 24.01.2024).

<sup>10</sup> OECD. Tax Policy Reforms 2021: Special Edition on Tax Policy during the COVID-19 Pandemic. OECD Publishing, Paris, 2021. <https://doi.org/10.1787/427d2616-en>



**Figure 6. Changes in nominal tax revenues and nominal GDP in developing countries in 2022 compared to 2021**

Compiled by the authors using the data from: Revenue Statistics. Global Revenue Statistics Data Set. 2023. Available at: <https://stats.oecd.org/index.aspx?lang=en>; Regional GDP. Regional Economy - OECD. Stat. 2023. Available at: [https://stats.oecd.org/Index.aspx?DataSetCode=REGION\\_ECONOM#](https://stats.oecd.org/Index.aspx?DataSetCode=REGION_ECONOM#) (accessed: 24.01.2024).

Across income groups, differences in income taxes are significant (similarly to developed economies): for countries that were in the top three deciles in the analyzed period, median values of corporate income taxes and personal income taxes amounted to around 4.9% and 8.5% of GDP, respectively (while countries in the bottom three deciles of GDP per capita collect an average of 1.8% and 1.2%, respectively).

Revenue from taxes on goods and services (including VAT) and property taxes increases alongside the prosperity of countries; however, this is not true for all income groups. For example, in 2021, their revenues increased in parallel with GDP growth from 16.3 to 25.2 thousand US dollars per capita (5<sup>th</sup> to 8<sup>th</sup> deciles).

In the given countries, tax structures vary considerably as a result of differences in historical development paths, financial constraints, and uneven income distribution. This partially explains why many of them do not fully use the potential of income and property taxation. For example, in 2021, the majority of revenues in many countries came from taxes on goods and services: Argentina (53.6%), Chile (53.1%), Bulgaria (48.6%), Hungary (45.9%), among others, while social insurance contributions comprised the largest share of total revenues in Poland (35.4%).

Property taxes played a less prominent role in the revenues of most developing countries (except for South Africa and Colombia) (Figure 7).

Taxes on income (personal income tax (PIT) and corporate income tax (CIT)) accounted for half of all tax revenues in South Africa and around 40% in Mexico and Indonesia. However, the trends in these countries are different, with South Africa and Indonesia experiencing a noticeable increase in the share of personal income tax and a decrease in the share of corporate income tax revenues until 2021, while Mexico saw a gradual increase in the proportion of these taxes.

In developed countries, there is no clear correlation between economic growth and tax structure.

The dynamics of revenues from major tax types from 2009 to 2021 (Figure 8) indicate that there were no significant changes in the development of tax systems in the pre-pandemic period. Meanwhile, personal income tax and corporate income tax showed a weak tendency towards gradual growth. However, the COVID-19 crisis negatively impacted economic and financial performance of businesses, leading to a reduction in the proportion of these taxes in recent years, alongside a simultaneous increase in the relative importance of social insurance contributions.

The average share of indirect taxes on goods and services remained consistently high in the given period, except for 2019 and 2020. Social contributions surged in the pandemic year of 2019. There were two main reasons behind this trend: firstly, this increase was caused by the redistribution of shares as other taxes decreased. Secondly, it resulted from national governments expanding the tax base and increasing contribution rates, aiming to ensure the stability of social insurance systems during the pandemic, disrupted by significant wage fluctuations throughout the economic cycle.

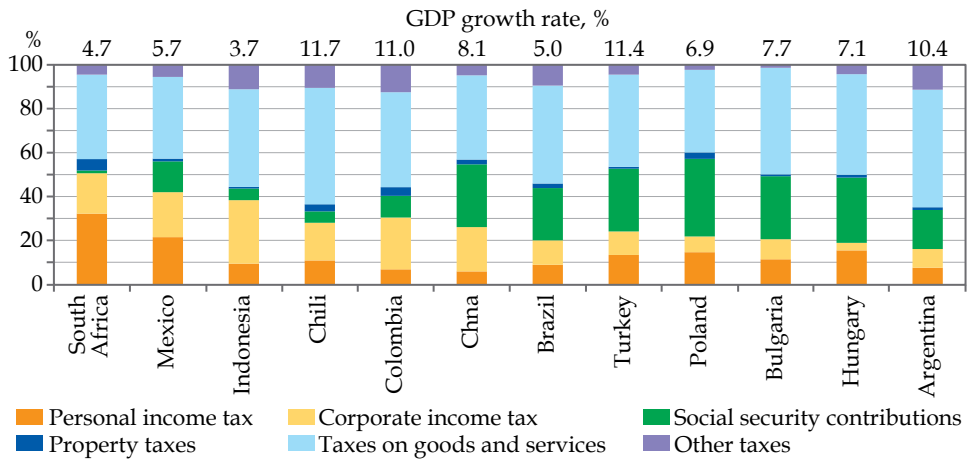
For instance, Mexico implemented a comprehensive pension reform, result-

ing in a significant increase in benefits and contributions tied to wages. Many countries have raised the retirement age, expanding the tax base for social contributions<sup>11</sup>.

The analysis of changes in tax rates indicates that despite some common trends, there are noticeable differences among developing countries<sup>12</sup>.

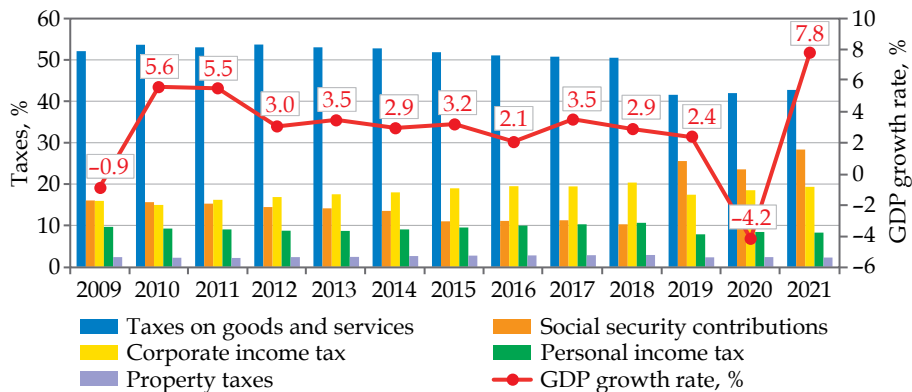
<sup>11</sup> OECD. Pensions at a Glance 2021: OECD and G20 Indicators. OECD Publishing, Paris, 2021. <https://doi.org/10.1787/ca401ebd-en>

<sup>12</sup> KPMG. KPMG’s Global Online Tax Rates Tool. 2023. Available at: <https://kpmg.com/sa/en/home/services/tax/tax-tools-and-resources/tax-rates-online.html> (accessed: 24.01.2024).



**Figure 7. Tax structure of developing countries, 2021**

Compiled by the authors using the data from: Revenue Statistics. Global Revenue Statistics Data Set. 2024. Available at: <https://stats.oecd.org/index.aspx?lang=en> (accessed: 24.01.2024).



**Figure 8. Structure of the major taxes in developing countries in 2009-2021**

Compiled by the authors using the data from: Revenue Statistics. Global Revenue Statistics Data Set. 2024. Available at: <https://stats.oecd.org/index.aspx?lang=en> (accessed: 24.01.2024).

Hungary has gradually decreased the corporate income tax and personal income tax while keeping the VAT rate unchanged, continuing pre-crisis trends.

Several countries have reduced their corporate income tax rates in response to the pandemic (Colombia, Turkey, Chile, South Africa, Indonesia), which aligns with long-term global trends. In Argentina, the corporate income tax rate was reduced for enterprises engaged in knowledge-related economic activities (from 25% to 15%), while in Turkey, it was lowered for companies that first list at least 20% of their shares on the Istanbul Stock Exchange since January 2021 (from 22% to 20% for five years).

Meanwhile, several other developing countries, on the contrary, have decided to increase their direct tax rates: Colombia, Mexico, Turkey (income tax), and South Africa. In response to the falling tax revenues due to COVID-19, Chile reformed the personal income tax system by restoring the maximum PIT rate to 40% in 2020, which had been reduced from 35% in 2017. In the given period, the direct tax rates and VAT remained unchanged in Bulgaria, Brazil, China, and Poland.

The analysis has shown that it is quite difficult to identify common features and trends in the tax structures of developing countries; however, statistical data on major taxes clearly indicate the predominance of indirect taxation over direct taxation in most of them (Table 3).

**Table 3. Types of tax structures in developing countries**

| Type of tax structure                                 | Countries  |
|---|--|
| Prevalence of direct taxation over indirect taxation  | South Africa   |
| Prevalence of indirect taxation over direct taxation  | Argentina, Bulgaria, Brazil, Chile, China, Colombia, Hungary, Poland, Turkey |
| Roughly equal revenues from direct and indirect taxes | Indonesia, Mexico  |

The formation of a tax structure with the prevalence of indirect over direct taxation indicates certain issues in income taxation, partly linked to such well-known factors as fluctuating wages due to irregular pay and seasonal work, lobbying by wealthy taxpayers with economic and political sway, and sometimes ineffective tax administration. In many developing countries, the marginal income tax rate for individuals significantly exceeds the corporate income tax rate, incentivizing taxpayers to opt for collective or corporate forms of business. Another characteristic of developing countries is the absence of unified marginal tax rates for corporate income, which significantly distorts the processes of market resource allocation.

## 5. Discussion

### 5.1. Tax trends

The analysis of statistical indicators of tax levels, tax revenues, tax rates, and the level and dynamics of GDP in both developed and developing countries has shown that in the period after the global financial and economic crisis of 2007–2008 (the Great Recession), tax policies were relatively predictable and stable.

There's a famous saying: "an old tax is a good tax". Stable taxes, based on clear rules aimed at ensuring fiscal responsibility and manageable public debt [35], empower businesses to make decisions without being hindered by the state's tax policy, while also helping governments confidently plan tax revenues and expenditures.

Additionally, it should be noted that discretionary tax policy is less well-suited to promptly respond to emerging issues compared to monetary policy, as it is more susceptible to political influence and depends on lengthy and unpredictable democratic procedures.

In recent years, there has been a surge in global fiscal activism driven by several factors, including the depletion of monetary policy's regulatory potential in many countries and the growing importance of government support for R&D, propelled

by increased global technological competition and worsening environmental conditions, alongside the urgent need to mitigate the consequences of such unexpected events as COVID-19 and military conflicts. Specifically, in the given period, the COVID-19 pandemic emerged as a “black swan” event, compelling many countries to mobilize financial resources, often through tax and budgetary measures [36].

Fiscal decision-making affects the national tax level and economic growth rates. Statistical data, however, do not indicate any pronounced (or at least significant) impact that differences in tax levels and fluctuations in the tax burden may have on economic growth in developed countries. Over the long term, taxes have been increasing at roughly the same rates (in some countries, slightly higher) as GDP, as was shown for OECD states by OECD experts, while in the short term, their volatility mirrored fluctuations in the business cycle<sup>13</sup>.

This doesn't mean that taxes are not important; rather it suggests that their use was limited (except perhaps during the pandemic), and in developed countries, monetary policies, including quantitative easing, held more sway than fiscal measures during the period under review [37]. Additionally, the actual impact of taxes was overshadowed by other non-tax factors.

## 5.2. Developed economies

The tax structure in developed countries is dominated by taxes on personal income, as well as mandatory contributions to social funds. Taxes on goods and services account for a smaller share of the total tax revenues of OECD member countries.

The share of the largest tax on goods and services (VAT) is clearly smaller than that of the personal income tax and mandatory social contributions. Given that income taxes and social contributions rank highest in an informal ranking of taxes that are the most harmful to economic

growth [15], this situation could have a negative impact on the economic growth in developed countries.

The actual situation, however, is much more complex than that. For example, high and continuously rising social contributions, driven by the processes of demographic aging, on the one hand, reduce disposable incomes, consumption, and investments. On the other hand, they contribute to the struggle against poverty and social stability, which are also crucial for sustainable economic development, especially in periods of exogenous shocks.

The differences between the tax structures of many developed countries are typically not very significant (on a global scale), as are the differences in tax objects, tax rates, and the breadth of the tax base, which is explained by common patterns in economic and fiscal evolution, years of integration efforts, and processes of tax policy harmonization. The similar strategic directions of the tax systems' evolution are often determined by the historically high level of economic development and shared social institutions in the Western world.

However, recent trends towards escalating technological competition worldwide and geo-economic fragmentation may result in increased discrepancies and even contradictions in the fiscal policies of various groups of developed countries, particularly between the EU and the USA.

One of the recent examples is the US Inflation Reduction Act of 2022, which provides for tax subsidies for environmental initiatives and includes explicit “Buy American” requirements. In the EU, this law has raised concerns about possible hindrances to exports to the US and the possibility of European firms being forced to relocate. As a result, the EU has responded with changes to state aid rules under the Green Deal Industrial Plan [39] and special climate subsidies<sup>14</sup>.

<sup>13</sup> OECD. Revenue Statistics 2023: Tax Revenue Buoyancy in OECD Countries. OECD Publishing, Paris, 2023. <https://doi.org/10.1787/9d0453d5-en>

<sup>14</sup> European Parliament. Think Tank. EU's response to the US Inflation Reduction Act (IRA). 2023. Available at: [https://www.europarl.europa.eu/thinktank/en/document/IPOL\\_IDA\(2023\)740087](https://www.europarl.europa.eu/thinktank/en/document/IPOL_IDA(2023)740087) (ac-cessed: 24.01.2024).



### 5.3. Developing economies

Emerging economies differ from developed countries in their diverse fiscal systems, encompassing varying levels and structures of taxation. These differences arise from unique historical trajectories and national strategies aimed at addressing economic, social, environmental, and other pertinent challenges.

Unlike developed countries, many developing nations have a much lower overall tax level, with a larger proportion of taxes coming from goods and services rather than individuals' and businesses' incomes. However, this doesn't necessarily mean these countries have better fiscal conditions for boosting economic growth compared to developed ones. Instead, it points to challenges in improving citizens' well-being, organizing income taxation, and a tendency to rely on raw materials in developing their economies.

In many of these countries, taxes, much like in developed nations, generally did not have a significant impact on economic growth. Instead, they often served as tools to tackle economic issues and deal with external shocks.

This trend, observed in advanced emerging economies as well as many developed countries, involves the pursuit of an active fiscal policy aimed at enhancing scientific and technological progress and fostering economic growth, driven by escalating competition for cutting-edge technologies [38]. This primarily concerns the major economies that exert an increasing influence on global economic processes such as China, India, Brazil, Indonesia, Mexico, and Nigeria.

For example, according to Reuters, in 2022, China planned a package of financial stimuli in the form of subsidies and tax incentives to support its semiconductor industry, amounting to over 1 trillion yuan (143 billion dollars)<sup>15</sup>. In India in 2022, the government increased tax support for

<sup>15</sup> Zhu J. Exclusive: China readying \$143 billion package for its chip firms in face of U.S. curbs. 2022. Available at: <https://www.reuters.com/technology/china-plans-over-143-bln-push-boost-domestic-chips-compete-with-us-sources-2022-12-13/> (accessed: 24.01.2024).

new semiconductor enterprises to 50% of project costs and announced plans to abolish the ceiling on maximum allowable investments to boost display production<sup>16</sup>. In 2019, Brazil provided tax deductions from various federal taxes for producers of goods used in the IT and communication sectors that invest in R&D and innovation<sup>17</sup>.

### 6. Conclusion

Our analysis of recent trends in tax level, composition, and structure does not corroborate the predictions of various theoretical models regarding the significant impact of tax factors on economic growth. In the aftermath of the global financial crisis (Great Recession) of 2007–2008, the tax policies of many countries, both developed and developing, didn't seem to have a pronounced systemic impact on economic growth according to statistical data. Instead, countries tended to exercise restraint in their fiscal responses to the crisis, rather than opt for a more proactive approach.

We found no confirmation for our hypothesis that there are clear patterns in the relationships between tax indicators and economic growth, which would characterize the direction of tax influence in relatively similar groups of countries. The actual picture is too varied and doesn't lend itself to a straightforward interpretation.

This conclusion, however, should be interpreted very cautiously. Taxes undoubtedly influence the well-being and behavior of economic entities. Thus, the following considerations should be kept in mind:

*Firstly*, the influence of taxes should be distinguished from the distorting influence of non-tax factors. This can be done, for example, through a specific

<sup>16</sup> Vengattil M. India expects at least \$25 bln investment under semiconductor incentive scheme. 2022. Available at: <https://www.reuters.com/markets/asia/india-offer-more-fiscal-support-under-its-chip-production-incentive-scheme-2022-09-21/> (accessed: 24.01.2024).

<sup>17</sup> Rivas de Simone D.C., Caumo R.H. Brazil to offer tax incentives for manufacturers of IT and communication products. 2020. Available at: <https://www.internationaltaxreview.com/article/2a6a4ynkdzu2frfpr629s/brazil-to-offer-tax-incentives-for-manufacturers-of-it-and-communication-products> (accessed: 24.01.2024).

counterfactual analysis, i.e., by comparing what actually happened with what could have happened in the absence of discretionary intervention.

*Secondly*, it is important to remember that cautious fiscal policy, which gives priority to monetary measures, is not an absolute imperative but rather a characteristic of a particular stage of economic development. The situation could change significantly due to new external shocks and other challenges, which requires active government intervention, for instance, a government may resort to such interventions to prevent increased economic inequality as a result of advancements in AI technologies.

*Thirdly*, rather than merely being economic agents, taxpayers are individuals endowed with free will, albeit constrained by institutional frameworks and over time, they can also change their behavior patterns, influenced by the new digital reality such as the rise of remote work, freelancing, tax nexus for businesses, and other factors.

Certainly, factors such as the digital and new industrial revolutions, geo-eco-

nomnic fragmentation, and global environmental challenges – especially since the onset of the pandemic – contribute to the recent rise in fiscal activism, primarily observed in influential developing (emerging) economies that are likely to shape new trends in the development of tax systems worldwide.

A promising avenue for further research would involve identifying and analyzing these factors not uniformly across all countries worldwide or within the traditional divide between developed and developing (emerging) economies, but within the framework of new macro-regions. These regions, where participants are interconnected through supply and value chains, will need to coordinate their tax policies to achieve maximum cooperative effect. It would also be advisable to pay particular attention to macro-regions that include rapidly progressing countries of the Global South, which have already concentrated a significant portion of global industry, including cyber-physical sectors – the main drivers of development for the entire global economy.

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### Acknowledgements

The article is based on the results of research carried out at the expense of budgetary funds under the state assignment of the Financial University under the Government of the Russian Federation.

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### For citation

Bogachov S.V., Vishnevsky V.P., Gurnak A.V., Nekliudova V.D. Modern Tax Trends and Economic Growth in a Turbulent World: Insights from Developed and Developing Economies. *Journal of Tax Reform*. 2024;10(1):63–83. <https://doi.org/10.15826/jtr.2024.10.1.157>

### Article info

Received February 14, 2024; Revised March 5, 2024; Accepted March 26, 2024

### Благодарности

Статья подготовлена по результатам исследований, выполненных за счёт бюджетных средств по государственному заданию Финансового университета при Правительстве Российской Федерации.

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### Для цитирования

Bogachov S.V., Vishnevsky V.P., Gurnak A.V., Nekliudova V.D. Modern Tax Trends and Economic Growth in a Turbulent World: Insights from Developed and Developing Economies. *Journal of Tax Reform*. 2024;10(1):63–83. <https://doi.org/10.15826/jtr.2024.10.1.157>

### Информация о статье

Дата поступления 14 февраля 2024 г.; дата поступления после рецензирования 5 марта 2024 г.; дата принятия к печати 26 марта 2024 г.