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*Changes in the Revenue Autonomy of the Local Government
Subsector of the European Union Countries as a Result of the
Pandemic Crisis*

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Abstract

Theoretical background: Intergovernmental relations are a key area of research on fiscal federalism. The extent and strength of central government's influence on local governments determines the degree of autonomy of local authorities. The prevailing view in the literature is that a higher degree of local government autonomy is a factor that stimulates economic growth, fiscal stability, and efficient delivery of public goods. At the same time, the COVID-19 pandemic period forced the need for coordination between central government and subnational authorities. Under such conditions, significant changes occurred in the size and structure of local government budgets, which were the result of greater interconnection of local government finances with transfers from central government. These changes meant pressure to reduce the revenue autonomy of local governments. In view of this, the article formulates a research hypothesis that the degree of revenue autonomy of local governments decreased during the pandemic period.

Purpose of the article: The purpose of the article is to determine the direction and strength of changes in the level of local government subsector revenue autonomy in European Union countries.

Research methods: The research used data for 2012–2022 from the *Government Finance Statistics Database* published by Eurostat. The values of three indicators for European Union countries determining the degree of revenue autonomy of local governments were compared: 1) the share of local governments' transfer revenues in their total revenues; 2) the share of local governments' own (non-transfer) revenues in general government sector revenues; 3) the share of local tax revenues in total taxation. In addition, the statistical significance of the differences in the studied indicators between the individual years of the study period was tested using a paired sample *t*-test (for the first indicator) and a non-parametric Wilcoxon signed rank test (of the other two indicators).

Main findings: It was shown that the COVID-19 pandemic period was only to some extent a factor in changing the revenue structure of the local government. The biggest influence on the changes in this structure came from transfers received from the central government, the importance of which did increase in the years preceding the pandemic period, but the increase from year to year was small and statistically insignificant. Indeed, it was only the pandemic crisis that caused significant statistical changes in this regard. In the case of the ratio of the share of local own revenue in general government revenue, it turned out that only to a small extent was the pandemic crisis the source of the reduction in the role of local revenue in the general government sector. No significant changes in the role of local government taxes in the tax revenues of the sector as a whole were also seen. For this indicator, there was no evidence of statistically significant differences in the values of this indicator during the COVID-19 pandemic period relative to the pandemic period. Similarities were also found in the direction of change of the first two indicators relative to the average for European Union states.

Introduction

Revenue autonomy of local government is a research problem in the area of fiscal federalism and intergovernmental relations. Fiscal federalism refers to the demarcation between different levels of government of revenue collection activities and expenditure responsibilities. In principle, subnational governments can collect more precise information on local preferences and therefore can define and implement policies that better meet people's needs. When residents have heterogeneous preferences, aggregate welfare will be higher when each jurisdiction can choose its own policy, as opposed to the situation where a uniform policy is implemented across all jurisdictions (Oates, 1999). The classical theory of fiscal decentralization is based on the tenet that local governments know more about their local situation than the central government does (Marlow, 1988). Therefore, under a decentralized system, local governments can better provide public goods in an effective, efficient, and timely manner. This is a fundamental argument for the decentralisation of public finances. This means that the revenue structure of local government and the share in it of own revenues and transfers is a factor influencing economic growth, expenditure structure, revenue inequality, fiscal sustainability (Martinez-Vazquez et al., 2017). On theoretical grounds, decentralisation of public revenues can reduce the common pool problem. In the case of central government funding of local tasks, the relationship between the costs of task implementation (borne by the community at large) and the benefits of task implementation (achieved by the local community) is weakened (Hirota & Yunuone, 2020). The local government's dependence on transfer revenue

is also a source of fiscal illusion. Residents treat own revenue and grants or subsidies differently (Patrzalek, 2017). Unaware of the total cost of financing subsidised tasks, they make additional demand for them (Guziejewska, 2021). In addition, the presence of grant funding in the financing structure of public tasks has a stronger impact on the growth of public expenditure than the situation of financing tasks from own resources. This phenomenon is referred to as the flypaper effect (Guziejewska et al., 2021). The decentralisation of public revenues increases the accountability of local government to residents, especially when it concerns the spending of funds from local taxes. This means improving the efficiency of public resources from own revenues and leads to a better reflection of residents' preferences (Narbón-Perpiñá & De Witte, 2018).

Nevertheless, decentralisation also has drawbacks. In particular, they are related to the generation of tax competition by the fiscal system, the failure to exploit economies of scale and the inappropriate sharing of risks (Hindriks & Myles, 2013). In addition, subnational authorities may struggle to deal with local side effects (i.e. when the impact of policies implemented by one jurisdiction affects other jurisdictions).

Revenue autonomy is understood as the local governments having their own sources of revenue and the right to shape and freely dispose of these funds. The higher the share of own sources of revenue in budget revenues, the higher the degree of revenue autonomy of the local government unit. In other words, the greater the importance in local revenue of transfers in the form of grants or subsidies, the lower the degree of revenue autonomy.

In practice, subnational governments have limited autonomy to raise revenue, as they are usually dependent on intergovernmental grants and rarely have full discretion over tax policy (Dougherty et al., 2019; Poniatowicz & Dziemianowicz, 2016; Filipiak & Dylewski, 2016). This results in more rigid local budgets compared to the state budget. In addition, local authorities have to comply with a wide range of fiscal rules, face institutional restrictions on taking out loans (Vammalle & Bambaite, 2021) or have less developed and more illiquid bond markets compared to national bond markets (Smoke & White, 2005). As a result, when shocks such as the COVID-19 pandemic crisis occur, local governments cannot easily incur debt or compensate for revenue shortfalls by issuing debt as central governments do, and cutting discretionary spending such as investment often becomes the easiest way to adjust their budgets. For this reason, the degree of revenue autonomy of local authorities is an important area of research on fiscal federalism.

The COVID-19 pandemic period was a shock that necessitated the definition of a new relationship between central and local government in order to effectively coordinate efforts to reduce the negative effects of the pandemic crisis. In view of this, the role of transfers from central government to the local government subsector has increased. Against this background, the aim of this study is to determine the direction and strength of changes in the degree of local government subsector revenue autonomy in European Union countries.

Revenue autonomy of local governments during the COVID-19 pandemic – a literature review

Determining the degree of welfare-maximising local autonomy is not trivial, especially as countries differ in their designation of decentralised spending responsibilities and revenue collection. Funding systems for local governments differ between EU countries. This means that, on the one hand, in countries such as Sweden, Finland, Spain or France, local governments show a large share of own revenue in the revenue structure, while in Estonia, Lithuania, the Netherlands, Slovakia and Romania transfer revenues predominate. In the case of Poland, the degree of revenue autonomy of local governments does not exceed the average for the European Union (Wyszkowska, 2017).

As the level of economic activity heterogeneously affects different revenue streams and spending needs, central government and local governments have different exposures to crises. International comparisons indicate a high heterogeneity in the fiscal response of individual countries to pandemic crises (Chen et al., 2021).

The outbreak of the COVID-19 pandemic has shaken the foundations of fiscal policy and posed a threat to financial stability at all levels of the general government sector, including local government, whose ability to absorb shocks and adapt to changing macroeconomic conditions is significantly constrained (Marrs, 2020). Ter-Minassian (2020) shows that designing effective intergovernmental fiscal cooperation arrangements is far from trivial and may depend on several factors such as having a strong national government that exercises effective policy leadership, ethnic tensions, natural resources endowments, levels of development, economic structure and even history of perceived unfairness by the national government in resource distribution across subnational governments. OECD (2020a) and Dougherty and de Biase (2021) explore intergovernmental coordination arrangements to tackle the COVID-19 crisis and reveal issues that countries have in coordinating their responses.

Local governments are important players in the design and implementation of public policy around the world. Not surprisingly, therefore, they had an important role to play in dealing with the COVID-19 crisis. Local authorities, as direct service providers to the community, struggled to respond to the COVID-19 pandemic on an unprecedented scale, despite sometimes immediate and severe disruptions to their budgets (Dzigibeda et al., 2020; Dutta & Fischer, 2020). The COVID-19 crisis prompted spending on measures to prevent the spread of the pandemic, treatment of the sick and social protection programmes, while also impacting on reduced economic activity and thus tax revenues. Under these circumstances, there have been significant changes in the size and structure of local government budgets. This includes the degree of revenue autonomy. Some evidence suggests that the degree of autonomy of subnational governments is correlated with the speed with which they regain their financial stability after negative shocks (Shoag et al., 2019), and this can be at least partly explained by the fact that autonomous local governments tend to increase tax rates in times of crisis in order to stabilise their revenues (Lutz,

2008). Since the beginning of the pandemic, the central government has helped municipalities struggling with huge gaps between projected revenues and expenditures, although the assistance provided has been disproportionate to the scale and timing of the challenge (Gordon et al., 2020).

Controversy over the extent of local government financial autonomy intensified during the pandemic crisis due to the need for greater operational coordination between central authorities and local governments. The literature on crisis management indicates that during times of crises, governmental decision-making within the public sector tends to gravitate towards higher levels of authority (Peters, 2011). There are various reasons for this. From a governance perspective, responses to crises must create coherence and impose priorities. The use of central authority allows governments to act quickly and effectively, and stops potential disputes over the priorities of government action. From the political point of view, citizens expect centralised leadership and are prepared to accept it when the situation becomes extremely serious. Therefore, as was the case in previous global crises (Navarro & Velasco, 2022), centralisation movements were also expected in the governance of COVID-19.

The COVID-19 pandemic highlighted the many trade-offs of centralized versus decentralized policymaking. The literature on fiscal federalism focuses on the benefits and costs of decentralisation (Oates, 1999; Boadway & Shah, 2009). The global nature of the pandemic indicated the need for national and even international responses to the health and economic crises it caused. Arguments for centralisation during the pandemic referred to the classic interjurisdictional externalities and spillovers. For example, failure to contain the virus in one jurisdiction imposed costs on other jurisdictions if borders are open. In addition, local governments may lack the capacity and administrative capability to respond quickly to a crisis. Moreover, the lack of uniformity between jurisdictions can raise important equity issues, especially in federal states when there is variation in the health tasks carried out between sub-national governments. The importance of local knowledge and rapid on-the-ground response has been emphasized in previous crisis and disaster management research (Baker & Refsgaard, 2007; Yilmaz & Boex, 2021).

At the same time, the literature on fiscal federalism suggests that there may be reasons to decentralise pandemic policy to subnational authorities. Seegert et al. (2020) argue that local governments' policies may be more effective in mitigating the spread of the COVID-19 pandemic because local authorities may be able to better align their policies with the preferences of their citizens. At the same time, while some policies were decentralised, others were more centralised. This means that decentralisation alone did not guarantee a more effective response to the effects of the pandemic (Erkoreka & Hernando-Pérez, 2023).

Publications issued in the early months of the pandemic pointed out the risks to local government finances. It was noted that the loss of local government revenue in the US as a result of COVID-19 was much greater than during the financial crisis (Gordon et al., 2020). Chernick et al. (2020) highlighted that in unitary countries where

transfers are directed to local authorities directly by the government the negative impact of the pandemic may be smaller than in federal countries, where most of the transfers addressed to the local government sub-sector come from the state authorities, which may not be able to provide sufficient resources. OECD (2020b) forecasts indicated that the COVID-19 pandemic would cause a sharp decline in local authorities' shared and own tax revenues, particularly for indirect taxes and income taxes. In addition, the introduction of measures such as tax credits, exemptions, deferrals and reductions in tax rates as part of the stimulus packages was expected to reduce tax revenues.

Nemec and Špaček (2020) pointed out that in the first months of the pandemic, data for the Czech Republic and Slovakia indicated that the financial resources available to municipalities were not commensurate with their tasks. In their view, the response of the central authorities in both countries to this situation was inadequate, resulting in service delivery problems in some areas, especially in culture and sport. In Slovakia, the subnational governments faced shortfalls in their revenues and an increase in unexpected expenditures (Čajková et al., 2021). Local authorities in Sardinia have recorded a sharp decrease in tax revenue from income taxes and taxes on productive activities (Deriu et al., 2022).

Swianiewicz and Łukomska (2020) pointed out that during the first pandemic period in Poland, the most unfavourable changes referred to the situation of the largest cities, with the main source of problems during this period being the decrease in revenue from the share of personal income tax revenue. These authors also noted a distinct decline in property tax revenues as an effect of various types of exemptions granted by local governments as part of protecting business entities from the effects of lockdown. However, they stressed that the adverse changes were mitigated to some extent by increased transfers to local government budgets. Malinowska-Misiąg (2022) remarked that the first year of the pandemic turned out to be better for local authorities in Poland than initially expected, although the financial situation of individual local governments varied greatly. The negative effects of the pandemic were particularly evident in urban municipalities and cities with district rights, while rural municipalities suffered the least.

Studies that covered a longer period of the pandemic indicated that its impact on the financial situation of the local government subsector in many countries was not as bad as originally assumed. It was pointed out that the outbreak of the pandemic did not lead to significant effects on the financial situation of local governments in Indonesia (Anas, 2021). The World Bank research, based on case studies of 15 cities in 10 underdeveloped and medium-developed countries, indicated that the COVID-19 pandemic had a severe, but manageable, impact on the financial health of these cities. In doing so, it was also identified that local government units, which were characterised by a particularly weak initial revenue position and little ability of upper tier authorities to provide support due to their own fiscal space and constraints, had the greatest problems. This group of cities was more vulnerable to the crisis and suffered a sharp drop in revenue (World Bank, 2021).

Transfers from central government became a key factor that reduced the negative impact of the COVID-19 pandemic on local government finances. Poniatowicz (2022) pointed out that in Poland, compared to the year before the pandemic (2019), during the years of the pandemic crisis, the dependence of local government budgets on transfers from the central budget has clearly increased, so the share of transfer revenue, i.e. subsidies and grants, has increased. This has led to a reduction in the revenue autonomy of local governments. In view of the above, it is reasonable to investigate whether the phenomenon of reduced revenue autonomy of local authorities during the pandemic crisis is widespread in the countries of the European Union.

Research methods

Three indicators commonly used to assess different dimensions of local governments' revenue autonomy were used to compare the degree of local government revenue autonomy in EU countries (Kim et al., 2013). The first is the share of local governments' transfer revenues in their total revenues. This indicator is equated with the decentralisation of local government revenues. The lower its value, the greater the degree of decentralisation and the less dependence of the financial situation of local authorities on central government decisions. The second indicator used in the study is the share of local governments' own (non-transfer) revenues in general government sector revenues. This measure reflects the importance of local government revenues in the overall general government sector and shows the revenue strength of the local government sector. The third indicator used in the study is the share of local tax revenue in total taxation. It indicates the importance of local taxes in general government tax revenue. It is a measure of the contribution of local government to total government tax revenue. The data source for the calculation of these indicators was the *Government Finance Statistics Database* published by Eurostat. The study covered the years 2012–2022, so as to include both the pre-pandemic period and the COVID-19 pandemic period. The analysis of the indicator for the share of local tax revenue in total taxation, due to data availability, was finalised for 2021.

Firstly, the values of each of these indicators were compared in 2022 against 2019. In the case of the indicator of the share of local tax revenue in total taxation, the last available period was 2021. In this way, the changes in the degree of revenue autonomy that occurred during the pandemic period were presented. As a second step, the differences between the dynamics of the indicators analysed were examined by comparing the changes of each indicator in the period 2019–2022 to the changes for the period 2013–2019. This allowed for an examination of whether the magnitude of change during the pandemic period differed from the magnitude of change during the pre-pandemic period. In addition, the statistical significance of the differences of the studied indicators between the single years of the 2012–2022 period for the first two indicators and the 2012–2021 period for the third indicator was tested. For those

indicators for which the Shapiro–Wilk test indicated a distribution close to normal, the test of statistical significance of change was based on the results of a paired sample *t*-test. For those indicators for which the hypothesis of normality of distribution was rejected, the test of statistical significance of differences was carried out using the non-parametric Wilcoxon signed rank test. The tests used made it possible to investigate whether there were statistically significant differences between the values of the indicators analysed in the COVID-19 pandemic and pre-pandemic years.

Results and discussion

The indicators used to determine the evolution of revenue autonomy in European Union countries are: 1) share of local governments' transfer revenues in their total revenues; 2) share of local governments' own (non-transfer) revenues in general government sector revenues; 3) share of local tax revenues in total taxation. Figure 1 compares the values of the first indicator for the European Union countries between 2019 and 2022.

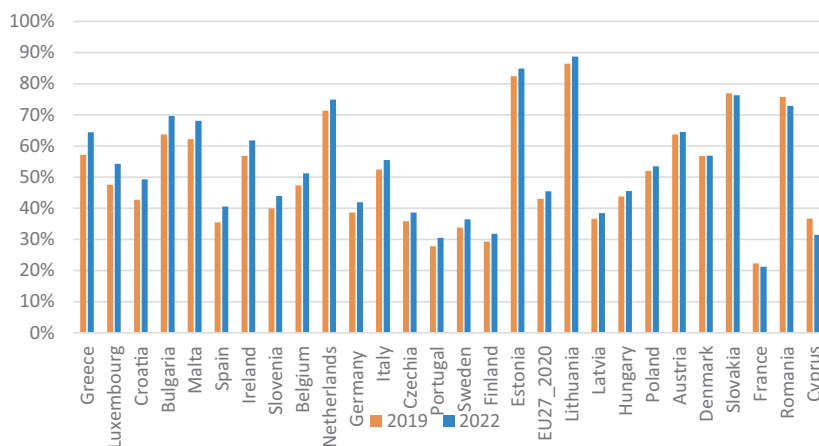


Figure 1. Share of local governments' transfer revenue in total revenues (2019 vs 2022)

Source: Author's own study based on Eurostat database.

The countries in the table have been ranked according to the dynamics of the share of transfers between 2019 and 2022. For six countries (Greece, Luxembourg, Croatia, Bulgaria, Malta, Spain), an increase in this indicator exceeding 5 pp was recorded. At the same time, four countries (Cyprus, Romania, France, and Slovakia) experienced a decrease in the value of this indicator. Thus, in these countries, the final impact of the pandemic crisis on reducing the degree of decentralisation of public finances was not found, although in the first two years of the pandemic (2020–2021), four of these countries (except Romania) experienced a temporary increase in the

share of transfers. On average for the European Union, this share increased between 2019 and 2022 by more than 2 pp.

The dynamics of this indicator were also examined by comparing the changes in the period 2019–2022 to the changes for the period 2013–2019 (Figure 2). The data indicate that in the pre-pandemic period, more than half of the European Union countries experienced an increase in the share of transfers in local governments' revenues. In these countries, 2019–2022 was thus a continuation of this process, although in most of them the increase in the share of transfers accelerated. The impact of the pandemic crisis on changes in the revenue structure of local government is particularly strong in those countries that showed a decline in the share of transfers in local governments' revenue in the period preceding the pandemic outbreak, whereas this phenomenon was sharply reversed after 2019. Only in two countries (Cyprus, France) was there a decrease in the value of the indicator in both sub-periods studied, which means that the pandemic period did not inhibit the process of gradual decentralisation of public finances in these countries.

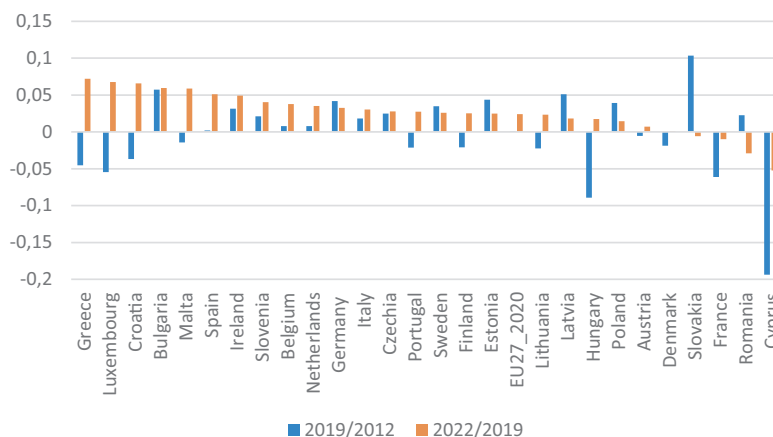


Figure 2. Changes in the share of transfer revenue in total revenue of local governments (2019/2012 vs 2022/2019)

Source: Author's own study based on Eurostat database.

Figure 3 compares the value of the indicator for the share of own revenue (non-transfer) of local governments in the revenue of the general government sector in 2019 against 2022. As with the first indicator, it should be noted that in the vast majority of countries there has been a deterioration in the situation of local government, i.e. the revenue strength of the local government sector has decreased relative to the general government sector. Only in six European Union countries was the direction of change different, i.e. the share of local government revenue in general government revenue increased, although this increase did not exceed 1 pp.

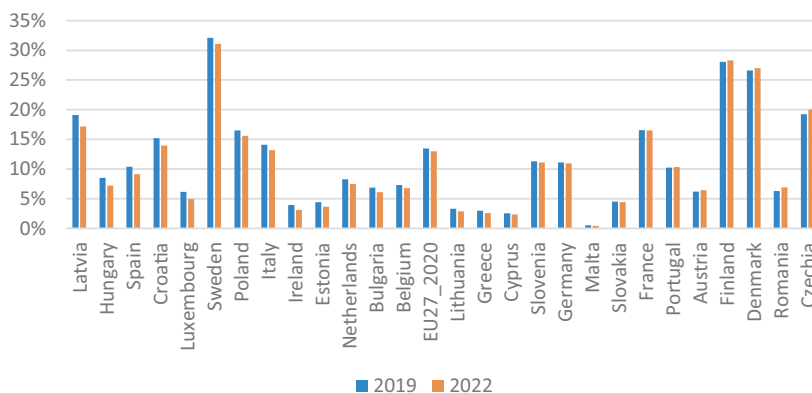


Figure 3. Share of local governments' own revenue (non-transfer) in general government sector revenue (2019 vs 2022)

Source: Author's own study based on Eurostat database.

The dynamics of this indicator were also examined by comparing the changes in the period 2019–2022 to the changes for the period 2013–2019 (Figure 4). The data indicate that in the pre-pandemic period, more than half of the European Union countries experienced an increase in the share of transfers in local governments' revenues. In the case of this indicator, too, there was already a deterioration in the revenue situation of the local government sector relative to the general government sector in most countries in the pre-pandemic period, i.e. the share of local governments' revenue relative to that of the general government sector was declining. The pandemic period continued this decline. Only in three countries (Czechia, Austria, Finland) an increase in the value of the indicator was recorded in both sub-periods studied, which means that the pandemic period did not inhibit the process of increasing the share of local governments' revenue in the general government sector in these countries.

Also in the case of the indicator for the share of local tax revenue in total taxation, the importance of local government declined in most European Union countries during the pandemic period (Figure 5). This time, however, a larger group of countries recorded an improvement in the ratio of local government revenue including tax revenue. This means that it was not tax revenue that was the main factor influencing the reduction in local government's revenue autonomy. At the same time, among the three indicators analysed, the share of local tax revenue in total taxation was the only indicator that registered an improvement in 2021 relative to 2019 calculated for the EU-27.

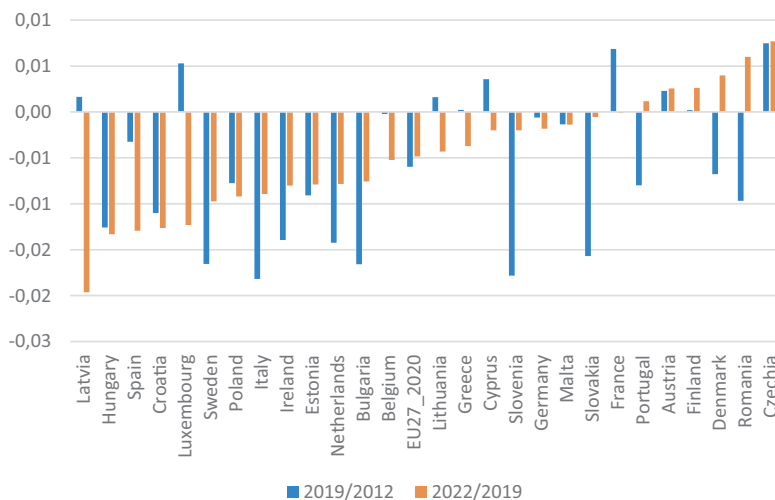


Figure 4. Changes in the share of local governments' own (non-transfer) revenue in general government sector revenue (2019/2012 vs 2022/2019)

Source: Author's own study based on Eurostat database.

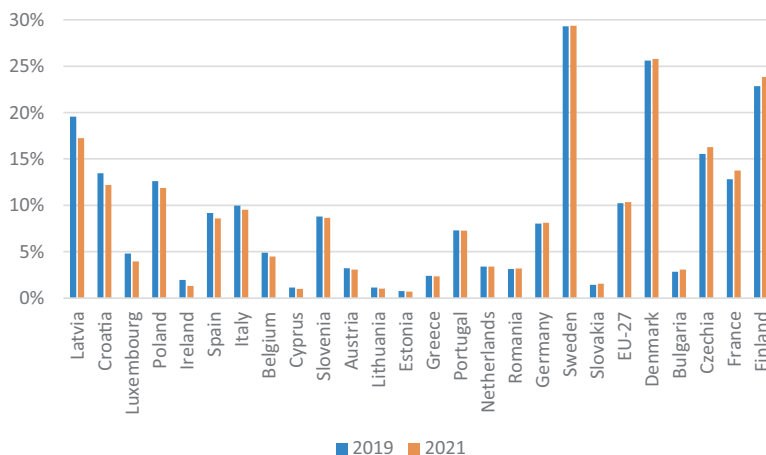


Figure 5. Share of local tax revenue in total taxation in EU countries (2019 vs 2022)

Source: Author's own study based on Eurostat database.

As with the other indicators, the dynamics of the share of local tax revenue in total taxation were also examined by comparing changes in this indicator over the period 2019–2022 to changes for the period 2013–2019 (Figure 6). Compared to the other indicators, changes in the share of local tax revenue in total taxation showed greater variation between countries. It should be noted, however, that the largest decrease in the importance of local government taxes between 2019 and 2021 was observed

in three countries (Latvia, Croatia, Luxembourg), which in the pre-pandemic period recorded an increase in the indicator of the share of local tax revenue in total taxation. On the other hand, in countries such as Czechia, France, Finland, the increase in this indicator initiated in the pre-pandemic period continued during the pandemic period.

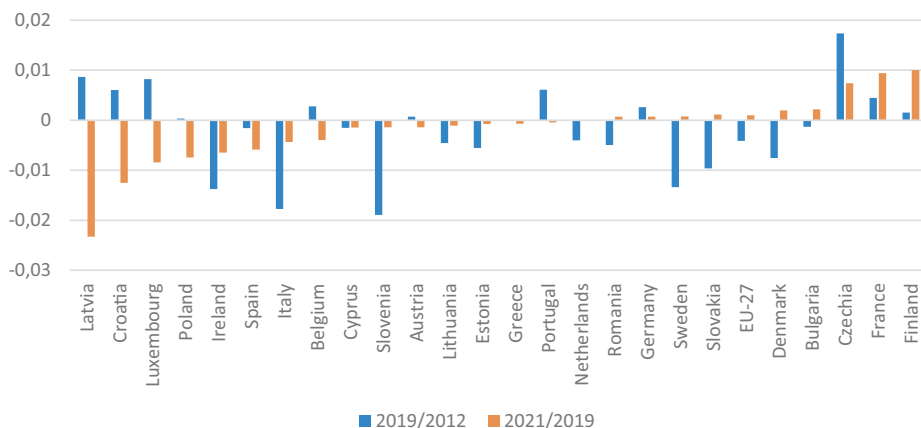


Figure 6. Changes in the share of local tax revenue in total taxation in EU countries (2019/2012 vs 2022/2019)

Source: Author's own study based on Eurostat database.

The analyses presented were further refined by examining the statistical significance of the differences in the indicators studied between the individual years of the 2012–2022 period for the first two indicators and the 2012–2021 period for the third indicator.

Firstly, it was examined whether the variables under study in each year had a normal distribution. The Shapiro–Wilk test was used to test the normality of the distributions (Table 1). The results of this test (significance level (α) = 0.05) indicate that, while the variable – the share of local governments' transfer revenues in their total revenues (V1) – has a distribution close to normal, for the other two variables – the share of local governments' own (non-transfer) revenues in general government sector revenues (V2) and the share of local tax revenues in total taxation (V3) – the hypothesis of normality of the distribution should be rejected. This means that a paired sample *t*-test was used to test the significance of differences between the values of the indicator for the share of local governments' transfer revenue in their total revenue between 2020–2022 (COVID-19 period) and earlier years, while differences in the values of the indicators for the share of local governments' own (non-transfer) revenue in general government sector revenue and the share of local tax revenue in total taxation were analysed using a non-parametric Wilcoxon signed rank test. The tests used allow us to investigate whether there are statistically significant differences between the values of the variables analysed in the years of the COVID-19 pandemic and earlier years.

Table 1. Results of the Shapiro–Wilk test for variables: V1, V2, V3

| | V1 | | V2 | | V3 | |
|------|----------|----------|----------|----------|----------|----------|
| | <i>W</i> | <i>p</i> | <i>W</i> | <i>p</i> | <i>W</i> | <i>p</i> |
| 2012 | 0.950559 | 0.221185 | 0.910377 | 0.023292 | 0.848295 | 0.001635 |
| 2013 | 0.944221 | 0.154828 | 0.913350 | 0.027380 | 0.850474 | 0.001798 |
| 2014 | 0.952339 | 0.244199 | 0.918568 | 0.036471 | 0.858518 | 0.002567 |
| 2015 | 0.947260 | 0.183827 | 0.910078 | 0.022917 | 0.851690 | 0.001897 |
| 2016 | 0.964883 | 0.473891 | 0.896411 | 0.011082 | 0.857115 | 0.002411 |
| 2017 | 0.961928 | 0.408484 | 0.896014 | 0.010855 | 0.853858 | 0.002087 |
| 2018 | 0.969719 | 0.594409 | 0.902026 | 0.014887 | 0.860990 | 0.002868 |
| 2019 | 0.960506 | 0.379515 | 0.899357 | 0.012931 | 0.866372 | 0.003662 |
| 2020 | 0.962021 | 0.410452 | 0.890980 | 0.008367 | 0.853955 | 0.002095 |
| 2021 | 0.976212 | 0.768711 | 0.890811 | 0.008294 | 0.856803 | 0.002378 |
| 2022 | 0.978366 | 0.823709 | 0.886863 | 0.006781 | | |

Source: Author's own study.

The results of the comparisons for the indicator of the share of transfer revenue in local governments' total revenue confirm the statistical significance of the differences between 2019 and each of the subsequent years of the 2020–2022 period (Table 2). This implies that the effects of the COVID-19 pandemic may have been a source of change in the share of transfer revenue in local government budgets. Thus, the COVID-19 pandemic contributed to a statistically significant increase in the share of transfers in local revenues, with the increase averaging around 2.5 pp. Importantly, over the period 2012–2019, the changes in the share of transfer revenues in local revenues in the European Union countries were not so large, not exceeding 1 pp on average, moreover, not showing statistical significance.

Table 2. Significance of differences between the values of V1 between 2020–2022 (COVID-19 period) and 2019 (paired sample *t*-test)

| | Mean | St. Dev. | Difference | <i>t</i> | <i>p</i> |
|------|----------|----------|------------|----------|----------|
| 2020 | 0.535574 | 0.172080 | | | |
| 2019 | 0.509536 | 0.174653 | 0.026038 | 2.459823 | 0.020865 |
| 2021 | 0.538927 | 0.171678 | | | |
| 2019 | 0.509536 | 0.174653 | 0.029391 | 4.720192 | 0.000070 |
| 2022 | 0.536071 | 0.176706 | | | |
| 2019 | 0.509536 | 0.174653 | 0.026535 | 4.731302 | 0.000068 |

Source: Author's own study.

For the indicator of the share of local governments' own (non-transfer) revenue in general government sector revenue, slightly different results were obtained. Firstly, it turned out that there are statistically significant differences between the median value of this indicator in 2019 and the years 2021–2022, while changes in the first year of the pandemic turn out to be statistically insignificant (Table 3). Secondly, it is noticeable that also in the years prior to the COVID-19 pandemic period, changes in the value of this indicator showed statistical significance. Such results indicate that,

although there was a reduction in the median share of local own revenue in general government revenue in the European Union countries as a result of COVID-19, this change was only to some extent due to the pandemic crisis. Throughout the period under review, a slight annual decrease in the median share of local own revenue relative to general government revenue was discernible, although this trend strengthened during the pandemic period. At the same time, it should be noted that the magnitude of this decrease was relatively small, averaging just over 1 pp over the entire period under study.

Table 3. Significance of differences between the values of V2 between 2020–2022 (COVID-19 period) and 2019 (Wilcoxon signed rank test)

| | <i>T</i> | <i>Z</i> | <i>p</i> |
|---------------|----------|----------|----------|
| 2020 and 2019 | 174 | 0.360375 | 0.718567 |
| 2021 and 2019 | 91 | 2.35445 | 0.018551 |
| 2022 and 2019 | 61 | 3.0752 | 0.002104 |

Source: Author's own study.

In the case of the indicator for the share of local tax revenue in total taxation, no statistically significant differences were seen between the medians of this indicator in most of the years studied (Table 4). In fact, in successive years there tended to be small changes in the value of this indicator from country to country, and in the pandemic period these changes were not noticeably different from the values found in the pre-pandemic period.

Table 4. Significance of differences between the values of V3 between 2020–2021 (COVID-19 period) and 2019 (Wilcoxon signed rank test)

| | <i>T</i> | <i>Z</i> | <i>p</i> |
|---------------|----------|----------|----------|
| 2020 and 2019 | 155 | 0.201802 | 0.840072 |
| 2021 and 2019 | 116 | 1.251171 | 0.210873 |

Source: Author's own study.

Changes in indicators of revenue autonomy of local governments in European Union countries as a result of the pandemic crisis maintained the differentiation in autonomy degrees that existed between countries in the pre-pandemic period (Wyszkowska, 2017). While most countries showed changes in the degree of revenue autonomy in line with the common belief that there should be greater coordination between central government and subnational authorities (Peters, 2011), leading to greater reliance of local government budgets on transfer revenue from central government (Poniatowicz, 2022), the response of changes in revenue autonomy across countries was not uniform. Not all countries experienced a marked decline in revenue autonomy, which confirmed that decentralisation was not always seen as an effective panacea for the outbreak of the COVID-19 pandemic (Erkoreka & Hernando-Pérez, 2023).

Conclusions

The research conducted indicates that the pandemic period was only to some extent a factor in changing the revenue structure of local government. The biggest influence on the changes in this structure were transfers (grants and subsidies) received from central government. While the importance of transfer revenues increased in the years preceding the pandemic period, the year-on-year increase was small and statistically insignificant. It was not until the pandemic crisis that this changed significantly.

In the case of the indicator for the share of local own revenue in general government revenue, slightly different patterns were observed. The pandemic period continued the trends seen in earlier years, with a small but systematic reduction in the value of this indicator from year to year. This means that only to a small extent was the pandemic crisis the source of the reduction in the role of local revenues in the general government sector, and that changes in the relationship between central government and local government revenues were initiated in the pre-pandemic period.

The study found no significant changes in the role of local government taxes in tax revenues for the general government sector as a whole. For this measure, there was no evidence of statistically significant differences in the values of this indicator during the COVID-19 pandemic period compared to the pandemic period. It should be noted, however, that the time series for these figures ends in 2021, so it does not reflect the full period of the pandemic crisis, especially as some countries (e.g. Poland) have just made tax changes in 2022, the effects of which have had a negative impact on local government budget revenues. Hence, conclusions regarding fiscal autonomy cannot be treated in the same way as those relating to more synthetic measures of local governments' revenue autonomy. This means that it is not possible to state unequivocally that the degree of revenue autonomy of local governments decreased during the pandemic period, especially as changes in the degree of revenue autonomy were already observed in the pre-pandemic period. In addition, the degree of revenue autonomy in individual countries was also determined by factors that are not directly related to the pandemic (for example, regulatory changes in the tax system).

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