

# *Tax Sharing and Intergovernmental Fiscal Transfers in Bulgaria and Czechia*

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This paper aims to explore and compare the systems of intergovernmental fiscal transfers and tax sharing in Bulgaria and Czechia, as well as their evolution. It examines the factors influencing various types of municipal revenues and their distribution among individual municipalities, and proposes a model for a tax revenue-sharing system in Bulgaria inspired by the Czech formula-based tax-sharing algorithm. The research applies Ordinary Least Squares

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(OLS) regression to identify determinants of municipal revenues and Gini coefficients to assess revenue inequality. Key explanatory variables include population, area, urbanisation, and unemployment. Additionally, simulations estimate the effects of implementing Czechia's tax-sharing formula in Bulgaria. Results confirm population size as the dominant factor shaping all revenue types in both countries. The simulations suggest that adopting a formula-based tax-sharing mechanism in Bulgaria could reduce fiscal disparities and enhance expenditure decentralisation.

*Keywords:* tax sharing, intergovernmental transfers, fiscal decentralization, municipalities, Bulgaria, Czechia

## 1. Introduction

Adequate local government revenues are a crucial component of meaningful fiscal decentralisation. As local taxes are often insufficient, countries have developed complex systems of tax sharing and intergovernmental transfers. Although many of these systems have been in operation for a long time, discussions about potential changes remain ongoing. These systems are subject to diverse and sometimes conflicting expectations, and the boundary between tax sharing and transfers can often be rather unclear.

At the turn of the century, Bulgaria and Czechia adopted contrasting approaches to intergovernmental transfers and tax sharing. Bulgaria implemented a fiscal decentralisation programme in 2003, which introduced a new formula-based mechanism for determining subsidies (Kalcheva, 2022). The formula is approved annually as part of the State Budget Act and has gradually replaced the previous revenue sharing of corporate income tax (CIT, in effect until 2002) and personal income tax (PIT, in effect until 2008). In Czechia, a new formula-based tax sharing system for PIT, CIT, and value-added tax (VAT) has been in place since 2001, with its share of total municipal revenue steadily increasing (from 41 % in 2001 to 62 % in 2023).

This paper aims to explore and compare the systems of intergovernmental fiscal transfers and tax sharing in Bulgaria and Czechia, as well as their evolution. It examines the factors influencing various types of municipal

revenues and their distribution among individual municipalities, and proposes a model for a tax revenue-sharing system in Bulgaria inspired by the Czech formula-based tax-sharing algorithm.

The topic of the article is extremely relevant not only in the context of Bulgarian and Czech municipalities, but also in relation to the decline in the level of fiscal decentralisation in some Central and Eastern European countries. More specifically in the case of Bulgaria, the relevance of this topic stems from the persistently low fiscal autonomy of municipalities in Bulgaria, their increasing reliance on state transfers, and the pressing need for reforms in the sector of local finance. Low financial autonomy refers both to the limited capacity to generate own revenues due to a restricted tax base and the low yield of many municipal taxes, as well as the small proportion of budget revenues that are non-earmarked and can be allocated according to municipal priorities. In recent years, the share of targeted transfers in municipal budgets has consistently increased, now exceeding 65% of municipal revenues. Meanwhile, the tax base at the local level remains constrained in most Bulgarian municipalities, and even a significant increase in current local taxes would not result in a substantial improvement in fiscal autonomy. In 2023, Council of Europe experts published reports (Centre of Expertise for Good Governance – CoE, 2023) providing recommendations to enhance the fiscal independence of Bulgarian municipalities and proposing specific measures to strengthen fiscal decentralisation in the country. These measures include updating the property tax base, reviewing and refining the mechanism for intergovernmental transfers, introducing (or reinstating) a mechanism for revenue sharing, establishing new business taxes, and reassessing the division of expenditures into three categories: (1) local expenditures, (2) expenditures for financing activities delegated by the central government, and (3) expenditures for co-financing activities delegated by the central government with own resources (Ceriani & Péteri, 2023).

The National Association of Municipalities in Bulgaria also periodically advocates the introduction of shared tax revenues in local budgets (National Association of Municipalities in the Republic of Bulgaria, 2023, 2024). Despite the importance of the topic, no proposals have yet outlined specific mechanisms for implementing shared tax revenues. In this context, the present study aims to contribute to the body of literature on the subject. When designing a decentralisation reform, it is essential that this occurs within a comprehensive framework so that any isolated changes do not create inconsistencies and imbalances across government levels, undermining the effectiveness of fiscal policy (Fedelino, 2010). At

present, no measures to increase municipal revenues or appropriate instruments for this purpose have been proposed.

The article provides basic guidelines and proposals to policymakers, and outlines steps for a possible increase in municipal budget revenues. Last but not least, the proposals are also related to reducing inequalities between individual municipalities in Bulgaria, which have been growing in recent years. The first section of the paper reviews the existing literature on setting a clear distinction between transfers and shared tax revenues and between the roles these types of revenue play. The second section examines municipal revenues in Czechia and Bulgaria. The third section outlines the data and methods employed. The fourth section summarises the results, and the final section presents the conclusions.

Regarding the terminology used, the following clarifications are necessary: (1) The terms “shared taxes” and “shared revenue” are used interchangeably. (2) Fiscal autonomy refers to the capacity of local authorities to manage their own financial resources and obligations with a certain degree of independence from the central government. This encompasses the ability of local authorities to collect their own revenues, determine expenditures, and make decisions regarding the allocation of resources without significant interference or control from the central government (as per the OECD’s definition; Blöchliger & King, 2006). (3) We use “local” and “municipal” as synonyms. (4) When discussing the mechanism of shared revenues, fiscal decentralisation is considered in terms of expenditure fiscal decentralisation, meaning municipalities possess a larger amount or share of revenue that is non-earmarked.

## 2. Shared Tax Revenues and Intergovernmental Transfers in Local Budgets

Revenues from shared taxes have become a pivotal element of intergovernmental fiscal relations, primarily aimed at providing financial resources for local authorities to fulfil their spending responsibilities. The application of intergovernmental transfers and the distribution of revenues across different tiers of government are prominent features of modern decentralised systems. However, the absence of well-structured vertical and horizontal fiscal flows between government levels can lead to challenges at national, regional, and local levels.

According to Kim, Lots, and Blöchliger, “tax sharing is often regarded as providing a balance between granting local fiscal autonomy and keeping the overall fiscal framework stable” (Kim, Lots, & Blöchliger, 2013, p. 19). Tax-sharing revenue constitutes a significant part of the subnational revenues of many countries, including countries in Central and Eastern Europe (OECD, 1999, 2002; Blöchliger & Petzold, 2009).

In the case of shared tax revenues, the state allocates a proportion of national tax revenues to local authorities. Shared revenues typically include tax receipts from PIT, CIT, or VAT. These are taxes that do not inherently align with the framework or characteristics of local taxes and, according to established practices and various scientific studies (OECD, 1999, 2002; Roy, 2008; Sedmihradská, 2008), are most appropriately levied and collected at the central level. The tax base, tax rates, and tax deductions are determined at the central level, and the national administration is responsible for tax collection. Municipalities receive a designated percentage of the total collected tax revenues, which are generally non-earmarked, enabling them to allocate resources in line with their preferences and individual spending policies.

According to the OECD definition, tax sharing is “... an agreement where tax revenue is divided vertically between the central and sub-central governments as well as horizontally across sub-central governments” (OECD, 2013, p. 22). In addition, in some countries, under a tax-sharing agreement, sub-central governments do not have the authority to set the tax rate or base, but they may be able to collectively negotiate adjustments to the distribution formula or exert influence on tax legislation. Hallwood and MacDonald (2005, p. 103) define shared tax as “one whose proceeds are either shared between the different levels of government on the basis of derivation (i.e., tax revenue is attributed to a particular geographical area where it was generated) or equalization (i.e., revenue is allocated based on needs or resources)”.

The rules governing how the state shares tax revenues with local and regional authorities differ markedly across countries. Some systems allocate tax revenue strictly proportionally based on the geographic location where it was generated, while others utilise a complex redistribution formula (Kim et al., 2013). There are also mixed systems that incorporate elements of both approaches.

Shared taxes usually appear in official statistics as sub-national revenue, even though sub-national governments typically lack autonomy in determining the revenue base or rate (Martinez-Vazquez, Lago-Peñas, & Sac-

chi, 2016, p. 4). In practice, there are cases when distinguishing shared tax revenues from intergovernmental transfers can be challenging. It is not uncommon for revenues directed to local budgets from the central budget to be classified as shared tax revenues (as defined by local legislation), even when they have the characteristics of typical state transfers.

Since the 1990s, proposals have emerged advocating changes to definitions, statistical methodologies, and reporting formats to clarify the distinction between transfers and shared revenues. In 2002, Rodden (2002) examined the importance of distinguishing between intergovernmental transfers, shared revenues, and sub-national revenues derived from own sources. He concluded that “previous studies that attempt to quantify this distinction do so by using the Government Finance Statistics (GFS) (e.g., Watts, 1996; Fukasaku & de Mello, 1998), which code revenues from tax sharing arrangements (taxes that are levied and collected by the central government and automatically transferred to the local ones) as own-source revenue” (Rodden, 2004, p. 13). Based on this classification, Rodden emphasised the risk of overestimating local revenue autonomy for many countries where sub-national governments possess very little taxing authority. He proposed an alternative approach that incorporates a more practical measure of vertical fiscal balance (grants/revenue), classifying shared revenues as transfers and consulting additional sources for greater accuracy.

While transfers remain the most common method of reallocating resources between central and sub-central governments, the potential for increased use of tax-sharing agreements has garnered considerable attention in many countries in recent years (Roy, 2008). Although the two methods differ in terms of incentives, targeting, and administration, they are perceived as equivalent regarding the degree of central government control over sub-national revenue. Rodden (2002, 2003) and Stegarescu (2005) analysed and demonstrated the highly limited capacity of sub-national governments to influence the revenues that municipalities receive from the state. According to Pola (1999), Ebel and Yilmaz (2002), and Rodden (2003), one of the main risks associated with shared revenues is the tendency to overstate the true extent of revenue decentralisation in a country.

Given the risks identified, analyses of the taxing power of local and regional authorities should carefully examine the various types of local tax revenues, transfers, and shared taxes. A conservative approach is advisable, with particular attention given to shared revenues, their dynamics,

their relationship with the fiscal capacity of local authorities, and their interrelation with local incentives to generate own revenues.

Returning to the determination of the centre's ability to influence the distribution of shared revenues, it should be emphasised that unlike transfer payments, which are allocated on an annual basis, the rules governing the distribution of shared revenues and the proportions allocated to local and regional authorities are typically fixed and often enshrined in the constitution or other fundamental laws of the respective country (Rodden, 2002; Stegarescu, 2005). However, practices observed in EU countries reveal instances where these rules are embedded in ordinary laws, making them more susceptible to change.

Practice shows that the central government seldom has the ability to alter the rules for sharing tax revenues independently. When legislative changes related to shared tax revenues are proposed, local authorities in some countries actively participate in working groups and advocate for their proposals. In the context of EU Member States, municipal associations serve a representative function *vis-à-vis* local authorities, defending the interests of municipalities before the central government. In his study, Roy (2008) found that transfers are a more suitable instrument for fiscal consolidation because of the greater control exercised by the centre over them.

In 2005, the Council of Europe's Committee of Ministers issued Recommendation Rec (2005), according to which: "An authority's 'own resources' are resources of which it can vary the level, possibly within a predetermined range. These resources may, for example, be fiscal or non-fiscal, exclusive or shared, etc."<sup>1</sup> An authority's "shared resources" are resources that are raised by the authority in addition to resources raised by another authority on the same basis.

In their study, Bergvall and colleagues (2006) discuss the taxonomy of grants and emphasise the need for clear distinctions between grants and shared tax revenues, defining shared taxes as a type of local revenue. However, according to Rodden (2006), tax sharing is a type of general grant, which is prone to moral hazard when new debt is incurred. In his earlier research, the author noted another risk arising from reporting shared tax revenues as one's own tax revenues, namely: "Expenditure decentralization without corresponding local tax powers will not engender

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<sup>1</sup> Recommendation Rec(2005)1 of the Committee of Ministers to member states on the financial resources of local and regional authorities p.3.

the tax competition that drives the Leviathan model, nor will it strengthen the agency relationship between local citizens and their representatives” (Rodden, 2003, p. 697).

An analysis of the main theoretical approaches to issues related to the system of intergovernmental transfers is necessary in order to conduct a more comprehensive analysis of transfers and shared revenues. Although the mechanisms for distributing transfers and shared revenues are similar in nature, they provide different degrees of financial autonomy to local and regional authorities. Another important factor is whether the place where the revenues are generated is taken into account when sharing/redistributing revenues. For greater clarity on the issue, the main OECD studies on the subject were reviewed.

Blöchliger and Petzold (2009) focused on defining the dividing line between transfers and shared revenues and proposed test criteria to differentiate tax sharing and grants. In their study, they suggested the introduction of a set of test criteria. These criteria are: (1) Risk sharing: Is the amount of revenue allocated to the sub-central level strictly related to total tax revenue? (2) Unconditionality: Is the sub-central government free to use the revenue allocated, i.e., are the revenues unconditional? (3) Formula stability: Is the revenue shared between the central and the sub-central government predetermined in advance and not changed in the course of a fiscal year? (4) Individual proportionality: Is the revenue share of each sub-central government strictly related to what it generates on its own territory?

If the analysed agreements between central and local authorities cover all four criteria, they are referred to as strict tax sharing. If an arrangement fulfils the first three criteria but not the fourth (individual proportionality), it is referred to as tax sharing. If an arrangement does not fulfil the first three criteria, it is referred to as an intergovernmental grant (Blöchliger & Petzold, 2009). It should be noted that the study is based on previous OECD research on the topic (OECD, 1999, 2008), or Blöchliger and King (2006). The results show that OECD member states rarely share tax revenues solely on an individual proportional basis. For that reason, tax sharing is subdivided into “strict tax sharing” and “tax sharing”, depending on whether or not the tax sharing arrangement fulfils the individual proportionality criterion.

Based on a study of the types and dynamics of shared tax revenues over the years, examples are reported where shared tax revenues acquire the character of transfers and vice versa. Following reforms to the Nation-

al Accounts in 2010, some agreements that were formerly reported as tax sharing are now reported as intergovernmental grants (e.g., Australia, Austria, Belgium). As a result of the statistical reform, tax systems of OECD countries now appear more centralised than they did back in 2008, and the significance of tax sharing has declined, while autonomy over the remaining sub-central taxes has increased (Blöchliger & Nettley, 2015).

In 2013, Kim explored the possibilities for refining the test criteria for shared taxes proposed by Blöchliger and Petzold (2009). According to his findings and suggestions, the test criteria for defining shared taxes should include a distinction between: (1) tax sharing that is strictly proportional to the local tax base and local income; (2) partially proportional tax allocation; and (3) tax sharing that is inversely proportional to the local tax base. He identified a major shortcoming in the system developed by Blöchliger and Petzold (2009) (current definition of taxing power) as the fact that the degree of proportionality is not identified. The author suggests that this shortcoming could be avoided by exclusively applying the strong version of the test criteria for determining shared revenues. However, implementing this approach would result in tax sharing in many countries, including Germany and several other federal states, being reclassified as general aid/transfers. The rationale behind the author's proposal is supported by studies on fiscal decentralisation, which emphasise that linking local taxes proportionally to local income serves as one of the most important incentives for local economic growth. This assumption has its supporters (e.g., Weingast, 2009) as well as detractors (e.g., Treisman, 2006a, 2006b). Furthermore, Ebel and Yilmaz (2002) report that tax sharing has a markedly negative impact on GDP growth per capita.

Kim's research suggests that the OECD's existing definition of taxing power can be improved through the concept of "tax base proportionality", which incorporates tax sharing modified to reflect horizontal subsidies. According to Kim, the dichotomous nature of the current definition by Blöchliger and Petzold (2009) can be overcome by calculating the contribution of the local tax base to shared tax revenues continuously (OECD/Korea Institute of Public Finance, 2013, p. 57). Matić, Blažić Pečarić, and Grdinić (2023) present different methods of measuring tax autonomy and show different results under different approaches in the case of Croatia.

The OECD taxonomy categorises the degree of fiscal autonomy that sub-national governments (SCGs) have over taxation and revenue, dividing it into six main categories (A–F), each with specific sub-codes:

*A: Autonomy over tax rates and reliefs*

- a1: The SCG can set both tax rates and any tax reliefs independently without consulting the higher-level government.
- a2: The SCG can set tax rates and reliefs but must consult the higher-level government beforehand.

*B: Autonomy over tax rates*

- b1: The SCG sets the tax rate freely, with no upper or lower limits imposed by the higher-level government.
- b2: The SCG sets the tax rate, but the higher-level government establishes upper and/or lower limits on the rate.
- b3: The SCG sets the tax rate, but the higher-level government imposes restrictions on the annual revenue or levy increase.

*C: Autonomy over tax reliefs*

- c: The SCG can set tax reliefs independently, but not necessarily the tax rate.

*D: Tax-sharing arrangements*

- d1: SCGs determine the revenue split themselves.
- d2: Revenue splits can only be changed with the consent of SCGs.
- d3: Revenue splits are legislatively determined and may be changed unilaterally by the higher-level government, but less frequently than once per year.
- d4: Revenue splits are determined annually by the higher-level government.

*E: Central government sets tax rates and reliefs*

- e: SCGs have no control over either tax rates or tax reliefs.

*F: None of the above categories*

- f: Situations that do not fit into categories A–E.

From the data presented, it is clear that tax-sharing agreements, given their complexity, can be categorised into four subcategories based on the degree of influence subnational authorities exert over revenue determination. In category d4, shared tax revenues are characterised by the domi-

nant role of the higher level of government in deciding on the allocation of shared revenues, while the distribution mechanism remains loosely established in local legislation. This classification aligns with the test criteria set forth by Blöchliger and Petzold (2009), enabling a comprehensive analysis of the nature of shared tax revenues and their impact on the extent of decentralisation within the respective country.

The OECD (2022) provides an analysis of changes in tax autonomy for federal and unitary countries between 2000 and 2018. It finds that, in federal countries, the share of shared tax revenues was estimated at 10% of total revenues for the period 2002–2018, increasing to 12% and 13% in the last two years. This change is likely attributable to the effects of the COVID-19 pandemic and its impact on tax revenues at both local and national levels.

In unitary countries, a slight dynamic is observed, with the share of shared tax revenues increasing by 2% in 2005 to reach 17% of total revenue and remaining stable at 16% between 2011 and 2022. This demonstrates the consistency of tax agreements between central and local authorities. Among the EU and OECD member states where a significant proportion of tax revenues are shared are Germany, Austria, Poland, Portugal, Estonia, Slovenia, Spain, and others.

This analysis corroborates the conclusion drawn by Rodden (2003, p. 705), who asserts that “the global trend toward fiscal decentralization has occurred almost exclusively through increased grants and shared revenues rather than the devolution of tax authority. In newly decentralizing developing countries, this fact is shaped in part by the challenges of developing effective systems of local tax administration in the context of poverty, regional inequality, and administrative underdevelopment”.

In summary, the theoretical review highlights a lack of recent comparative research on revenue sharing and intergovernmental transfers, especially concerning the exchange of best practices between CEE countries.

### 3. Tax Sharing and Intergovernmental Transfers in Bulgaria and Czechia

In this section, we describe the systems in Bulgaria and Czechia, including their evolution over the last two decades. The section concludes with a chart comparison showing the development of key financial indicators.

### 3.1. Bulgaria

Bulgaria is a unitary state, with municipalities serving as the primary administrative-territorial units where local self-government is exercised. There are 265 municipalities in Bulgaria, each with its own budget and assets. Fiscal decentralisation in Bulgaria officially commenced with the adoption of the strategy for fiscal decentralisation and the programme for its implementation in 2002. Since the start of this process, significant changes have been introduced both to the tax powers of municipalities and the state transfer system.

In 2002, a decision by the Council of Ministers established the division of activities funded through municipal budgets into state and municipal activities related to public service delivery. State-delegated activities were funded through transferred revenues from taxes under the Law on Taxes on the Income of Natural Persons (shared PIT revenue) and the general complementary subsidy until 2008. Since 2008, these activities have been financed solely by the general subsidy for the financing of state-delegated activities. Local activities, on the other hand, are financed up to the amount of municipalities' own revenues and the equalisation subsidy, without any restrictions on spending.

The state-delegated activities and the standards for assessing value, quantity, and quality are jointly determined by the respective minister, the National Association of Municipalities in the Republic of Bulgaria (annually), and the Minister of Finance, and are approved by the Council of Ministers for the respective budget year. These standards guide the total amount of funding allocated for state-delegated activities and its distribution among municipalities. The exact amount of funds allocated to each municipality is stipulated in the annual State Budget Act. In 2006, municipalities were granted actual tax powers, enabling them to set local tax rates within certain legally defined limits.

The system of intergovernmental transfers underwent changes between 2003 and 2022. Revenues from personal income tax formed part of the total general supplementary subsidy during the period 2004–2007.

Currently, local budgets are composed of tax revenues, non-tax revenues, and revenues from state transfers. Local tax revenues include property tax, vehicle tax, property acquisition tax, patent tax, inheritance tax, donation tax, and taxi transport tax. Despite the diverse range of local taxes and the adoption of a strategy for fiscal decentralisation alongside its

implementation programme, recent years have witnessed a trend towards centralisation.

Non-tax revenues consist of income from the sale of non-financial assets, municipal fees, rental income, penalty interest, and other sources. These revenues are generally earmarked, particularly in the case of revenues derived from municipal fees. Income from the sale of non-financial assets is traditionally allocated to funding capital expenditures.

Municipal expenditures are categorised into local expenditures, expenditures for financing state-delegated activities, and local expenditures for co-financing state-delegated activities. Municipalities receive revenues from three main types of state transfers: the general subsidy for financing state-delegated activities, the subsidy for financing capital expenditures, and the subsidy for financing local activities/general equalisation subsidy. Of these, only the general equalisation subsidy is non-targeted, allowing local authorities to allocate the funds according to their expenditure policies.

### 3.2. Shared Taxes in Bulgaria Before 2008

Shared tax revenues are not new to local budgets in Bulgaria. Historically, during the 1990s, Bulgarian municipalities received shared revenues from three state taxes: personal income tax, a tax for municipalities (derived from the profits of legal entities registered under the Commercial Code), and a tax on companies with more than 50% municipal ownership (Ivanov, 1999). The majority of shared revenues came from PIT, which accounted for nearly 30% of municipal revenues and 65% of shared taxes in 1998. Revenues from the tax for municipalities made up 15% of municipal revenues and 33% of shared revenues, while revenues from the profit tax represented only 0.5% of all municipal revenues and 1% of shared tax revenues (Ivanov, 1999).

During this period, shared tax revenues were more similar to state transfers, despite shared revenues from PIT being recorded as own tax revenues under the provisions of the Municipal Budgets Act. Reflecting on the research focused on distinguishing transfers from shared tax revenues, it can be summarised that, in the 1990s, there were no clear boundaries between these two types of revenue in municipal budgets.

In 2003, shared revenues from PIT were classified under the category of own revenue. Between 2004 and 2007, they were recorded as revenues

from ceded/shared taxes, but from 2008 onwards, municipal budgets no longer received revenues from central taxes. A detailed analysis of financial data reveals that, in 2003, municipalities received 64% of total personal income tax revenues. This share decreased to 58% in 2004, rose to 63% in 2005, reached 64% in 2006, and, by 2007, the shared revenues for municipalities comprised only 44% of total personal income tax revenues.

In 2008, the government opted to increase the general supplementary subsidy, renaming it the general supplementary subsidy for financing state-delegated activities, and discontinuing the sharing of PIT revenues. It is worth noting that, despite the state ceding/sharing personal income tax revenues, municipalities were required to allocate the funds to specific purposes. Although shared revenues were recorded as own tax revenues in 2003, under the Municipal Budgets Act, they were strictly tied to defined expenditures. These included salaries and social security payments, scholarships, 50% of normatively calculated current maintenance expenses, subsidies for health activities and medical assistance, and funding for non-profit organisations. Between 2003 and 2008, shared revenues were exclusively used to fund the expenditures of state-delegated activities allocated to municipalities.

The distribution of shared revenues during this period relied on various criteria, including 20% of shared revenues being allocated based on the place of revenue generation, with the remaining portion being distributed according to factors such as overdue liabilities, population size, territory, the number of settlements within the municipality, and the relative share of expenditures for delegated activities within the overall national allocation. The distribution mechanism lacked stability, with changes being imposed each budget year. Based on the OECD's criteria, it can be concluded that the mechanism for shared tax revenues in Bulgaria aligns more closely with a state transfer system, as it fails to fulfil strictly the first three criteria defining shared revenues.

### 3.3. Czechia

Czechia is a unitary state with two tiers of local government: regions (14) and municipalities (6,250). Municipalities exercise simultaneously their own responsibilities – carried out by the municipality and its elected bodies on its behalf – and delegated responsibilities, which are performed on behalf of the state, with the state legally accountable for their implementation. According to budget classification, revenues are divided into four categories: tax revenues, non-tax revenues, capital revenues, and transfers. Tax

revenues comprise shared taxes and local taxes, such as real estate tax, local fees, and, since 2017, gambling tax. Transfers include funds for the execution of delegated tasks, which are distributed using a formula, alongside earmarked current and capital subsidies from both national and EU budgets. Non-tax revenues primarily consist of rental income, while in 2023, interest and capital revenues largely stemmed from the sale of municipal property. The share of own revenue – including local taxes, non-tax revenues and capital revenues – accounts for approximately 20% of total revenue.

The tax sharing system was introduced in 1993 and underwent significant changes in 1997 and 2001. The current system, which was put in place in 2001, encompasses all three major taxes – PIT, CIT, and VAT – as well as all three tiers of government: the state budget, regions, and municipalities. Tax sharing takes place in two stages. In the first stage, the shares allocated to the individual government tiers are determined. In the second stage, the shares distributed to individual regions or municipalities are set. Over time, the first stage has evolved: the share allocated to regions increased from the initial 3.1% to between 7.86% and 9.78%, while the share allocated to municipalities has ranged from 19.93% to 25.84%. The second stage, in the case of regions, has remained unchanged since 2001, as it is fixed by law. However, in the case of municipalities, significant adjustments were made to their shares in 2008, 2013, and 2017.

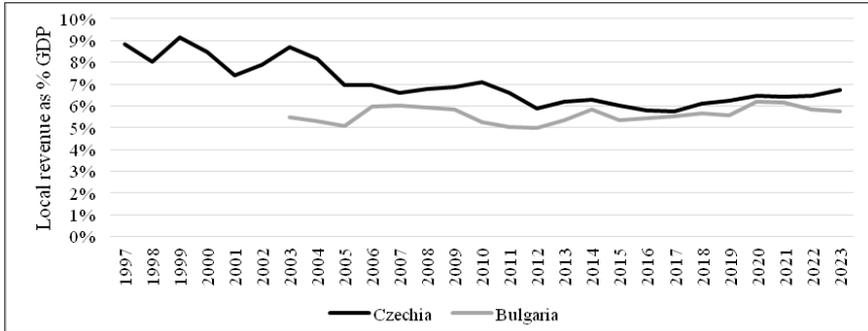
The starting point for municipal tax sharing in 2001 was the introduction of size groups and the development of a formula reflecting the size of the municipality. Larger municipalities benefitted from a higher coefficient, resulting in a greater amount per capita compared to smaller municipalities. Over time, the system evolved: the number of size categories was reduced, size coefficients were replaced by sliding coefficients, disparities among the coefficients diminished, and new elements were incorporated into the formula (Sedmihradská, 2008). The current formula is  $78\% \times (\text{number of residents} \times \text{size coefficient}) + 10\% \times \text{number of residents} + 3\% \times \text{area} + 9\% \times \text{number of students}$ .

While the changes introduced in 2008 and 2013 involved adjustments to the coefficients and formula, the modifications since 2018 have slightly altered the formula and eliminated the last origin-based element of tax sharing, which had been applied to the PIT for self-employed individuals. Up until 2017, 30% of the PIT paid by self-employed residents of a municipality was allocated directly as revenue for that municipality. Since 2018, however, this revenue has been distributed using the same formula as for other shared taxes.

### 3.4. Comparison of Financial Indicators

Over the last decade, the share of municipal revenues in GDP has been approximately 6% in both Bulgaria and Czechia (Figure 1). The decline in Czechia's share from 9% in 1999 to 6% in 2012 can be attributed to changes in the allocation of responsibilities in elementary education and social assistance.

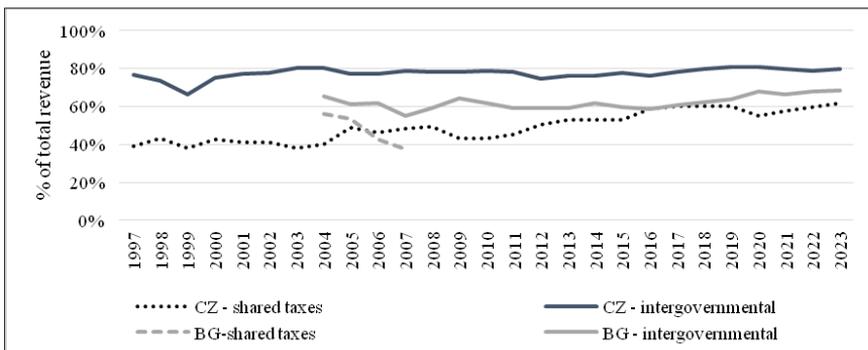
Figure 1: *Municipal revenue as % of GDP (1997–2023)*



Source: Authors, based on information from the Monitor and the Czech Statistical Office for Czechia, the Ministry of Finance and the National Statistical Institute for Bulgaria.

Czechia exhibits a greater reliance on intergovernmental revenue, which has remained remarkably stable over time (Figure 2). The role of shared taxes has gradually expanded in Czechia. In contrast, Bulgaria has experienced a gradual but consistent rise in targeted state transfers since 2015, which accounted for 64% of total municipal revenue by the end of 2022. Shared taxes in Bulgaria were discontinued as part of the decentralisation reform launched in 2003.

Figure 2: *Share of intergovernmental revenue in total revenue (% , 1997–2023)*



Source: Authors, based on information from the Monitor and the Czech Statistical Office for Czechia, the Ministry of Finance and the National Statistical Institute for Bulgaria.

## 4. Data and Methods

To compare the systems of local government revenues in Bulgaria and Czechia, two sets of data are utilised: aggregate data on municipal revenue spanning the last 20 to 25 years, and data on individual municipalities for 2023. The data sources include the Monitor and the Czech Statistical Office for Czechia, and the Ministry of Finance and the National Statistical Institute for Bulgaria.

To evaluate the distribution of revenue per capita across individual municipalities, we employ the Gini coefficient. It is a widely used measure of inequality within a distribution, ranging from 0 (perfect equality) to 1 (maximum inequality). It is calculated based on the Lorenz curve and reflects how evenly resources are distributed among units – in this case, municipalities.

A value of zero would indicate that all municipalities receive identical revenue per capita, while higher values signal greater disparities. The theoretical maximum for a series with  $n$  members is  $((n - 1)/n)$ , which occurs when only one municipality receives all revenue. By comparing Gini values for different revenue components – local taxes, transfers, and shared taxes – we assess the equalising effect of various fiscal instruments.

The standard OLS regression is employed to identify the factors influencing various types of revenue, including local taxes, shared taxes, transfers, intergovernmental revenue, and total revenue. Intergovernmental revenue comprises the sum of shared taxes and transfers. In the case of Bulgaria, intergovernmental revenue is equivalent to transfers. This contrasts with the standard Czech classification of shared taxes but aligns with the OECD classification outlined in the first part of the paper.

The final set of explanatory variables includes population (POP), total area in hectares (AREA), the share of urbanised land within the total area (URBANISED), and the unemployment rate (UNEMPLOYMENT). Demographic variables, such as the share of the young and elderly populations, and economic activity variables, such as the number of employees, were excluded from the econometric analysis due to collinearity issues. Variables indicated by PC denote per capita values. Table 1 presents the descriptive statistics for the variables used in the econometric analysis.

Table 1: *Descriptive statistics (2023)*

	Units	Average	Standard deviation	Minimum	Maximum
<b>Bulgaria (N = 265)</b>					
LOCAL TAX	thousands BGN	10,473.700	90,340.300	27.288	1,393,010
TRANSFERS	thousands BGN	54.792	450.753	2.176	7,287.330
TOTAL	thousands BGN	79,975.700	662,963.000	2,756.350	10,636,800
PC_LOCAL TAX	BGN	143.418	132.024	43.93	1,366.05
PC_TRANSFERS	BGN	1.501	0.572	0.764	6.124
PC_TOTAL	BGN	1,980.46	739.345	1,277.74	8,014.58
POP	people	24,224.1	85,636.1	552	1,286,970
AREA	hectares	83,955.5	682,528	4,439.58	11,166,100
URBANISED	%	4.943	4.215	0.727	47.995
UNEMPLOYMENT	%	11.946	9.658	1.600	68.734
<b>Czechia (N = 6,245)</b>					
LOCAL TAX	thousands CZK	7,439.320	105,875.000	64.031	7,975,960
TRANSFERS	thousands CZK	14,417.300	432,458.000	67.300	33,883,400
SHARED TAXES	thousands CZK	47,104.600	1,139,130.000	423.505	87,573,000
INTERGOV	thousands CZK	61,521.900	1,569,380.000	632.696	121,456,000
TOTAL	thousands CZK	78,932.600	1,823,340.000	769.979	140,781,000
PC_LOCAL TAX	CZK	4,074.75	9,791.2	545.454	486,367
PC_TRANSFERS	CZK	6,400.42	14,697	209.052	490,462
PC_SHARED TAXES	CZK	19,914.6	2,613.65	10,890	71,382.2
PC_TOTAL	CZK	36,176.4	22,738.8	17,134.4	562,306
POP	people	1,745.12	19,330.8	15	1,384,730
AREA	hectares	1,246.73	1,508.49	42.287	49,620.8
URBANISED	%	1.699	1.280	0.054	19.003
UNEMPLOYMENT	%	3.288	2.094	0	25.641

Source: Authors.

Next, we estimate the revenue of individual municipalities in Bulgaria using the current Czech tax-sharing formula and 2021 demographic data from Bulgarian municipalities. The data on population size, area, and the number of pupils were sourced from the National Statistical Institute.

The primary assumption for this estimation is that the tax-sharing amount matches the funds allocated to targeted transfers in 2022, totalling 6,238.5

million BGN, which represents 26.4% of the total PIT, CIT, and VAT revenue. For comparison, in Czechia, shared taxes accounted for 27% of the total revenue from these taxes. Additionally, Czech municipalities received an extra 8.7% of the total PIT, CIT, and VAT revenue in the form of transfers.

We estimate two models: Model 1 utilises the size coefficients applied in Czechia, as shown in Table 2, for all municipalities. Model 2 applies higher size coefficients for the four largest cities, similar to the approach used in Czechia – namely, Burgas, Varna, and Plovdiv with a coefficient of 2.2961, and Sofia with a coefficient of 4.0641. The following formula is applied:  $78\% \times (\text{number of inhabitants} \times \text{size coefficient}) + 10\% \times \text{number of inhabitants} + 3\% \times \text{area} + 9\% \times \text{number of pupils}$ .

Table 2: *Size coefficients*

Population	Coefficient	
0–50	1	$1.0000 \times \text{number of inhabitants}$
51–2,000	1.07	$50 + 1.07 \times \text{number of inhabitants above 50}$
2,001–30,000	1.1523	$2,136.5 + 1.1523 \times \text{number of inhabitants above 2,000}$
30,001 +	1.3663	$34,400.9 + 1.3663 \times \text{number of inhabitants above 30,000}$

Source: Authors' presentation based on Czech law on tax sharing.

## 5. Results

The per capita distribution of municipal revenues varies across different types of municipal revenues. Table 3 illustrates how the distribution changes with the inclusion of additional revenue types using the Gini coefficient. The higher the Gini coefficient, the higher the inequality in distribution.

In Bulgaria, local taxes establish the initial inequality, which is significantly lower than in Czechia. The inclusion of non-tax revenue has a slight equalising effect. Contrary to our expectations, the impact of the equalising transfer on revenue distribution in 2023 was insignificant. Similar results can be found in previous studies (Nenkova, 2019).

This is likely due to the limited volume of resources allocated to equalisation transfers, comprising just 3.8% of total revenue in 2023. The inclusion of targeted transfers significantly reduces inequality, as a substantial

proportion of funds (61% of total revenue in 2023) is distributed relatively evenly among municipalities. E.g., the Gini coefficient for conditional grants, including the State Transfers for State-Delegated Activities, was 0.1516.

In Czechia, the distribution of local taxes is less equal compared to Bulgaria, and the inclusion of non-tax revenue further exacerbates this inequality. However, tax sharing has a strongly equalising effect due to both the substantial volume of these resources and their highly uniform distribution (the Gini coefficient for shared taxes is 0.0655). Conversely, the distribution of transfers is notably unequal (Gini 0.6272), suggesting that transfers are intended not for equalisation, but to provide additional resources based on the specific needs of individual municipalities.

The equalising capacity of the formula-based revenue-sharing system applied in Czechia is further confirmed through simulations for Bulgaria, using both Model 1 and Model 2. This holds true despite the limited funds allocated to revenue sharing (as detailed in the Data and Methods section).

Higher inequality in Model 2 is caused by its design. The four largest cities, which account for approximately one third of the population, have significantly higher revenues than other municipalities. In Model 1, there is no substantial advantage for the four largest cities.

Table 3: *Gini coefficient*

	Bulgaria	Czechia
Local taxes	0.3294	0.4042
Local taxes and non-tax revenue	0.3073	0.4239
Local taxes, non-tax revenue, and tax sharing or equalisation grant	0.3072	0.1668
Total revenue	0.1557	0.2161
Total revenue Model 1	0.1221	
Total revenue Model 2	0.1418	

Source: Authors.

The results of the OLS regression (Table 4 and Table 5) confirm the significant role of population size in determining all types of revenue. This relationship is not surprising, as the number of inhabitants enters the formula for tax sharing and some intergovernmental grants.

The influence of a municipality’s area is negative for all types of municipal revenue in Czechia and for local taxes in Bulgaria. This indicates that a larger area does not generate additional revenues. However, for transfers and total revenue in Bulgaria, the relationship is reversed – a larger area corresponds to higher transfers, which, given their substantial share in total revenue, also results in higher total revenue.

Differences in the structure of municipal territories also influence revenue sources in Bulgaria. For instance, a higher proportion of urbanised land, such as towns and cities, correlates with lower local taxes but leads to higher transfers. This suggests preferential treatment of towns and cities in the allocation of transfers.

Table 4: *Results of OLS regression (Czechia, 2023)*

	Local Tax	Shared Taxes	Transfers	Intergov	Total
CONST	5,938.460	177,831.000	85,850.400	263,681.000	282,618.000
	(475.276)	(6,717.690)	(3,857.540)	(10,484.500)	(11,608.500)
AREA	-2.505	-73.670	-35.692	-109.362	-115.980
	(0.190)	(2.152)	(1.236)	(3.359)	(3.719)
POP	5.540	61.980	23.386	85.367	98.845
	(0.015)	(0.171)	(0.098)	(0.267)	(0.296)
UNEMPLOYMENT		-3,166.880	-1,309.490	-4,476.370	-4,904.300
		(1,278.840)	(734.359)	(1,995.930)	(2,209.910)
URBANISED	-2,968.610	-80,413.400	-37,337.700	-117,751.000	-126,808.000
	(190.903)	(2,142.180)	(1,230.120)	(3,343.360)	(3,701.800)
R-squared (adjusted)	0.969	0.966	0.923	0.957	0.961
N	6,245	6,245	6,245	6,245	6,245

Source: Authors.

The negative influence of unemployment in Czechia is surprising, as neither tax sharing nor general transfers take the economic situation of a municipality into account. As previously noted, tax sharing is based on the number of employees in the municipality. However, this indicator is not correlated with unemployment; the correlation coefficient between the number of employees and the unemployment rate is 0.0083.

Table 5: *Results of OLS regression (Bulgaria, 2023)*

	Local tax	Transfers	Total
CONST	3,572.160	-5,227.400	1,665.080
	(676.482)	(1,010.900)	(696.517)
AREA	-0.095	0.181	0.023
	(0.011)	(0.017)	(0.015)
POP	0.375	0.778	1.538
	(0.004)	(0.006)	(0.004)
URBANISED	-690.412	1,263.870	
	(73.861)	(10.109)	
R-squared (adjusted)	0.981	0.992	0.998
N	265	265	265

Note: unemployment was not significant in any of the models and therefore is not shown.  
 Source: Authors.

## 6. Discussion and Conclusions

Shared tax revenues and state transfers are essential tools of state policy for providing municipalities with the resources needed to fulfil their responsibilities. The distinctions between tax-sharing arrangements and state transfers can often be subtle, with the line between the two frequently blurred. The OECD applies a set of test criteria to differentiate them. In many countries, shared tax revenues resemble transfer payments due to the use of complex formulas, which facilitate a more equitable distribution of tax revenues among municipalities and help limit the growth of fiscal disparities.

This article examines and compares the systems of intergovernmental fiscal transfers and tax sharing in Bulgaria and Czechia, along with their development over time. It analyses the factors influencing various types of municipal revenues and their distribution among individual municipalities. Furthermore, it models a tax revenue-sharing system for Bulgaria using the Czech formula-based tax-sharing approach. The findings from the OLS regression highlight the significant role of population size in determining all types of revenue in both countries. In Bulgaria, the struc-

ture of municipal territory exhibits a differentiated influence on revenue sources. For instance, a higher proportion of urban land – such as towns and cities – is associated with lower local taxes but higher transfers, indicating preferential treatment of urban areas in the allocation of transfers. The summarised results suggest that introducing a shared tax revenue mechanism in Bulgaria could help reduce inequalities between municipalities and significantly enhance expenditure decentralisation. An analysis of changes in the Gini coefficient in Bulgaria reveals that allocating the same resources through a formula-based tax-sharing system inspired by the Czech model, rather than the current system of transfers, would result in a slight decline in the Gini coefficient.

To implement an effective tax-sharing system, it is crucial to reform the state transfer system and reduce the reliance on targeted subsidies. Such reforms would align with the recommendations outlined in the Council of Europe reports and lessen the dependence of Bulgarian municipalities on targeted transfers. While this analysis does not address changes in the structure and value of the current state transfer mechanism, it underscores the need for further research in this area. In conclusion, it should be noted that despite the progress achieved in the processes of decentralisation and local governance, there remains a distinct lack of in-depth and systematic research examining the specifics of municipal development in the context of different national models and regional characteristics in CEE, including on the topic of the development of intergovernmental transfer systems.

This study contributes to filling this gap by offering an analytical framework and empirical observations that can serve as a basis for further comparative analyses. The results show that applying a proven and working model for sharing tax revenues can reduce inequalities between individual municipalities in Bulgaria. It should be noted that, in addition to population size, an important factor in the distribution of shared tax revenues is the level of collectability of individual revenues and the potential for generating tax revenues in individual local territorial units.

A wide range of possibilities remain for future research, including a more in-depth study of good management practices, the impact of European policies on local autonomy, and the opportunities for digitisation and innovation in municipal management. Comparative, interdisciplinary studies are particularly promising, as they can provide a clearer picture of the dynamics of local development and support the formulation of sustainable policies, including with regard to the structuring of the local tax system.

From this perspective, this paper not only highlights key challenges and issues in the local finance system, and the exchange of good practices between two CEE countries, but also emphasises the need for more focused academic and political attention to continue to fill the existing scientific and practical gap in this area.

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## TAX SHARING AND INTERGOVERNMENTAL FISCAL TRANSFERS IN BULGARIA AND CZECHIA

### Summary

*Adequate fiscal revenues for local governments are a crucial aspect of meaningful fiscal decentralisation. As local taxes are often insufficient, many countries have developed complex systems of tax sharing and transfers. Although numerous systems have been in place for a long time, discussions about potential changes remain ongoing. These systems are subject to varied and often conflicting expectations, with the distinction between tax sharing and transfers frequently being rather unclear. This paper aims to examine and compare the systems of intergovernmental fiscal transfers and tax sharing in Bulgaria and Czechia, as well as their evolution. We analyse the factors affecting various types of municipal revenue and the distribution of municipal revenue among individual municipalities, and propose a model for a tax revenue-sharing system in Bulgaria based on the Czech formula-driven tax-sharing algorithm. The results of the OLS regression confirm the pivotal role of population in determining all types of revenue across both countries. In Bulgaria, we observe a distinct influence of the structure of municipal territory on different revenue sources. While a higher proportion of urban land – such as towns and cities – correlates with lower local taxes, it is associated with higher transfers, indicating preferential treatment for urban areas in the allocation of transfers. The findings suggest that introducing a shared tax revenue mechanism in Bulgaria could help mitigate inequalities between municipalities and significantly enhance expenditure decentralisation. An analysis of the change in the Gini coefficient in Bulgaria reveals that allocating the same resources through a formula-based tax-sharing system, inspired by the Czech model, rather than the current system of transfers, would result in a modest reduction in the Gini coefficient.*

**Keywords:** tax sharing, intergovernmental transfers, fiscal decentralisation, municipalities, Bulgaria, Czechia

## RASPODJELA POREZNIH PRIHODA I MEĐURAZINSKI FISKALNI TRANSFERI U BUGARSKOJ I ČEŠKOJ

### Sažetak

Odgovarajući fiskalni prihodi jedinica lokalne samouprave ključan su aspekt stvarne fiskalne decentralizacije. Budući da su lokalni porezi često nedostatni, mnoge su države razvile složene sustave dijeljenja poreznih prihoda i transfera. Iako brojni sustavi postoje već duže vrijeme, rasprave o mogućim promjenama i dalje su prisutne. Ti su sustavi izloženi različitim, a često i međusobno suprotstavljenim očekivanjima, pri čemu je razlika između dijeljenja poreza i transfera često prilično nejasna. Cilj je ovog rada analizirati i usporediti sustave međuvladinih fiskalnih transfera i raspodjele poreznih prihoda u Bugarskoj i Češkoj, kao i njihov razvoj. Analiziraju se čimbenici koji utječu na različite vrste prihoda općina i gradove te raspodjelu općinskih prihoda među pojedinim općinama, stoga se predlaže model dijeljenja poreznih prihoda u Bugarskoj koji je utemeljen na češkom modelu raspodjele poreza. Rezultati OLS regresije potvrđuju ključnu ulogu stanovništva u određivanju svih vrsta prihoda u obje zemlje. U Bugarskoj se uočava i izrazit utjecaj strukture teritorija općina i gradova na različite izvore prihoda. Tako veći udio urbanog područja – poput gradova i urbaniziranih naselja – korelira s nižim lokalnim porezima, no istodobno je povezan s višom razinom transfera, što upućuje na povlašteni položaj urbanih područja u alokaciji transfera. Nalazi sugeriraju da bi uvođenje mehanizma dijeljenja poreznih prihoda u Bugarskoj moglo pomoći u ublažavanju nejednakosti među općinama i gradovima te značajno unaprijediti decentralizaciju rashoda. Analiza promjene Ginijevog koeficijenta u Bugarskoj pokazuje da bi raspodjela istih sredstava putem sustava dijeljenja poreznih prihoda temeljenog na formuli, inspiriranog češkim modelom, umjesto postojećeg sustava transfera rezultirala umjerenim smanjenjem Ginijevog koeficijenta.

Ključne riječi: raspodjela poreznih prihoda, međuvladini transferi, fiskalna decentralizacija, općine i gradovi, Bugarska, Češka