https://doi.org/10.34135/sjpppa.230202

Jarmila RYBOVÁ[1] – Štěpánka KAMENÍKOVÁ[2]

COMPARISON OF TAX BURDEN INDICATORS IN THE CZECH REPUBLIC AND SLOVAKIA[3]

Abstract
The article focuses on the comparison of the tax systems of the Czech Republic and Slovakia in the period 2017-2020. First, it deals with a brief description of the basic parameters of Czech and Slovak taxes, which also include contributions to social security and health insurance. In the next section, there are selected indicators of taxation. These indicators are implicit tax rates on consumption, labour, and capital, effective tax rates, tax mix, and tax quota, and on the other hand, the standard of living is presented by the indicator of gross domestic product per inhabitant in purchasing power parity. By evaluating the selected indicators, it was found that the tax burden in the Czech Republic is higher than in Slovakia, although the tax quota indicator indicates the opposite. It can be stated that it is appropriate to use more indicators to assess the tax burden.

Key words: tax quota, taxation, implicit tax rate, tax mix, Czech Republic, Slovakia

1 INTRODUCTION

The situation and ties between the Czech Republic and Slovakia are unique. This applies in the area of taxation as well. The fact that the two countries formed one state for many decades and are now still building on further cooperation affects not only the present but also future developments. The purpose of the article is not to compete in the field of taxation, but rather to mention and compare

Faculty of Economics, Department of Accounting and Finance, University of South Bohemia in České Budějovice, Studentská 13, 370 05, České Budějovice, Czech Republic, jrybova@ef.jcu.cz, ORCID iD: https://orcid.org/0000-0001-9074-6903.

2 Faculty of Economics, Department of Accounting and Finance, University of South Bohemia in České Budějovice, Studentská 13, 370 05, České Budějovice, Czech Republic, 3kamenikova@ef.jcu.cz.

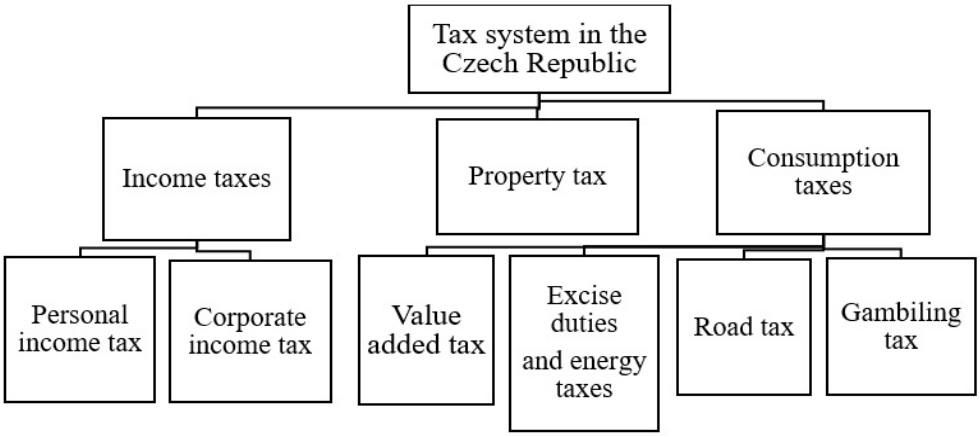
3 The article is processed as an output of the project: Economic and financial imbalances at the level of the company, region, and state registered by the Grant Agency of the University of South Bohemia under the designation 129/2022/S.

several indicators of taxation that can support the further development of mutual relations, for example in the business sphere. Although the tax quota is used as a basic indicator, its reporting power is limited.

1.1 Tax system in the Czech Republic and Slovakia

The tax system represents a summary of all taxes that are collected on the territory of the state. It also includes the links between individual taxes and the rules for collecting taxes.

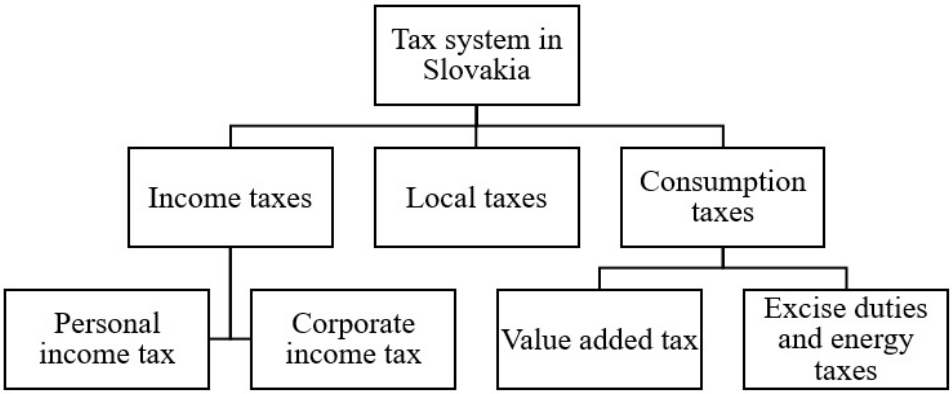
Figure 1. Tax system of the Czech Republic



Source: Own processing, Marková 2023.

Just like the tax system of the Czech Republic, the tax system of Slovakia also contains direct and indirect taxes. The tax structure of the two states is different. The tax system of Slovakia includes, for example, local taxes, which, in addition to taxes on real estate, contain other taxes that are not included in the Czech tax system. Other taxes include social security contributions, which include social security and health insurance contributions.

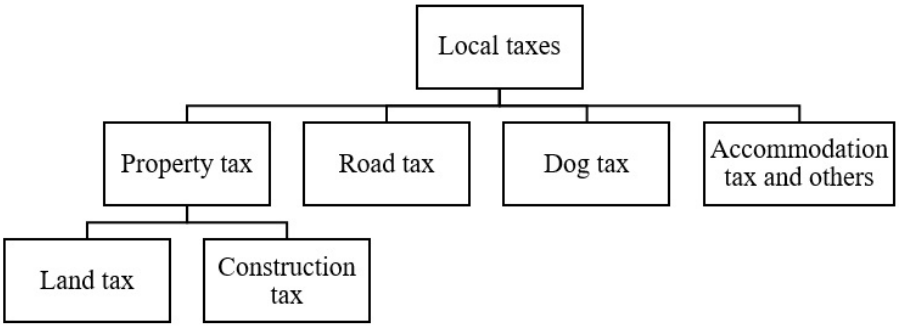
Figure 2. Tax system in Slovakia



Source: Collective of Authors 2022.

Figure 3 shows local taxes in Slovakia in detail. Payments to public budgets are included in the group of local taxes, which are also collected in the Czech Republic, but in the case of payment for a dog and for accommodation, they are a fee.

Figure 3. Local taxes in Slovakia



Source: Collective of Authors 2022.

The classification of road tax differs between the two states. The inclusion of road tax is a subject of discussion even among experts. The authors Vančurová, and Zídková (2022) rely on the OECD methodology when including road tax. Here, the road tax is included among indirect taxes and, depending on the object of taxation, it belongs to use taxes.

2 METHODOLOGY

The article aims to compare the tax systems of the Czech Republic and Slovakia based on selected indicators. The authors are based on the description of selected basic parameters of individual taxes, taxation indicators of selected states, and their evaluation in the defined period 2017-2020. The basis for the elaboration of the article is also the publication of the co-author Kameníková (2023). Data from 2021 were included if they were already available in the respective databases. The data source is the database of Eurostat (2023), OECD (2023), and the document Taxation Trends in European Union published by the European Commission (2022).

The comparison of the tax systems of both countries was made based on selected indicators of the tax burden. These indicators are:

Implicit tax rates:
- implicit tax rate on consumption,
- implicit tax rate on work,
- implicit tax rate on capital,

Effective corporate income tax rate,
Tax mix,
Composite tax quota,
Tax Freedom Day.

Another indicator that complements the context of tax indicators is the indicator of the standard of living of the population:
• Indicator of gross domestic product (GDP) per capita in purchasing power parity (PPP).

2.1 Implicit Tax Rates

Implicit tax rates (ITR) relate tax revenues to the type of activity or commodities that are taxed, i.e. tax revenues are not related to GDP. It is an analysis of the impact of the tax burden on activities according to their function, which is capital, labour, and consumption. We distinguish the following:

Implicit consumption tax rate
Implicit tax rate on labour
Implicit tax rate on capital

We also encounter these indicators in the Eurostat database (2023) in studies and statistical publications of the European Commission (2022) and subsequently in various studies.

Implicit consumption tax rate

This indicator (ITRc) measures the share of consumption taxes, i.e. value added tax,

energy, and consumption taxes, from household expenditure on final consumption in the territory of a given state, including intermediate consumption and in-kind social transfers from government institutions and non-profit institutions serving households, see (European Commission, 2022). Equation 1 shows the calculation of ITRc.

$$ITR_c = \frac{total\ of\ all\ consumption\ taxes}{household\ final\ consumption\ expenditure} * 100$$

The authors of Feher et al. (2019) in their study investigated the effect of harmonization on the implicit consumption tax rate. The results of their study demonstrated the influence of harmonization on the development of consumption taxation. There is an increase in consumption taxation, which, however, hinders economic growth.

However, it is difficult to estimate the development of consumption tax rates based on the implicit tax rate on consumption. The level of the indicator is affected by two different types of taxes, namely value-added tax, which is the so-called value tax, and the second type is energy and consumption taxes, which we classify as specific taxes .

The implicit tax rate on labour

The European Commission (2022) uses two indicators to measure the effective tax burden on labour: the implicit tax rate (ITR) on labour and the tax burden on labour. ITR on labour measures the total tax burden of all employed labour. This tax burden is calculated as a share where the numerator includes taxes and social contributions from the income of the employed workforce and the denominator includes total employee compensation and payroll taxes. It is an overall summary indicator based on macroeconomic variables in the national accounts. Equation 2 shows the calculation of ITRl.

$$ITR_l = \frac{DT + IT + SIC\ of\ employees\ and\ employers}{total\ compensation\ to\ employees} * 100$$

Legend:
DT …Direct taxes
IT …Indirect taxes
SIC …Social insurance contributions

Labour ITR is an aggregate measure, it provides an overall picture of taxation averaged across all workers. It should be noted that all tax expenditure reduces the ITR on labour as it reduces tax revenue. However, only generally applicable provisions unrelated to actual expenditure, such as standard family allowances, reduce the tax burden that the model takes into account, see European Commission (2022).

The implicit tax rate on capital

The Implicit Tax Rate (ITRcap) on capital reported by the European Commission (2022) is based on national accounts aggregates and attempts to measure what percentage of the potential capital tax base is collected as tax. An alternative to this indicator is the measurement of ITR on business income. Equation 3 shows the calculation of ITRcap.

$$ITR_{cap} = \frac{income\ from\ all\ capital\ taxes}{all\ potential\ share\ capital\ and\ business\ income} \cdot 100$$

ITRcap is defined as the ratio of taxes on capital to the sum of capital income and savings income. The numerator includes taxes collected on income that households and corporations receive from savings and investments, taxes related to capital stock derived from savings and investments in previous periods, and taxes on asset transactions.

The components of the capital tax base (ITR denominator) are only a rough measure of the worldwide capital income of a country's residents for domestic purposes. The ITR denominator may differ from the statutory tax base defined in the legislation for the following reasons:

- Tax accounting rules are not fully comparable between individual countries, so the consumption of fixed capital may differ here.
- Capital gains are not part of the capital accounts in the national accounts.
- Non-taxable profits in the case of the central bank are included in the denominator.
- Interest payments made by households and self-employed persons are not separated from each other.
- Taxable profits and tax revenues reduced by pass-through cause a cyclical mismatch in basis and ITR, distorting international comparability. Differences in methods for estimating imputed owner-occupied rents between national accounts and tax reserves also lead to bias.

There are also differences between countries in methods affecting comparability: for example, fixed capital stocks, depreciation, and imputed rents from national accounts are estimated differently across countries.

2.2 Effective corporate income tax rate

The effective tax rate expresses the proportion of the amount of tax on gross income or profit, not on the tax base. This indicator is often used to compare taxes over time or between countries, it is explained by e.g. Vančurová, Zídková (2022). Morávková (2015) states that the effective tax rate indicator is also suitable for detecting distortions caused by taxes and can also be used for evaluating tax reforms.

Nicodeme (2001) adds the reasons for the importance of this indicator. The first reason is that it can be used to compare statutory and effective tax rates. This comparison gives an idea of tax incentives from the authorities. These incentives can be, for example, a lower tax base or insufficient enforcement. The second reason is the cross-country comparison of effective tax rates, which indicates whether the tax treatment of companies with the same characteristics located in different countries differs significantly. These differences in comparison may indicate whether or not a large variance in statutory tax rates may mask small differences in effective taxation. Countries that have high statutory rates can lower the base or reduce tax enforcement.

The author Szarowská (2011) describes three basic methods of determining effective tax rates, namely the methods of backward macro view, backward micro view, and forward micro view. The differences between the individual methods are given by the differences in the data used.

The retrospective macro-view method determines the effective corporate tax rate from the obtained data contained in the national accounts of individual countries, which are published by national or international organizations (e.g. OECD, European Commission). Their positive advantage is the mutual comparability and time series time series, which can be used to monitor changes in the total effective tax burden. Macro view methods According to Morávková (2015), macroeconomic indicators are divided into implicit tax rates and tax percentages. Implicit tax rates are already mentioned above. Three different calculation methods are taken into account for the tax percentage:

- Corporate tax on total tax revenues,
- Share of corporate tax on GDP,
- The share of corporate tax revenue on the corporation's economic result.

The micro-lookback method uses the financial statements of individual companies to calculate the effective corporate tax. There are three ways to determine

these effective rates, which are calculated as a ratio where the numerator is the taxes paid on corporate income or profits and the denominator is the tax base, which can be expressed as total operating income before taxes, total operating income, or gross operating income. Morávková (2015) states that the difference between a backward-looking and a forward-looking micro-view is the input data used.

Forward micro-view methods obtain indicators of the corporate tax burden, which have been used to analyse the influence of taxes on the investment decisions of corporations. These indicators can be used for international comparisons and are designed to track the effects of taxation on investment incentives that differ across national tax laws. If the tax is taken into account in the investment decision, the rate of return of the project will be lower than if the tax was not taken into account. Their difference is referred to as a tax wedge. The size of the tax wedge depends on the mutual effect of taxation and inflation, on the tax assessment of depreciation, inventory, and various legally permissible forms of profit, and on several other elements that depend on the definition of the tax base. The effective tax rate for an investment project therefore depends on the industry in which the investment is made, the type of assets acquired, the method of financing the investment, and the identity of the investor.

Two indicators can be included in the forward-looking micro view method, see Morávková (2015):

- Effective marginal tax rate (EMTR) for hypothetical investment projects,
- Effective Average Tax Rate (EATR) for hypothetical investment companies.

Calculation of the Effective Marginal Tax Rate (EMTR)

For the calculation of EMTR, it is assumed that even the real value of economic rent after taxation R is equal to zero. Equation 4 shows the calculation of the effective marginal tax rate (EMTR).

$$EMTR = \frac{p_0 - s}{p_0}$$

Legend:
EMTR …effective marginal tax rate
P0 … rate of return on marginal investment before tax
s ... tax

Calculation of the Effective Average Tax Rate (EATR) of the business

If the investment is more profitable than the marginal investment and a positive

after-tax economic rent is expected, then the corporate tax burden is calculated through the EATR. The calculation of the EATR indicator also includes the influence of the effective marginal tax rate (EMTR). Equation 5 shows the calculation of the effective average tax rate (EATR).

$$EATR = \frac{R_0 - (1 - z) \cdot R}{p/(1 + r)}$$

Legend:
EATR …effective average tax rate
R0…the pre-tax net present value of the given investment
p …rate of return on investment before taxation
R …positive economic rent after taxation
z …tax on capital gains
p/(1+r) …net present value of investment return before taxes

Relationship between EATR and EMTR
The following equation 6 describes the relationship between the two quantities.

$$EATR = \frac{p_0}{p} \cdot EMTR + \frac{p - p_0}{p} \cdot \tau$$

Legend:
EATR = effective average tax rate
EMTR = effective marginal tax rate
p = pre-tax rate of return on investment
p_0= positive economic rent after taxation
τ = statutory corporate tax rate

2.3 Tax Mix

The tax mix expresses the combination of shares of individual taxes on the total tax revenue. The structure of the tax mix of each state corresponds to its traditions, long-term fiscal policy, customs, and, last but not least, the tax morals of citizens and companies. Discussions about the optimal tax structure are still relevant. The question is whether it is possible to define an optimal tax structure that would suit all states. From the differences in the tax mix between individual states, it is possible to infer preferences in taxation by direct or, conversely, indirect taxes. A higher share of direct taxes in the tax mix is usually found in states with

higher incomes, a higher standard of living, and better tax morale. On the other hand, high-income taxation can limit people's willingness to work. In addition, the taxation of income from work can be relatively easily moved to a state with a lower tax burden. States in which revenues from indirect taxes predominate are characterized by lower incomes or lower tax morale. Indirect taxes, however, burden lower social groups of the population more. Taxpayers are perceived as less sensitive than income taxes. This topic is expressed similarly (Kukalová, Moravec, Ječmínek, & Martásková, 2018). The share of social security in the tax mix is another aspect by which the tax system can be identified in more detail. Social security is a tax payment where there may not be such significant tax evasion, as it burdens citizens' incomes when they are acquired. It can be added that, at the moment, with a deficit in the social security account, these revenues cannot be used other than for the social sector. Author Kubátová (2018) states that high social security contributions may mean that the government is trying to shift the tax burden to taxes with lower evasion similar to countries with high consumption taxes. If we focus on the states of the European Union, it is evident that the differences in the field of social security are quite significant between them, see (Eurostat, 2023). For example, the Nordic countries show low shares of social insurance due to the financing of this area also from other taxes. In contrast, Slovakia, the Czech Republic, Slovenia, and Germany are among the countries where these shares in the tax mix are, on the contrary, high.

2.4 Tax Quota

The tax quota represents the basic and probably the most used indicator of the tax burden. This indicator expresses the share of tax revenues from the gross domestic product (GDP) in nominal terms per calendar year. The author (Rybová, 2016) deals with the indicator of the composite tax quota in the Czech Republic in comparison with other member states of the European Union, Macek (2014) in his study regarding the effect of taxation on economic growth also dealt with the tax quota and called it an approximation expressing part of the nominal GDP, which is redistributed through public budgets.

We distinguish several types of tax quotas according to the breadth of the concept of tax income. For example, authors Vančurová & Zídková (2022) explain the tax quota indicators in more detail.

The author Rybová (2017) worked with a partial tax quota when comparing consumption taxes in the study Convergence of EU Member States in the field of excise duties in the period 2000-2015.

In our article, we focus on the composite tax quota in the Czech Republic and Slovakia in the period 2008-2020. When comparing the values of individual states, it is necessary to be aware of the differences in the performance of the

economy expressed by the gross domestic product for the given year. Equation 7 shows the calculation of the composite tax quota

$$\text{composite tax quota} = \frac{\text{TR+SSP}}{\text{GDP}} * 100$$

Legend:
TR ... tax revenues
SSP ... social security premiums
GDP …gross domestic product

Author Kubátová (2018) draws attention to the limitations of international comparisons of the tax quota. The limiting aspects are:

- Underestimation of the indicator due to the existence of the grey economy, which is not included in the indicator;
- The absence of tax expenditures, which the author describes as taxes that were not collected due to the realization of tax benefits;
- Government guarantees and loans;
- Government regulation, which is not reflected in the tax quota, but burdens tax subjects indirectly;
- Taxes paid from social benefits, as they distort the data;
- Using the accrual or cash method of calculating tax income.

2.5 Tax Freedom Day

The Day of Tax Freedom is an imaginary border that divides the year into two periods. In the first, taxpayers earn money to cover the expenses of the government and other institutions of the state. Only the money they earn from the day of tax freedom (including) is freely decided by themselves.

According to Scot Hodge (2007), the concept of Tax Freedom Day was created by Florida businessman Dallas Hostetler in 1948, but there is no unified methodology for its calculation. In Slovakia, the day of tax freedom is calculated every year as a share of total consolidated public sector expenditures on gross domestic product. This calculation was previously published by the F. A. Hayek Foundation. As of 2017, the F.A. Hayek Foundation has adjusted the way it translates Tax Freedom Day into a date statement. Previously, it was based on the number of working days in a given year, currently, it is based on the number of calendar days.

2.6 Gross Domestic Product per Capita in Purchasing Power Parity

The indicator of gross domestic product per inhabitant is an indicator of a country's development or well-being compared to others, as stated by Ilter (2017), and is suitable for comparing selected states, as it expresses the relative performance of one state to another. Purchasing power parity (PPP) is a unit of currency conversion, it expresses the ratio of the price of the same goods and services in the national currency to its price in the currency unit of another country. It removes the differences in different price levels in different states for the same goods and services. Vintrová (2010) in her article Interpretation limitations of GDP and alternative indicators states that the indicator of GDP per person in PPS depends on labour productivity, measured as GDP per worker and per hour worked in PPS, on the use of the working population, demographic factors, specifically the share working-age population on the total population.

According to Eurostat (2022), gross domestic product per inhabitant in PPS is calculated as the ratio between the level of gross domestic product expressed in purchasing power standards and the total number of inhabitants.

GDP in PPS is obtained by converting GDP into a fictitious currency using special conversion coefficients. Purchasing power parities reflect price relationships between countries and are also expressed in a single currency. They thus remove from national gross domestic products both differences in monetary expression and differences in price levels between individual countries. The result is a comparable GDP across individual countries.

The volume index of GDP per capita in purchasing power standards (PPS) is expressed as the average of the European Union set equal to 100. If the index of a country is higher than 100, the level of GDP per capita of that country is higher than the EU average and vice versa. The basic figures are expressed in PPS, i.e. a common currency that eliminates differences in the price level between countries, enabling a meaningful volume comparison of GDP between individual countries. The author Rybová (2017a, p. 56) uses the mentioned indicator to express the standard of living of the population and adds that, based on a higher standard of living, it can be assumed, for example, that the population spends more on consumption and subsequently generates higher tax revenues, in this case for consumption taxes.

3 RESULTS

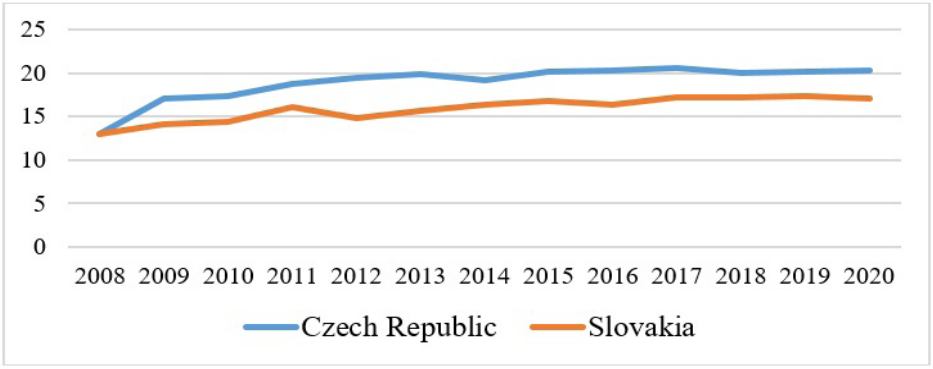
3.1 Implicit Tax Rates in the Czech Republic and Slovakia

Implicit tax rate on consumption

The Taxation Trends in the European Union (European Commission, 2022)

document provides implicit tax rates up to 2020.

Figure 4. Implicit tax rate on consumption in the Czech Republic and in Slovakia (%)



ITRc	2008	2012	2016	2020
Czech Republic	13	19.5	20.3	20.3
Slovakia	13	14.8	16.3	17

Source: own processing, Eurostat 2023.

According to the EU methodology, the consumption burden is higher in the Czech Republic than in Slovakia. Consumption is mainly burdened by value-added tax (VAT), the legislative rates in the mentioned states are as follows:

- The basic value-added tax rate of the Czech Republic is 21 %, 1. reduced rate is 15 %, 2. reduced rate is 10 %. These legislative rates have been valid in the Czech Republic since 2015. From 2024, two reduced rates will be combined into one in the Czech Republic. The basic rate will be 21% and the reduced rate will be 12%.

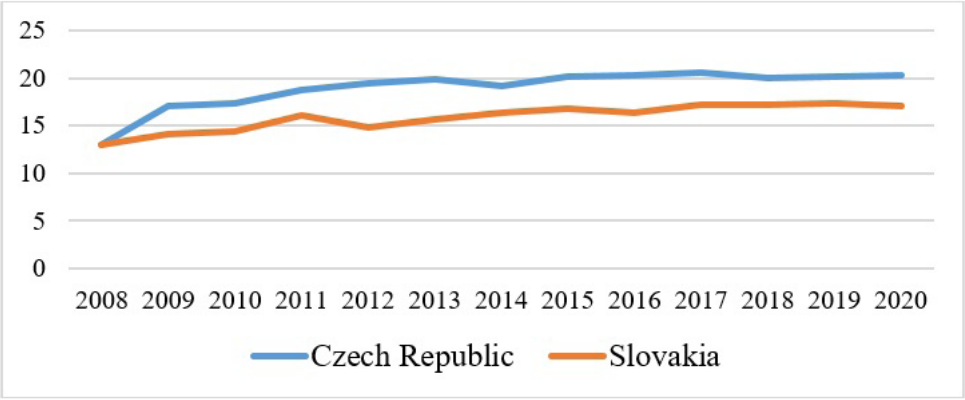
- The basic value-added tax rate in Slovakia is 20 %, reduced rate is 10 %. These legislative rates have been valid in Slovakia since 2011. The stability of tax rates in Slovakia is positive.

The implicit tax rate on labour

Data from the document Taxation Trends in the European Union (Eurostat, 2022) were again used to compare the implicit tax rates on work. Figure 5 shows data on implicit tax rates in the period 2008 - 2020 from Eurostat. The graph shows that the Czech Republic has a significantly higher labour tax burden than Slovakia. It can be assumed that the differences can result from the fact that each

country bases itself on something different and gives weight to taxation in other areas. It is also possible to observe that the development of the implicit tax rate on work has a slightly increasing trend.

Figure 5. The implicit tax rate on labour in the Czech Republic and in Slovakia (%)



ITRl	2008	2012	2016	2020
Czech Republic	39.8	38.5	39.5	40.4
Slovakia	34.2	33.6	36.8	37

Source: own processing, Eurostat 2023.

If we look at the differences between the two states, the highest difference between the rates is found in 2011, i.e. 5.9%, and in 2008 (5.6%). On the contrary, the lowest difference is noticeable in 2015, i.e. 2.2%, and from this year the difference tends to grow. In 2020, this indicator is 3.4% higher in the Czech Republic than in Slovakia. Given that the Eurostat data ends in 2020, we will look at the legislative income tax rates in the Czech Republic and Slovakia in 2020 and then also at the current rates valid in 2023.

As for legislative rates, in the Czech Republic, the income tax rate is 15% for a tax base up to 48 times the average wage. Above this threshold, the tax rate is 23%. We classify income into five partial tax bases:

- Partial base of tax on dependent activity created according to § 6
- Partial basis of tax from self-employment according to § 7
- Partial basis of tax on capital assets according to § 8
- Partial basis of rent tax according to § 9
- Partial tax base other income according to § 10

Table 1. Income tax rates in the Czech Republic

Personal income tax as of date 1/1/2020	**Corporate income tax as of date 1/1/2020**
Tax rate 15 %.	Tax rate 19 % (outside the basic investment fund, pension company fund, etc.).
Personal income tax as of date 1/1/2023	**Corporate income tax as of date 1/1/2023**
Tax rates: - 15% for the tax base up to 48 time - 23% in the tax base above 48 times the average wage	Tax rate 19 % (outside the basic investment fund, pension company fund, etc.).

Source: Act No. 586/1992 Coll., on income taxes, as amended.

The publication containing valid tax laws for the year 2022 (Collective of authors, 2022) lists the rates valid in Slovakia. There are two rates for corporate income tax. The lower rate up to the defined limit (for 2022 for EUR 49,790) is 15%, and above this limit, a rate of 21% is applied.

Table 2. Income tax rates in Slovakia

Personal income tax as of date 1/1/2020	**Corporate income tax as of date 1/1/2020**
• 19% of the tax base up to 176.8 times the subsistence minimum, i.e., the amount of EUR 35,022,312 (inclusive, in 2020) • 25% of the amount above the specified limit	Tax rate 21 %
Personal income tax as of date 1/1/2023	**Corporate income tax as of date 1/1/2023**
• 19% of the tax base not exceeding EUR 41,445.46 • 25% of the tax base exceeding EUR 41,445.46 Self-employed: • 15% for taxable income up to EUR 49,790 • 19% of income over EUR 49,790, from the part of the tax base up to 176.8 times the subsistence minimum, i.e. in 2023 the amount of EUR 41,445.46 (inclusive) • 25% of income above EUR 49,790, from the part of the tax base above EUR 41,445.46 From capital assets: • 19% The dividend tax rate if a recipient is a person is 7% and the rate is 35% if the income is paid by a corporation with its seat in a non-cooperative state (according to § 2 of Act No. 595/2003 Coll., on income taxes	• 15% of taxable income up to EUR 49,790 • 21% of taxable income above EUR 49,790 The dividend tax rate if the recipient is a corporation is 35%.

Source: Act No. 595/2003 Coll., on income taxes.

Personal income tax in Slovakia has two rates for income outside self-employment. Income earned from business and other self-employment is subject to three rates. Slovak income taxpayers undergo higher progressivity than payers

in the Czech Republic. At the same time, it can be added that in Slovakia, thanks to progressiveness and different rates for different types of income, the complexity of the tax for taxpayers is increasing.

Workers' social security contributions are part of the workload. Their share in tax revenues is very significant. In the tax mix of the Czech Republic, social security contributions account for approximately 45%, and in Slovakia 44% according to (OECD, 2022).

Table 3. Insurance rates of social security and health insurance in the Czech Republic (% of the assessment base)

Person/premium rate	Public health insurance (%)	Sickness insurance (%)	Pension insurance (%)	State employment policy (%)
Employee	4.50	-	6.5	-
Employer	9	2.10	21.5	1.2
Self-employed	13.5	Not mandatory	28	1.2
A person without taxable income		-	-	-
State insured		-	-	-

Source: Vančurová, Zídková 2022.

The assessment bases are established similarly in both states. For employees, the assessment basis is the gross salary, and the minimum limit is the minimum salary. For self-employed persons, the assessment basis is 50% of the partial basis of self-employment tax. In Slovakia, this partial basis also includes income from rent. In the Czech Republic, on the other hand, income from rent forms a separate partial basis that is not subject to social insurance contributions, i.e. social security or health insurance.

Table 4. Insurance rates of social security and health insurance in Slovakia (% of the assessment base)

Person/ premium rate	Public health insurance (%)	Sickness insurance (%)	Old age insurance/ guarantee/ disability/ reserve fund (%)	Unemployment insurance (%)
Employee	4	1.4	4/0/3/0	1
Employer	10	1.4	16/0.25/3/2.75	-
Self-employed	14	4.4	20/0/6/2.75	-
Voluntarily pension-insured person	14	4.4	20/0/6/2.75	-
State insured	4	-	20/0/6/0	-

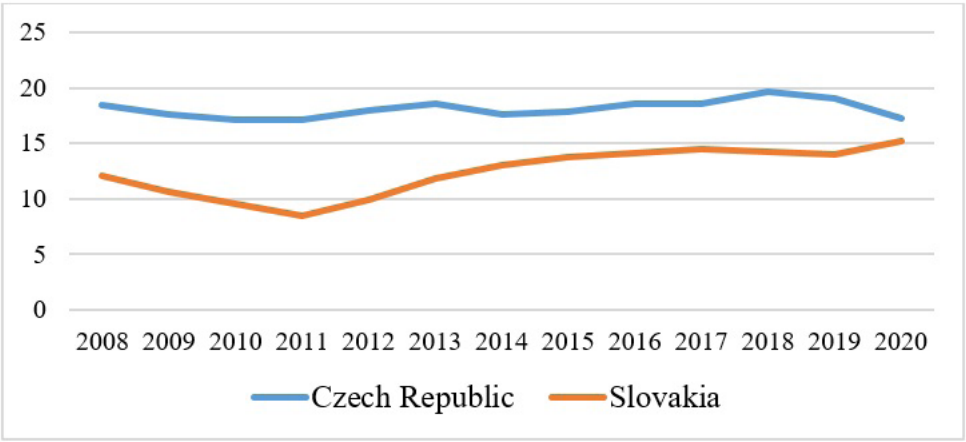
Source: Collective of authors (2022).

The implicit tax rate on capital

The capital implicit tax rate (ITRcap) is based on national accounts aggregates and attempts to measure what percentage of the potential capital tax base is collected in revenue.

Figure 6 shows the data of implicit tax rates on capital in the period 2008 to 2020 from Eurostat (2022). The graph again shows differences in the value of implicit tax rates, where the implicit rate on capital is higher in the Czech Republic than in Slovakia. The Czech Republic is less interesting than Slovakia from the point of view of investments.

Figure 6. The implicit tax rate on capital



ITRcap	2008	2012	2016	2020
Czech Republic	18.4	18.0	18.5	17.2
Slovakia	12.0	9.9	14.1	15.2

Source: own processing, Eurostat 2023.

3.2 Effective Corporate Income Tax Rate in the Czech Republic and Slovakia

The figures show the effective tax rate in the period 2017-2021. The stated results were determined by the method of forward-looking micro view and retrospective macro view.

3.2.1 Forward-Looking Micro View

Morávková (2015) says that the forward-looking micro view examines taxation, which is based on the nationality of the tax system. This method consists of two indicators:

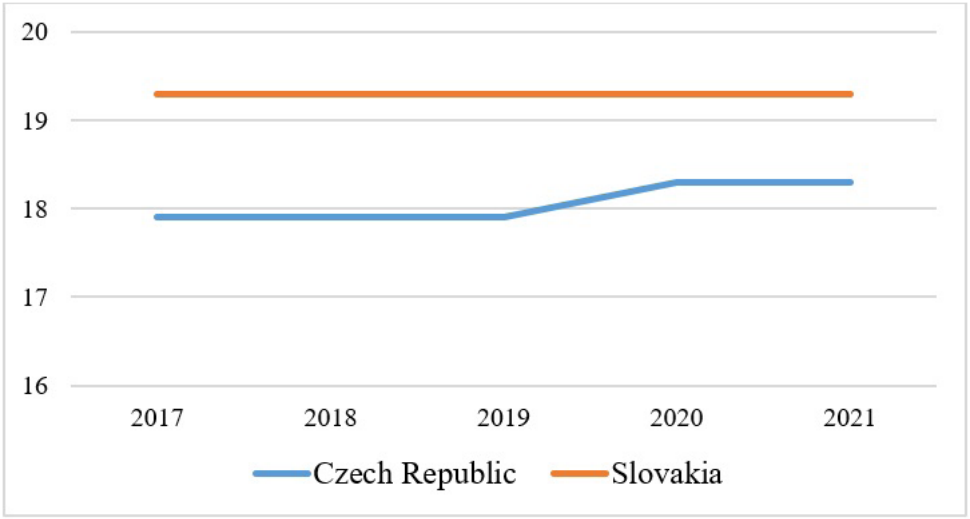
- Effective Average Tax Rate (EATR) for hypothetical investment companies
- Effective marginal tax rate (EMTR) for hypothetical investment projects

Composite effective average tax rate using the forward-looking micro view method (EATR)

The OECD database shows the composite effective average tax rate of the tax for various states, including the compared states, i.e. the Czech Republic and Slovakia. The forward-looking micro view method was used to calculate the data.

The following figure 7 shows the effective average tax rates for the years from 2017 to 2021.

Figure7. Composite effective average tax rate (%)



	2017	2018	2019	2020	2021
Czech Republic	17.9	17.9	17.9	18.3	18.3
Slovakia	19.3	19.3	19.3	19.3	19.3

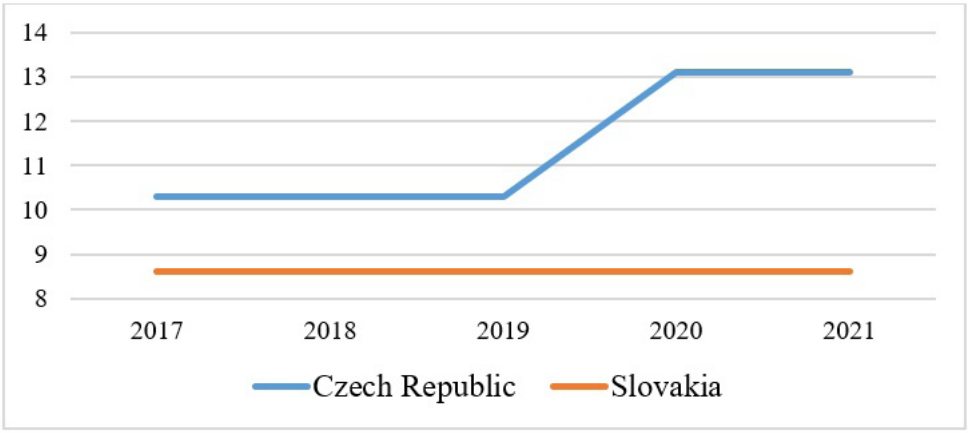
Source: own processing, OECD 2022a.

The composite effective average tax rate in Slovakia did not change between 2017 and 2021. It was 19.3%. In the Czech Republic, the value of the compound effective average tax rate between 2017 and 2019 remained at the level of 17.9%, from 2020 it increased to a value of 18.3%. This time, the graph shows that the effective average tax rate is higher in Slovakia than in the Czech Republic.

Composite effective marginal tax rate using the micro look forward method (EMTR)

Figure 8 shows data from OECD (2022a) statistics in the period 2017 to 2021.

Figure 8. Composite effective marginal tax rate



	2017	2018	2019	2020	2021
Czech Republic	10.3	10.3	10.3	13.1	13.1
Slovakia	8.6	8.6	8.6	8.6	8.6

Source: own processing, OECD 2022a.

The compound effective marginal tax rate is higher in the Czech Republic than in Slovakia, by 1.7 percentage points between 2017 and 2019 and by 4.5 percentage points between 2020 and 2021. In the Czech Republic, the amount of this rate from 2017 to 2021 hovered at 10.3% and rose to 13.1% from 2020, i.e. an increase of 2.8 percentage points. In Slovakia, the effective marginal tax rate is unchanged at 8.6%.

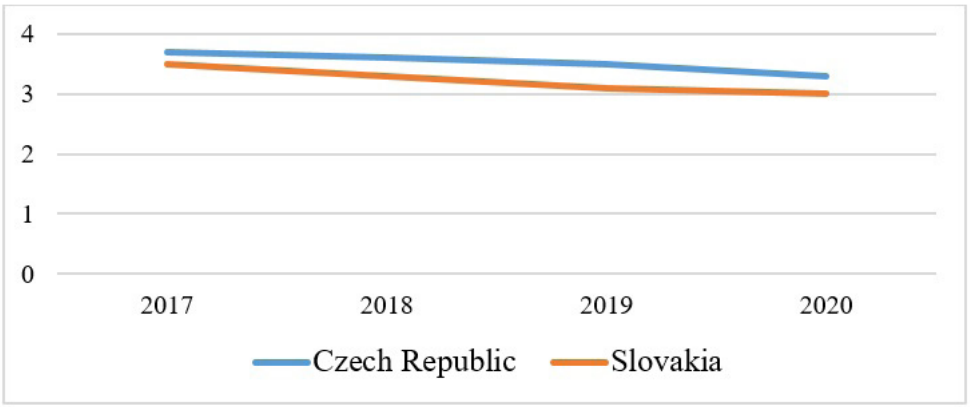
3.2.2 Retrospective Looking Macro View

Here are two results. The first is a comparison of the share of corporate tax on GDP in the years 2017 to 2020 in the Czech Republic and Slovakia determined by the method of the backward-looking macro view. The second result is a comparison of the share of corporate tax revenue in all tax revenue again between 2017 and 2020 in the Czech Republic and Slovakia.
This method has two indicators:

Share of corporate tax on GDP
Share of corporate tax on total tax revenues

Share of corporate tax on GDP
The following Figure 9 shows the evolution of the effective tax rate, which was determined as the share of total corporate tax revenue to gross domestic product (GDP). The data for this comparison was obtained from Revenue statistics (OECD, 2022).

Figure 9. Share of corporate tax on GDP in the Czech Republic and Slovakia (%)



	2017	2018	2019	2020
Czech Republic	3.7	3.6	3.5	3.3
Slovakia	3.5	3.3	3.1	3.0

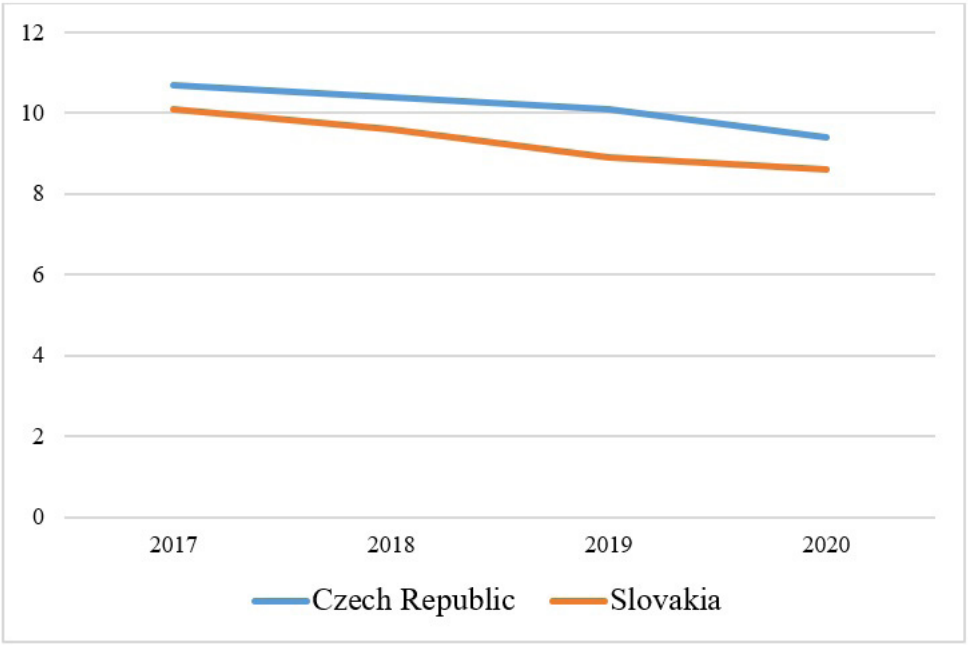
Source: own processing, OECD 2022.

The share of corporate tax on GDP in the Czech Republic has a downward trend when this share was 3.7% in 2017 and 3.3% in 2020. In Slovakia, there is also a downward trend in the share of corporate tax on GDP, when in 2017 this share was 3.5% and in 2020 it was 3.0%. Figure 9 shows similar results in both countries, with both countries showing decreasing trends in effective tax rates. Effective tax rates in the Czech Republic are slightly higher than in Slovakia, from this it can be concluded that taxation in the Czech Republic is higher than in Slovakia.

Share of corporate tax on total tax revenues

Figure 10 shows the share of corporate tax revenues in total tax revenues between 2017 and 2020 in the Czech Republic and Slovakia. Data was also obtained from OECD (2022) Revenue Statistics 2022.

Figure 10. Share of corporate tax on total tax revenues (%)



	2017	2018	2019	2020
Czech Republic	10.7	10.4	10.1	9.4
Slovakia	10.1	9.6	8.9	8.6

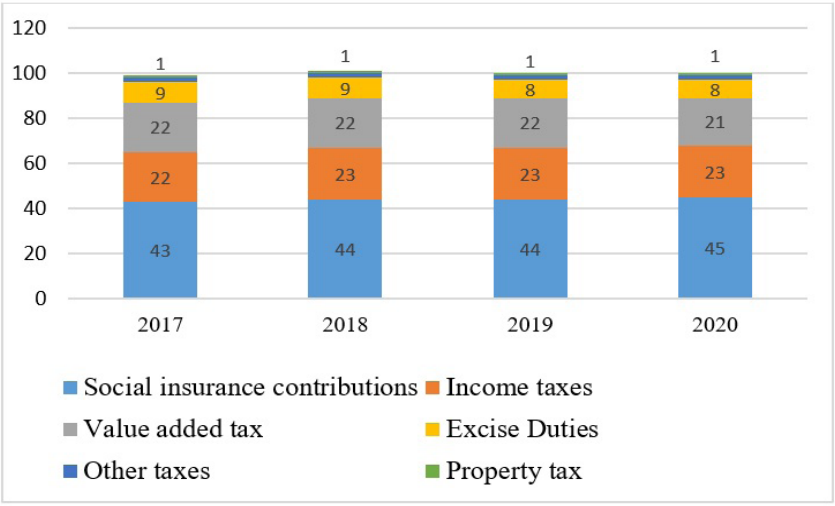
Source: own processing, OECD 2022.

The displayed share of corporate tax in total tax revenues developed similarly in both countries, a downward trend can be seen here. It can also be observed that effective rates are higher in the Czech Republic than in Slovakia. In the Czech Republic, the highest rate was in 2017 at 10.7% and the lowest in 2020 at 9.4%. In Slovakia, the highest rate was 10.1% in 2017 and the lowest was 8.6% in 2020. In 2020, the difference in rates was a total of 0.8 percentage points.

3.3 Tax mix in the Czech Republic and Slovakia

The tax mix of the Czech Republic for the year 2017-2020 is shown in figure 11 and the tax mix of Slovakia is shown in figure 12. The figures show a four-year horizon between 2017 and 2020. The data to show the tax mix was obtained from the document OECD (2022) Revenue statistics from 2022.

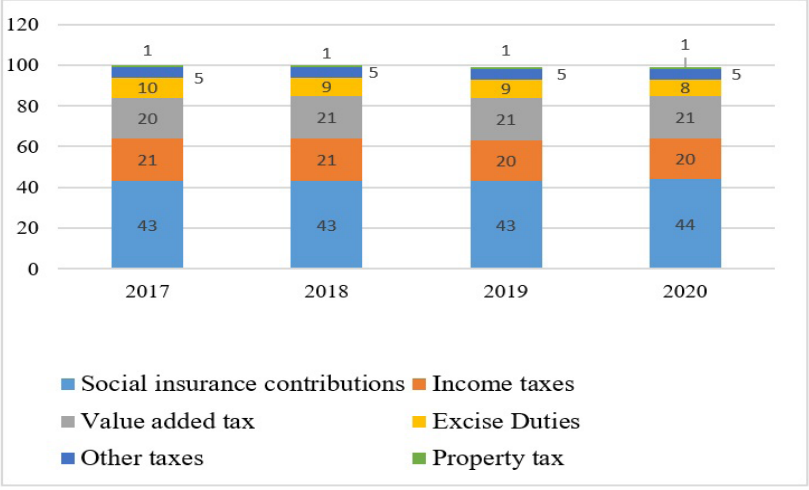
Figure 11. Tax mix in the Czech Republic (%)



Source: own processing, OECD 2022.

Figure 15 shows that social insurance contributions account for the largest share of total taxes, ranging between 43% and 45% over the selected time horizon. There is also a value-added tax, which accounts for around 22% of total revenue. Income taxes also have a significant share, which includes both personal income taxes and corporate income taxes, which have a share value of 23%. Consumption taxes, property taxes, and other taxes have smaller shares.

Figure 12. Tax mix in Slovakia (%)



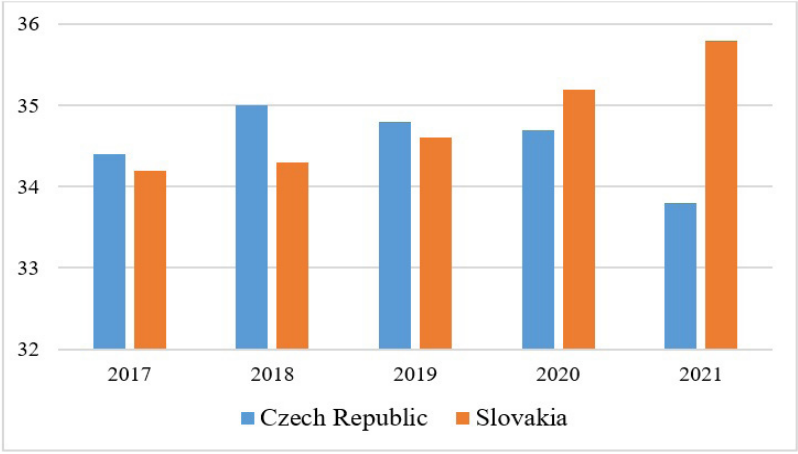
Source: own processing, OECD 2022.

Social and health insurance contributions also have the largest share of total tax revenue in Slovakia, at 43%. Furthermore, there is the value-added tax, which is around 21% of the total taxes. Another significant share of total taxes is income taxes, which have a share of 21% in 2019 and 2020. Consumption taxes, property taxes, and other taxes have a smaller share of total tax revenues. Both countries collect the largest share of their revenue from social security contributions, followed by value-added tax and income tax.

3.4 Tax Quota in the Czech Republic and Slovakia

The tax quotas of the Czech Republic from OECD statistics (2022) are shown in the following figures for the period 2017 to 2021.

Figure 13. Comparison of tax quotas in the Czech Republic and Slovakia (%)



	2017	2018	2019	2020	2021
Czech Republic	34.4	35.0	34.8	34.7	33.8
Slovakia	34.2	34.3	34.6	35.2	35.8

Source: own processing, OECD 2022.

The tax quota of the Czech Republic decreased from 34.7 to 33.8% between 2020 and 2021, i.e. by 0.9 percentage points. The Czech Republic achieved the highest tax quota in the monitored period in 2018 when it was 35%. On the contrary, an increase in the tax quota by 0.6 percentage points can be observed in Slovakia, where in 2020 the tax quota was 35.2% and in 2021 the tax quota was 35.8%. In the monitored period, it then reached its highest value in 2021. Furthermore, the graph shows that until 2019 the tax quota of the Czech Republic was higher than the tax quota of Slovakia. Since 2020, the tax burden

in the Czech Republic has started to decrease, while an increasing trend can be observed in Slovakia.

A lower tax quota with higher actual taxation in the Czech Republic compared to Slovakia can be given by a higher absolute value of the gross domestic product. From the results, it can be observed that the tax quota indicator has a limited reporting capacity and may not reflect the actual level of taxation.

3.5 Tax Freedom Days in the Czech Republic and Slovakia

The Liberal Institute (2023) calculates Tax Freedom Day for the Czech Republic since 2000. The article contains information from 2017, so we also present this indicator in the Czech Republic and Slovakia from this date. (Liberal Institute, 2023) states that Tax Freedom Day is an imaginary boundary in the calendar year that divides the year into 2 periods. In the first period, taxpayers earn notional income to cover the expenses of the government, government, and public institutions. This period ends on the day of tax freedom, from this day we earn for ourselves and make decisions about the money we earn at our discretion. Table 1 shows the comparison between the two states.

Table 5. Tax Freedom Day in the Czech Republic and Slovakia

Year	Tax Freedom Day in the Czech Republic (number of working days for government expenditure)	Tax Freedom Day in Slovakia (number of working days for government expenditure)
2017	May 29 (149 days)	June 5 (155 days)
2018	May 22 (142 days)	May 25 (144 days)
2019	May 28 (148 days)	May 27 (146 days)
2020	June 24 (175 days)	July 1 (182 days)
2021	June 25 (176 days)	July 9 (190 days) (According to the Liberal Institute in the Czech Republic (2023) June 22)
2022	June 17 (167 days)	June 21 (171 days) (According to the Liberal Institute in the Czech Republic (2023) June 10)
2023	June 13 (163 days)	August 21 (231 days)

Note: Differences in the determination of the tax-free day were caused by different calculation methodologies.

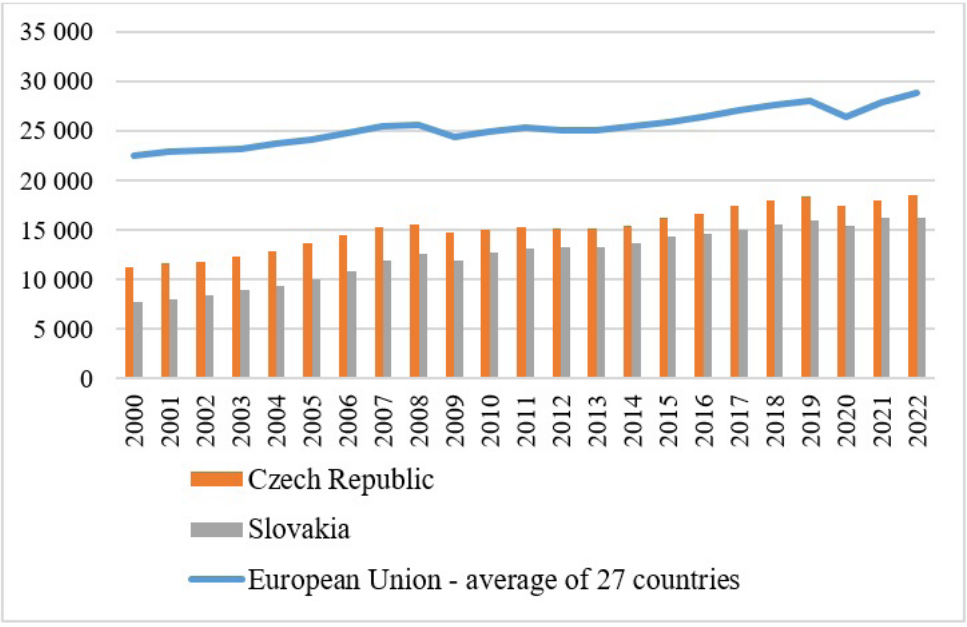
Source: Liberal Institute in the Czech Republic 2023; Účtovník 2021; ta3 2023.

In the years 2021 and 2022, in the case of Slovakia, different data on Tax Freedom Day were presented. The reason is the different calculation methodology of the Czech Liberal Institute compared to the Slovak Chamber of Tax Advisors and other Slovak sources.

3.6 Gross Domestic Product per Capita in Purchasing Power Parity

This indicator explains the situation of the states in the area of the standard of living of the population. Professional publications use this indicator to express the standard of living of the population. It is also mentioned here in this context. It can help to explain the differences between the states, mainly in the area of tax quota.

Figure 14. Real GDP per capita, chain-linked volumes (2010), euro per capita



Source: own processing, Eurostat 2023.

The GDP indicator per capita in PPS is higher in the Czech Republic. Therefore, it can be judged that the level of well-being and performance in the Czech Republic is higher than in Slovakia.

CONCLUSION

This article summarizes and compares a lot of data in the field of taxation to compare the tax burden of two very close and cooperating countries, i.e., the

Czech Republic and Slovakia. We value this mutual closeness and cooperation. However, the composite tax quota in international databases shows higher taxation in Slovakia in some years. This indicator, like other indicators, has a limited reporting capacity. Upon closer examination, we found that other taxation indicators speak to the opposite when comparing these two countries.

A summary of our results is here. The implicit tax rate on consumption was on average 20% in the Czech Republic and 17% in Slovakia during the given time horizon. This means a higher tax burden on consumption in the Czech Republic. The implicit labour tax rate in the Czech Republic was 40%, while in Slovakia it was around 37%. The amount of this rate hurts the tax burden of the Czech Republic, as it represents a country with higher labour taxation than Slovakia. The implicit tax rate on capital is higher in the Czech Republic than in Slovakia. Until 2020, the implicit tax rate on capital in the Czech Republic was approximately 19%, but then in 2020, it dropped to 17%. This decrease could be caused by the effect of the coronavirus and the steps taken by the government to respond to the wave of the coronavirus crisis and the effort to revive the economy. In Slovakia, on the other hand, it increased to 15% in 2020, until 2020 this rate was around 14%. The tax burden on capital is higher in the Czech Republic than in Slovakia. The effective tax rate was expressed using a forward-looking micro view and a backward-looking macro view. The forward-looking micro view consists of an effective average tax rate that reaches 18.3% in the Czech Republic and a stable 19.3% in Slovakia and an effective marginal tax rate that reaches 13.1% in the Czech Republic and 13.1% in Slovakia 8.6%.

The backward-looking macro view consists of two indicators, namely the share of corporate tax on GDP and the share of corporate tax on total tax revenues. The share of corporate tax on GDP shows a decreasing trend and the values are around 3.3% in the Czech Republic and the same in Slovakia with the difference that the values are around 3%. The share of corporate tax in total tax revenues also shows a downward trend and the values in the Czech Republic are around 9.4% and in Slovakia around 8.6%.

Both methods show that the tax burden in the Czech Republic is higher than in Slovakia. The tax mix of both countries leads to the conclusion that the composition of individual taxes on total tax revenues is similar for both countries. Both countries collect the largest part of their income from social insurance contributions, then value-added tax and income tax.

The tax quota began to decrease in the Czech Republic in 2020. This decrease may be because the effects of the coronavirus crisis began to show. An increasing trend can be observed for the tax quota in Slovakia.

According to the values of the GDP indicator per inhabitant in the PPS, it can be judged that the level of well-being and standard of living is also higher in the Czech Republic than in Slovakia.

From the comparison of individual indicators, we concluded that, according to most indicators, there is a higher tax burden in the Czech Republic than in Slovakia, even though the tax quota in the Czech Republic is lower in 2020 and 2021. Even though the tax burden is higher in the Czech Republic, the level of well-being is also higher here than in Slovakia. After all, isn't the common man better off in Slovakia?

REFERENCES

1. COLLECTIVE AUTHORS (2022). DAŇOVÉ ZÁKONY 2022 SR XXL ProFi. Bratislava: DonauMedia.
2. EUROPEAN COMMISSION, Directorate-General for Taxation and Customs Union (2022). Taxation trends in the European Union: data for the EU Member States, Iceland, Norway: 2022 edition, Publications Office of the European Union, 2022, [online]. Available at: https://data.europa.eu/doi/10.2778/417176 [15 January 2023].
3. EUROSTAT (2023). Eurostat database [online]. Available at: https://ec.europa.eu/eurostat/web/main/home [01 November 2023].
4. HODGE S. (2007). Tax Freedom Day Press Conference Remarks. The Tax Foundation. [online]. Available at: https//taxfoundation.org. [01 November 2023].
5. ILTER, C. (2017). WHAT ECONOMIC AND SOCIAL FACTORS AFFECT GDP PER CAPITA? A STUDY ON 40 COUNTRIES. Načteno z California State University Dominguez Hills, USA. Available at: https://www.researchgate.net/profile/Cenap-Ilter/publication/324228513_what_economic_and_social_factors_affect_gdp_per_capita_a_study_on_40_countries/links/5accdaee0f7e9b1896544385/what-economic-and-social-factors-affect-gdp-per-capita-a-study-on-40-count.
6. KAMENÍKOVÁ, Š. (2023). Porovnání soustavy daní v České republice a na Slovensku. Diploma Thesis. České Budějovice: Faculty of Economics, University of South Bohemia.
7. KUBÁTOVÁ, K. (2018). Daňová teorie a politika . Praha: Wolters Kluwer ČR.
8. KUKALOVÁ, G., MORAVEC, L., JEČMÍNEK, J., & MARTÁSKOVÁ, B. (June 2018). Financial Crisis Influence on Tax Mix Changes. European Financial Systems 2018. [online]. Available at: https://is.muni.cz/do/econ/soubory/sborniky/2018/Proceedings_finalni_verze_September_3.pdf#page=355 [15 January 2023].
9. LIBERAL INSTITUTE (2023). Den daňové svobody. [online]. Available at: https://libinst.cz/wp-content/uploads/2023/06/DDS-2023.pdf [01 November

2023].
10. MACEK, R. (2014). The impact of taxation on economic growth: Case study of OECD countries. Review of economic perspectives. [online]. Available at: https://sciendo.com/downloadpdf/journals/revecp/14/4/article-p309.pdf [15 January 2023].
11. MARKOVÁ, H. (2023). Daňové zákony 2023: úplná znění platná k 1. 1. Praha: Grada Publishing.
12. MORÁVKOVÁ, J. (2015). Český finanční a účetní časopis. Available at: Efektivní sazba korporátní daně. [online]. Available at: https://cfuc.vse.cz/pdfs/cfu/2015/04/05.pdf [10 January 2023].
13. NICODEME, G. (2001). Computing effective corporate tax rates: comparisons and results. [online]. Available at: https://mpra.ub.uni-muenchen.de/id/eprint/3808 [10 January 2023].
14. OECD (2022). The Impact Of Covid 19 On Oecd Tax Revenues. Revenue Statistics. [online]. Available at: https://www.oecd-ilibrary.org/taxation/data/oecd-tax-statistics_tax-data-en.
15. OECD (2022a). Effective tax rates. [online]. Available at OECD.stat: https://stats.oecd.org/index.aspx?DataSetCode=CTS_ETR [15 January 2023].
16. OECD (2023). Revenue Statistics. Available at: https://www.oecd-ilibrary.org/taxation/data/oecd-tax-statistics_tax-data-en.
17. RYBOVÁ (2017). Convergence of EU Member States in the field of excise duties in the period 2000 – 2015. Vol. 65, No. 4, 2017. Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis. Brno: Mendelova univerzita, s. 1415-1424, [online]. Dostupné: https://doi.org/10.11118/actaun201765041415, EID kód: 2-s2.0-85028835658.
18. RYBOVÁ (2017a). Změny spotřebních daní v souvislosti s harmonizačními procesy v členských státech Evropské unie. Doctoral dissertation. Praha: University of Economics, Faculty of Finance and Accounting, s. 93.
19. RYBOVÁ, J. (2016). Složená daňová kvóta České republiky v kontextu vývoje průměrných hodnot členských států Evropské unie. Daně a právo v praxi 2016 (12). Praha, ČR: Wolters Kluwer, a.s., s. 18-21, ISSN 1211-7293.
20. SZAROWSKÁ, I. (2011). Littera Scripta. Metody a sazby používané ke komparaci [online]. Available at: https://www.littera-scripta.com/wp-content/uploads/2019/05/1_PDFsam_1_PDFsam_15_PDFsam_13_PDFsam_19_PDFsam_9_PDFsam_13_PDFsam_11_PDFsam_9_PDFsam_23_PDFsam_LS_1_2011.pdf.
21. TA3 (2023). Slováci takmer dve tretiny príjmu odovzdajú štátu. Daňové zaťaženie sa zvýšilo [online]. Available at: https://www.ta3.com/clanok/272307/slovaci-takmer-dve-tretiny-prijmu-odovzdaju-statu-danove-zatazenie-sa-zvysilo [25 August 2023].
22. ÚČTOVNÍK (2021). Deň daňovej slobody od roku 1999 po súčasnosť. Opýtaj

sa účtovníka [online]. Available at: https://www.opytajsauctovnika.sk/den-danovej-slobody-od-roku-1999-po-sucasnost [cit. 15 January 2023].
23. VANČUROVÁ, A. a ZÍDKOVÁ, H. (2022). Daňový systém ČR 2022. Praha: Wolters Kluwer.
24. VINTROVÁ, R. (2010). Interpretační omezení HDP a alternativní ukazatele. Available at: https://www.vsem.cz/data/data/ces-soubory/working-paper/gf_wp0610.pdf.
25. ZÁKON č. 105/2004 Z. z. Zákon o spotrebnej dani z liehu a o zmene a doplnení zákona č. 467/2002 Z. z. o výrobe a uvádzaní liehu na trh v znení zákona č. 211/2003 Z. z. (undated). Aailable at: https://www.zakonypreludi.sk/zz/2004-105.
26. ZÁKON č. 106/2004 Z. z. Zákon o spotrebnej dani z tabakových výrobkov. (undated). Available at: https://www.zakonypreludi.sk/zz/2004-106.
27. ZÁKON č. 16/1993 Sb. Zákon České národní rady o dani silniční. (undated). Available at: https://www.zakonyprolidi.cz/cs/1993-16.
28. ZÁKON č. 461/2003 Z. z. Zákon o sociálnom poistení. (undated). Available at: https://www.zakonypreludi.sk/zz/2003-461.
29. ZÁKON č. 530/2011 Z. z. Zákon o spotrebnej dani z alkoholických nápojov. (undated). Available at: https://www.zakonypreludi.sk/zz/2011-530.
30. ZÁKON č. 580/2004 Z. z. Zákon o zdravotnom poistení a o zmene a doplnení zákona č. 95/2002 Z. z. o poisťovníctve a o zmene a doplnení niektorých zákonov. (undated). Available at: https://www.zakonypreludi.sk/zz/2004-580.
31. ZÁKON č. 609/2007 Z. z. Zákon o spotrebnej dani z elektriny, uhlia a zemného plynu a o zmene a doplnení zákona č. 98/2004 Z. z. o spotrebnej dani z minerálneho oleja v znení neskorších predpisov. (undated). Available at: https://www.zakonypreludi.sk/zz/2007-609.
32. ZÁKON č. 98/2004 Z. z. Zákon o spotrebnej dani z minerálneho oleja. (undated). Available at: https://www.zakonypreludi.sk/zz/2004-98.