

Economic Structure and Fiscal Autonomy

A Typology of the Economic Structures of Hungarian Municipalities and Their Financial Dependence on the State

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ABSTRACT: The revenues of Hungarian municipalities derive largely from their own sources—primarily the local business tax—which is based on the structure of the local economy. This study examines how the economic structure of municipalities affects the fiscal autonomy of their local governments. Based on the population of active businesses, the author identified four types of municipalities and compared their fiscal indicators—with nearly complete national coverage—using analysis of variance, pairwise comparisons, and size-adjusted covariance analysis. He concluded that the local tax base and dependence on transfers differ significantly by type. Industrial and service-oriented municipalities represent the two extremes of fiscal autonomy, while agricultural and diversified municipalities occupy an intermediate position, with similar circumstances. This difference persists even after controlling for size. Structural economic development is necessary to mitigate regional disparities, as the allocation of resources alone cannot resolve structural disadvantages.

KEYWORDS: fiscal autonomy, transfer dependency, local business tax, economic structure, cluster analysis

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Introduction

The transformation of Hungarian local government financing after 2011 has made own-source revenues—above all, the local business tax—one of the key conditions for municipal autonomy. However, the capacity to generate own-source revenues is not independent of the structure of the local economy. The size, sectoral composition, and capital intensity of the business sector determine the size of the tax base on which the municipality can rely. The literature typically links fiscal autonomy to municipality size or regional location, while the independent role of economic structure has been less explored—in particular, there is a lack of systematic empirical research covering the entire population of Hungarian municipalities.

This study aims to fill this gap. We link the typology of economic structures among Hungarian municipalities—four clusters formed based on the stock of active firms—with fiscal indicators calculated from municipal income statements, using cross-sectional data from 2023. The research question is twofold: Do economic structure types differ in terms of municipal fiscal autonomy, and if so, does this difference persist after controlling for the effect of settlement size? The analysis is organized around three hypotheses, which I set forth below—prior to outlining the theoretical framework—and which I theoretically substantiate in Chapter 3.

H1: The strength of the local tax base—the share of local business tax in total revenue—differs across economic structure clusters; it is highest in the industrial and diversified clusters and lowest in the agricultural and service-oriented small-settlement clusters.

H2: The transfer dependency rate varies across clusters; it is highest in the groups of agricultural and service-oriented small settlements, and lowest in the groups of industrial and diversified centers.

H3: The economic structure cluster explains fiscal indicators even after controlling for settlement size and region; thus, the effect of structure cannot be attributed solely to size.

Theoretical Framework: Fiscal Autonomy and Hungarian Local Government Financing

Before testing the hypotheses, it is necessary to establish the conceptual framework of fiscal autonomy and the evolution of the domestic regulatory environment. The right to local self-government and financial autonomy are rooted in the European Charter of Local Self-Government, which states that local governments have the right to their own resources, which they may freely dispose of, and that these resources must be commensurate with their duties as defined by law (Siket, 2020).

First- and Second-Generation Theories of Fiscal Federalism

The literature interprets local financing models within the framework of fiscal federalism. First-generation theories—following the work of Tiebout, Musgrave, and Oates—focus on allocative efficiency, emphasizing that, through decentralization, subnational governments can provide public services better aligned with local preferences, provided that local taxation functions as a kind of “price” for these services (Vigvári, 2011).

Second-generation models also incorporate considerations of political economy, accountability, and hard budget constraints into the analysis (Vigvári, 2011; Vasvári, 2019). According to these approaches, if local governments’ financing is overly dependent on central government transfers and there is a lack of genuine local taxing authority, local decision-makers are more prone to overspending, counting on a bailout from the central government. Fiscal autonomy, therefore, encompasses not only the size of revenues but also the share of own-source revenues in total revenues and budgetary discipline (Vasvári, 2019).

The Transformation of the Hungarian System: Task-Based Funding and Tightening Constraints

From the 1990s through 2011, the Hungarian local government system was based on a broad decentralization of responsibilities, but funding did not keep pace with the expansion of responsibilities. By the end of the 2000s, this period of “soft budgetary constraints” had led to unsustainable indebtedness within the local government subsystem, largely in the form of foreign-currency-denominated bond issuances and borrowing (Vasvári, 2019; Vigvári, 2007). The paradigm shift was brought about by Act CLXXXIX of 2011 on Local Governments in Hungary (Mötv.) and Act CXCV of 2011 on Economic Stability (Gst.) (Vértesy, 2021).

The state assumed the municipalities’ debt; in exchange, it restricted their borrowing options, and the deficit financing model was replaced by a system of task-based financing (Hegedűs et al., 2019). Numerous major service systems were transferred to state management, resulting in a reduction in the total amount of local budgets. Under the current system, mandatory tasks are financed by state grants; however, supplementing these grants, infrastructure development, and the performance of voluntarily undertaken tasks rely on own-source revenues, primarily the local tax base (Bordás, 2019). This regulatory environment has made the local economic structure and tax capacity key determinants of municipalities’ room for maneuver—which is precisely why it is warranted to examine the relationship between economic structure and fiscal autonomy.

Theoretical Basis of the Hypotheses

In this chapter, I derive the three hypotheses from the logic of the local tax system and the characteristics of economic structure clusters. I emphasize that the relationships presented here are theoretical expectations, the empirical testing of which is the task of Chapters 4–5. The purpose of this chapter is to lay the groundwork for the hypotheses, not to prove them.

Economic Structure and Local Tax Base (Establishing H1)

Under Act C of 1990 on Local Taxes (Htv.), local governments may impose property taxes (building tax, land tax), communal taxes, and the local business tax (HIPA) (Vértesy, 2021). In practice, the HIPA accounts for the overwhelming majority of local tax revenues and thus functions as a “fundamental local tax” (Szalai, 2005). The tax base for the HIPA is calculated from the net sales revenue of businesses, minus specified items; therefore, the volume of revenue depends directly on the output and productive capacity of the local economy. Since the Local Tax Act (Htv.) caps the HIPA rate, and most municipalities with a significant tax base apply the maximum rate, regional differences stem primarily not from the tax rate but from variations in the tax base—that is, the economic structure (Bordás, 2019). The varying ability of economic clusters to attract capital thus suggests differing tax-raising capacities. Industrial clusters are characterized by the presence of capital-intensive firms embedded in export and supply chains, which generate high sales revenue and thus a broad HIPA base (Nemes Nagy, 1998). In diversified centers, alongside the manufacturing sector, there is an extensive, high-value-added service and knowledge sector, which results in a broad tax base that is more resilient to economic shocks (Lócsei – Nemes Nagy, 2003). In contrast, the economy of the agricultural cluster, which is based on the primary sector, has a lower capacity to generate revenue, and a significant portion of primary producers falls outside the scope of the HIPA or benefits from subsidies; and in small service-oriented settlements, the business community is limited to capital-poor micro-enterprises (Lócsei, 2005). The matrix in Table 1 summarizes these expectations.

Based on these considerations, it can be expected that the tax base is not randomly distributed across space but rather follows the structural segmentation of the economy—which is what the empirical test of Hypothesis H1 is designed to examine.

Table 1: Spatial pattern of the economic structure: classification of settlements by dominant sector, 2023

Cluster Type	Economic Determinants	Capital Intensity	Expected tax revenue per capita
Industrial	Global companies, R&D, export orientation, supply chains	Exceptionally high	Highest
Diversified	Manufacturing, knowledge-based industries, logistics, advanced services	High, crisis-resistant	High
Service sector	Local services, retail, tourism in some cases	Low / seasonal	Low / moderate
Agriculture	Primary production, lack of capital	Very low	Lowest

Source: Compiled by the author based on the literature.

Fiscal Autonomy and Dependence on Transfers (Laying the Groundwork for H2)

The fiscal consequence of a narrower local tax base is a greater reliance on central government funds. Local governments receive task-based state subsidies to carry out their mandatory duties, but the prohibition on planning for an operating deficit requires a balanced budget (Bordás, 2019; Vasvári, 2019). In capital-poor agricultural and small service-sector municipalities, local tax revenues are marginal, so a large portion of the budget's expenditure side is financed by central government transfers; in these municipalities, fiscal autonomy typically remains formal, as resources are sufficient only to maintain mandatory functions (Hegedűs et al., 2019; Siket, 2020). In contrast, industrial and diversified centers can supplement normative grants with their significant own revenues and initiate autonomous development projects, resulting in lower dependence on transfers. This mechanism is qualified by the toolkit of territorial redistribution, above all the solidarity contribution, which progressively diverts resources from municipalities with higher per-capita tax capacity—above a threshold set annually in the budget law—to the central budget (Bordás, 2019; Hegedűs et al., 2019). This mechanism can turn some of the municipalities with the highest tax capacity into net contributors to the system (Vasvári, 2019).

Transfer dependency is therefore expected to follow the inverse of tax capacity, in a cluster-specific pattern—as outlined in H2.

Table 2: The assumed cluster-specific pattern of transfer dependency and the solidarity contribution

Tax capacity (cluster)	Role in redistribution	Expected transfer dependency and autonomy
Exceptionally high (industrial / diversified)	Net contributor (donor)	Low dependence; broad scope for action at the local level
Moderate (diversified / service-oriented)	Neutral / slight contributor	Partial autonomy, stable operation
Very low (agricultural / small community)	Net beneficiary	High dependence; merely formal autonomy

Source: Compiled by the author based on the literature.

The Hypothetical Independent Effect of Economic Structure (Establishing H3)

H3 raises one of the delicate methodological questions in spatial economics: does the fiscal disparity among clusters reflect the economic structure, or is it in fact a manifestation of the effect of settlement size (the agglomeration)? It is well known that there is a strong positive correlation between fiscal autonomy and settlement size: larger settlements enjoy agglomeration advantages—a denser market, a more skilled workforce, and more developed infrastructure—and generate proportionally higher own-source revenues (Lócsei – Nemes Nagy, 2003). Since, by definition, a diversified cluster brings together large settlements, there is a real risk that the cluster effect is partly a scale effect.

For this very reason, the study treats size (and region) as explicit control variables and examines whether the economic structure retains independent explanatory power after controlling for size. Theoretical expectations suggest that it does: even within the same size category, significant fiscal differences can arise from economic structure, because from the perspective of the local tax base, it is not the mere number of firms that matters, but rather their capital intensity, technological level, and integration into the value chain (Nemes Nagy, 1998). Of two settlements with the same population, the one with capital-intensive industry or a logistics function can generate a significantly larger tax base than the one focused on primary production. Hypothesis H3 formulates this assumption, and its test is the size-controlled model.

Data and Methodology

Data Sources and Unit of Analysis

The unit of analysis is the municipality. The economic structure classification is based on the 2023 register of active economic organizations, while the municipal financial indicators are derived from the budget reports for the same year. The purpose of linking these two data sources was to examine the structural characteristics of the local economy at the same analytical level as the measurable indicators of fiscal autonomy, across a cross-section of municipalities.

The procedure for classifying economic structure.

The first step in the enterprise-level preprocessing was to classify the main activities into macro-sectors. Based on TEÁOR classifications, agricultural activities were assigned to the agricultural macro-sector; manufacturing, energy, utilities, and construction activities to the industrial macro-sector; and trade, transportation, finance, real estate, business, public administration, education, health care, and other service activities to the services macro-sector. I kept activities that could not be unambiguously classified using the automatic rule in a separate verification category to ensure that the labeling remains reproducible and auditable.

To estimate economic weight, I converted the headcount categories listed in the registry into a decimal weight variable. For closed intervals, I used the midpoint of the category; for single-value categories, I used the specified value; and for open upper categories, I used 1.5 times the lower limit. For example, the 5–9 employees category was assigned a weight of 7, the 50–99 employees category a weight of 74.5, the 1,000–1,999 employees category a weight of 1,499.5, and the 5,000+ employees category a weight of 7,500. I assigned a weight of 0.5 to the “0 people” category because, while these organizations have a negligible impact in terms of employment, their economic presence means they do not have a zero weight.

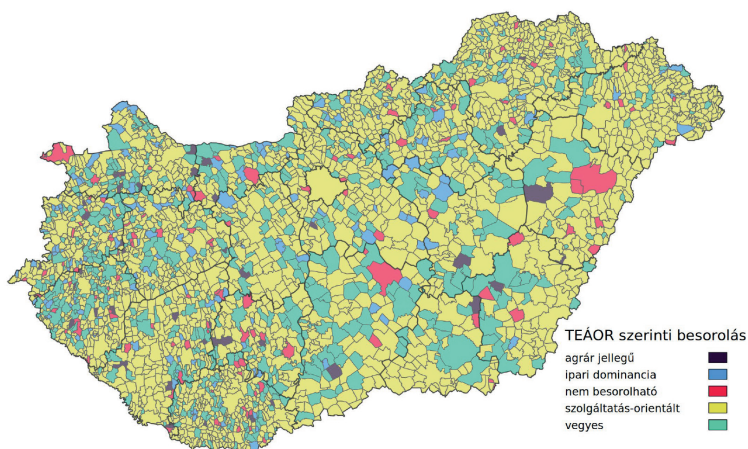
During the aggregation at the municipal level, I calculated the sectoral share, adjusted for workforce weight, for each macro-sector. For a given municipality, I compared the sum of the weights for agriculture, industry, and services to the total classifiable workforce weight; this yielded the municipal share of the given macro-sector. Using these same ratios, I calculated the Herfindahl-Hirschman Index, which measures sectoral concentration, as well as the dominant sector. This approach prevents a microenterprise and a company employing several hundred people from carrying the same weight in determining the economic structure of the municipality.

The procedure consisted of two distinct methodological steps. The TEÁOR-based macro-sector classification can be interpreted as rule-based labeling—a form of preprocessing closely aligned with the logic of supervised classification: the target categories were predetermined, and the assignment was based on fixed decision rules. In contrast, the final grouping of settlement profiles was performed using unsupervised k-prototype clustering, which handles both continuous and categorical features simultaneously (Huang, 1998; Szepannek, 2018).

Figure 1 illustrates the spatial pattern of the economic structure, showing settlements according to their dominant sector. The input variables for the clustering were employment-weighted sector shares, sectoral concentration, the estimated number of operating firms, and the dominant sector. I examined the number of clusters based on the silhouette index in the range $k = 2\text{--}8$ (Kaufman–Rousseeuw, 1990): the two-cluster solution yielded the highest value (0.622); however, this would have resulted in a division between service-oriented and manufacturing settlements, grouping agricultural and industrial settlements into a single category. The four-cluster solution (silhouette 0.545) distinguishes between these two theoretically distinct types; therefore, in the final model, the decision was based not only on the internal validation index but also on the interpretability of the economic structure.

Within the set of settlements with quality-checked data that could be linked to fiscal data, the procedure classified 2,991 settlements into four economic structure types. The cluster names—agricultural, small service-oriented settlement, diversified urban center, and industrial—are not pre-assigned categories but rather interpretive labels assigned to the cluster profiles after the fact. The profiles of the groups are summarized in Table 3.

Figure 1: Spatial pattern of the economic structure: classification of settlements by dominant sector, 2023



Source: Author's own compilation (QGIS, v 3.28.4.) based on the 2023 register of active economic organizations.

The figure illustrates the spatial pattern of the economic structure classification: it is clearly visible that industrial, agricultural, service-oriented, and mixed-type settlements do not form homogeneous regional blocks but rather exhibit a mosaic-like spatial arrangement. However, the map is not only useful for illustrating the geographic distribution but is also necessary for the quantitative presentation of the underlying structural indicators required to interpret the clusters. This is summarized in Table 3 below, which presents the number of elements in each cluster, their proportion, the average number of companies, as well as the weighting of agriculture, industry, and services and sectoral concentration.

Table 3: Profile of economic structure clusters: number of elements, sectoral composition, and concentration

Cluster	N	Proportion	Average number of companies	Agriculture	Industry	Services	HHI
Agricultural communities	117	3.9%	68	0.561	0.085	0.316	0.462
Service-Providing Small Settlements	901	30.1%	68	0.050	0.075	0.838	0.720
Diversified urban centers	1,646	55.0%	840	0.105	0.222	0.605	0.457
Industrial towns	327	10.9%	341	0.057	0.579	0.319	0.472

Source: Compiled by the author based on the 2023 register of active economic entities.

The source of the fiscal indicators is the 2023 dataset from the Hungarian State Treasury's municipal budget reports, covering the same cross-section. Local business tax and total revenue are derived from the report's form (K02) organized by account category: the local business tax is derived from the line item for local business tax paid on business activities conducted on a permanent basis (B351), while total revenue is derived from the "Total Budgetary Revenue" line (B1–B7). I calculated the transfer dependency ratio and the proportion of own-source revenue from the revenue structure of the reports—as the ratios of central government grants and own-source revenue to total revenue. I linked the two datasets using the Central Statistical Office's municipality identification code; this is a more robust matching key than name-based matching because it eliminates spelling variations.

Business tax data is available for municipalities that file their own financial reports; I documented the matching rate and the missing municipalities in the "Results" chapter.

Variables

The explanatory variable is the four-category economic structure cluster generated using the procedure described above. I captured fiscal outcomes using three ratios calculated from the financial statements. The share of local business tax revenue in total revenue measures the strength of the local tax base and serves as a direct indicator of H1. The transfer dependency rate expresses the share of central government transfers in total revenue, i.e., dependence on external sources; this is the H2 indicator. The share of own-source revenue—the combined weight of own-source revenue that is not exclusively tax-based—represents a transition between the two previous indicators and plays a supplementary role. For the analysis of H3, I include two control variables: I approximate the economic size of the municipality using the base-10 logarithm of the number of active economic organizations, which reflects the municipality’s agglomeration weight, and I use the region to capture large-scale territorial differences (NUTS 2 classification). The variables included in the analysis are summarized in Table 4.

Table 4: Variables included in the analysis, their content, and sources

Variable	Content	Level of measurement	Role	Source
Economic Structure Cluster	Four settlement types (agricultural, service-oriented, diversified, industrial) based on the sectoral composition of the business population	nominal	Explanatory	Company Register, 2023
Business tax rate	Local business tax as a percentage of total budget revenue	scale (0–1)	dependent – H1	State Treasury
Transfer dependency ratio	Central government transfers as a share of total revenue, scaled to the range 0–1	scale (0–1)	dependent – H2	State Treasury
Share of own-source revenue	Share of own-source revenue in total revenue	scale (0–1)	Supplementary	State Treasury
Economic size	The base-10 logarithm of the number of active economic entities	scale	control	Company Register, 2023

Variable	Content	Level of measurement	Role	Source
Region	NUTS 2 region	nominal	control	Central Statistical Office
Supplementary Performance Indicators	Balance sheet and operating profit per capita, labor cost intensity	scale	Descriptive	State Treasury

Source: compiled by the author.

For a few values outside the [0,1] range resulting from data errors—specifically regarding the ratio of transfer dependency to own revenue—I have clipped the indicators to a meaningful interval to ensure that the interpretation of the ratios remains consistent throughout. The supplementary performance indicators listed in Table 4 above—such as balance sheet and operating profit per capita, as well as personnel expense intensity—are not direct dependent variables in the hypothesis testing. We used these indicators for descriptive purposes to provide a more nuanced picture of municipal financial profiles, while the empirical testing focuses on the local business tax rate, the transfer dependency ratio, and the own-revenue ratio.

Statistical Methods

In comparing the fiscal indicators of the clusters, the focus is on the group averages. For H1 and H2, I examined the differences using Welch's analysis of variance, which does not assume equal variances (Welch, 1951), and I tested the pairwise differences using the Games-Howell procedure, which is reliable even when the number of observations and variances are unequal (Games & Howell, 1976). Due to the skewness of the distributions, I also tested the results using the Kruskal-Wallis test, which is based on rankings (Kruskal & Wallis, 1952). I expressed the magnitude of the effect using the eta-squared statistic from the Welch model and the epsilon-squared statistic from the Kruskal-Wallis test. I used established threshold values to interpret these (Cohen, 1988; Tomczak & Tomczak, 2014). To test H3, I use a covariance analysis that includes economic scale (the logarithm of the number of operating firms) and region as control variables, and I measure the independent explanatory power of the cluster using the partial eta-squared. Since the dataset approximates the entire population of Hungarian settlements, the interpretation of significance based on sampling uncertainty is of limited applicability. Therefore, in this presentation, I focus on effect size and treat the test statistics as descriptive and comparative tools.

Results

This chapter presents the empirical examination of the three hypotheses (H1–H3) formulated in Chapter 3. Since the analysis covers a dataset that is close to the Hungarian municipal population and approximates the total population, in the interpretation—in accordance with the principle outlined in Subsection 4.3—I prioritize *effect sizes*², treating test statistics and p-values as descriptive and comparative tools (Tomczak & Tomczak, 2014). I use Cohen’s (1988) conventions as a basis for the magnitude of effect sizes ($\eta^2 \approx 0.01$ for a small effect, 0.06 for a moderate effect, and 0.14 for a large effect).

The Combined Sample and Coverage of Indicators

The economic structure clustering classified 2,991 municipalities. Data on the transfer dependency rate and the ratio of own-source revenue are available for 98.7% of the municipalities ($n = 2,953$). The business tax ratio—which measures the strength of the local tax base—is derived from Form K02 of the Hungarian State Treasury, specifically from municipalities that file their own financial reports; therefore, it is available for 1,306 municipalities (44% of those classified). This partial coverage is balanced across clusters (40.7–47.9%), so it does not systematically distort comparisons between groups; thus, while the smaller sample size reduces the accuracy of the estimate, it does not shift the overall pattern. The descriptive statistics by cluster are summarized in Table 5 below.

Table 5: Descriptive Statistics of Fiscal Indicators by Cluster

Indicator	Cluster	Mean	Median	Standard Deviation	n
Business Tax Rate (H1)	Agriculture	0.120	0.102	0.130	56
	Service	0.043	0.019	0.070	415
	Diversified	0.106	0.079	0.100	702
	Industrial	0.216	0.159	0.198	133
Transfer dependency (H2)	Agriculture	0.711	0.742	0.177	116
	Service	0.788	0.835	0.169	895

2 The effect size expresses the magnitude of the difference between groups. The eta-squared, epsilon-squared, and partial eta-squared can be interpreted as the proportion of variance explained; therefore, in the case of a dataset that is close to the total population, they may be more informative than the mere significance level (Cohen, 1988; Tomczak & Tomczak, 2014).

Indicator	Cluster	Mean	Median	Standard Deviation	n
Share of Own Revenue (adjusted)	Diversified	0.707	0.742	0.179	1,615
	Industrial	0.606	0.635	0.217	327
	Agriculture	0.081	0.000	–	116
	Service	0.037	0.000	–	895
	Diversified	0.068	0.000	–	1,615
	Industrial	0.101	0.000	–	327

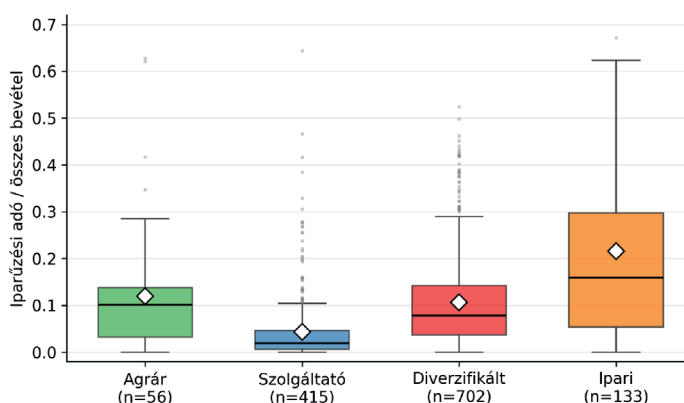
Source: Compiled by the author based on 2023 data from the Hungarian State Treasury and the Central Statistical Office.

Note: The ratio of transfer dependency to own-source revenue is based on values scaled to the 0–1 range. The own-source revenue ratio is heavily concentrated around zero (the median is 0), so it should be interpreted with caution as a supplementary indicator.

Strength of the Local Tax Base: Analysis of H1

According to H1, local tax revenue as a proportion of total revenue varies across clusters, being highest in the industrial and diversified clusters and lowest in the agricultural and service clusters. Figure 2 shows the distribution of the share of business tax revenue within total revenue.

Figure 2: Share of business tax in total revenue, by cluster.



Source: Author's own compilation (R, v.4.3.1.) based on 2023 data from the Hungarian State Treasury and the Central Statistical Office.

Note: The white diamond indicates the cluster average.

There is a strong, clearly distinguishable difference between the groups (Welch-F = 75.73; $\eta^2 = 0.174$), which is also confirmed by the Kruskal–Wallis test ($\varepsilon^2 = 0.207$). According to Cohen (1988), this is a *strong* effect: cluster membership explains approximately 17–21% of the variance. In the industrial cluster, the business tax accounts for an average of 21.6% of revenues—more than five times the 4.3% average for service-sector small settlements—consistent with the fact that a capital-intensive industrial base generates a broad local tax base (Nemes Nagy, 1998).

The Games–Howell pairwise comparison (Table 6) adds nuance to the picture. The industrial cluster is significantly distinct from all three other groups, and the service cluster also stands out as having the lowest tax base. At the same time, there is no substantial difference between the agricultural and diversified clusters ($\Delta = 0.014$; $p = 0.87$). H1 is thus partially confirmed: the two extreme positions are validated, but the expected distinction between the agricultural and diversified clusters is not.

Table 6: Games–Howell pairwise comparisons
(mean differences and adjusted p-values)

Cluster pair	H1 Δ	H1 p	H2 Δ	H2 p
Agriculture – Services	0.077	< 0.001	–0.076	< 0.001
Agriculture – Diversified	0.014	0.868	0.004	0.996
Agriculture – Industrial	–0.096	0.001	0.105	< 0.001
Services – Diversified	–0.063	< 0.001	0.080	< 0.001
Utilities – Industrial	–0.173	< 0.001	0.182	< 0.001
Diversified – Industrial	–0.109	< 0.001	0.102	< 0.001

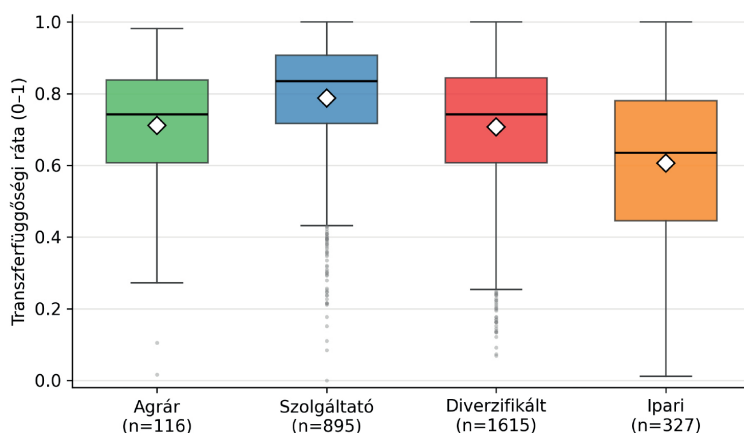
Source: own calculations based on 2023 data from the Hungarian State Treasury and the Central Statistical Office.

Note: Δ = the mean of the front cluster minus that of the rear cluster. The Games–Howell method is robust even under unequal variances and unequal sample sizes (Games & Howell, 1976).

Transfer Dependency: Testing H2

According to H2, the transfer dependency rate is highest in the agricultural and service clusters and lowest in the industrial and diversified clusters. The distribution of the rate is illustrated in Figure 3.

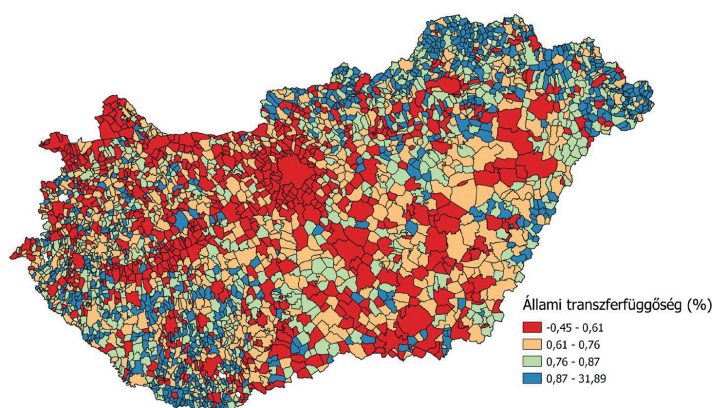
Figure 3: Transfer dependency rate by cluster



Source: Compiled by the author (R, v.4.3.1.) based on 2023 data from the Hungarian State Treasury and the Central Statistical Office. Note: The white diamond indicates the cluster average.

There is a moderate difference among the clusters (Welch-F = 78.93; $\eta^2 = 0.082$; KW $\varepsilon^2 = 0.092$). The industrial cluster is the least transfer-dependent (mean 0.606), while the service-sector small settlements are the most (0.788). The pairwise comparison (Table 6) mirrors H1, meaning that the industrial cluster is significantly the least dependent, while the service cluster is the most dependent (), whereas the agricultural and diversified clusters do not differ statistically ($\Delta = 0.004$; $p = 0.996$). All of this suggests that Hypothesis H2—like the first one—is partially confirmed. The spatial distribution of transfer dependency at the municipal level is illustrated in Figure 4 below.

Figure 4: Spatial distribution of state transfer dependency in Hungarian municipalities, 2023

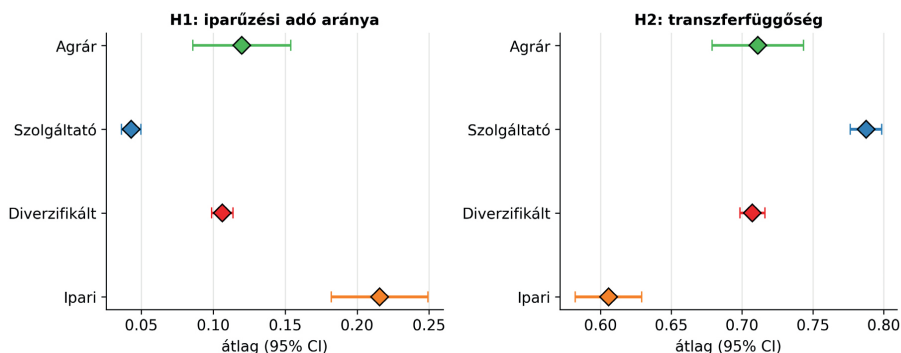


Source: Author's own compilation (QGIS, v 3.28.4.) based on 2023 data from the Hungarian State Treasury.

The map above (Figure 4) reveals two overlapping patterns. On a large scale, a faint center–periphery division is discernible. Settlements with low dependence on public transportation occur somewhat more frequently in the broader catchment area of the capital and in the industrialized belt of Transdanubia, while those with the highest dependence tend to appear in peripheral regions with small villages. However, this large-scale pattern is weak: the dominant impression is one of mosaicism, because settlements with high and low dependence are often located right next to one another, and the pattern does not coalesce into homogeneous regional clusters. Variability at the settlement level is consistent with the results of the covariance analysis. Thus, the fiscal position is primarily shaped by the local economic structure, while the region—although significant in the model—only influences the picture from the background. The map is thus not independent evidence, but rather a visualization of the cluster-based results, which show that the mosaic-like spatial pattern of fiscal autonomy aligns with the finding that economic structure—not geographic location—is the determining factor.

Figure 5 summarizes the cluster averages and 95% confidence intervals for the two main indicators. The industrial and service clusters represent the two poles of fiscal autonomy, while the agricultural and diversified clusters are situated in the middle, barely distinguishable from one another.

Figure 5: Cluster averages and 95% confidence intervals for the two main fiscal indicators



Source: Author's own compilation (R, v.4.3.1.) based on 2023 data from the Hungarian State Treasury and the Central Statistical Office.

Controlling for Size and Region: Testing H3

According to H3, the cluster explains the fiscal indicators even after controlling for municipality size and region. This issue is critical because there is a strong positive relationship between fiscal capacity and municipality size (Lócsei and Nemes Nagy, 2003), and the diversified cluster brings together larger municipalities with a higher concentration of firms. The results of the analysis of covariance (ANCOVA) are presented in Table 7, which shows that size and region have significant control effects, but the cluster retains independent, significant explanatory power even after controlling for these variables (business tax rate: partial $\eta^2 = 0.127$; transfer dependency: 0.044). H3 is thus confirmed; that is, the fiscal impact of economic structure cannot be reduced to settlement size.

Table 7: Partial η^2 values from the size- and region-controlled analysis of covariance (ANCOVA)

Dependent variable	Cluster (part. η^2)	Cluster p	Size p	Region p	n
Business tax rate (H1)	0.127	< 0.001	< 0.001	< 0.001	1,306
Transfer Dependency (H2)	0.044	< 0.001	< 0.001	< 0.001	2,953

Source: Author's calculations based on 2023 data from the Hungarian State Treasury and the Central Statistical Office.

Summary of Results

The empirical analysis provides substantial insight into all three hypotheses. H1 (local tax base) has a strong effect size, while H2 (transfer dependency) has a moderate effect size; both have been partially confirmed: the two extreme clusters—the industrial (high tax base, low dependence) and the service (low tax base, high dependence)—behave as expected, while the agricultural and diversified clusters do not differ from one another in terms of fiscal indicators. H3 is confirmed: the effect of economic structure persists even after controlling for size and region. A recurring finding, which is also theoretically noteworthy, is that instead of the simplified four-part pattern, the data reveal a *bipolar pattern*: on the fiscal autonomy axis, the industrial and service clusters are the two extremes, while diversified urban centers and agricultural settlements—despite their differing economic structures—occupy similar fiscal positions. This refinement precisely explains why the hypotheses had to be tested empirically rather than merely derived from theory.

Discussion

When interpreting the results, the practical scope for local tax policy must also be taken into account, as this further nuances the differences between the clusters. Decision-makers in small settlements with a narrow tax base and a heavy reliance on transfers face a double bind. On the one hand, state funding for public services often does not fully cover operating costs, which would encourage efforts to increase local revenue. On the other hand, the aging, low-income population and the capital-poor micro-entrepreneur community have limited financial capacity, so a substantial tax increase could lead to the weakening of the remaining businesses (Vértesy, 2021).

One consequence of this predicament is that many small, agricultural villages do not levy a local business tax at all, hoping that a zero tax rate will attract capital. Experience shows, however, that tax exemption alone is ineffective without adequate infrastructure, industrial zones, and a skilled workforce: the municipality forgoes revenue—albeit modest—and capital is deterred, which perpetuates dependence on transfer payments. In contrast, industrial and diversified centers with favorable conditions retain capital even under a higher tax burden, because the locational advantages offset the tax cost. Empirical results confirm this picture, though they also qualify it in two respects. On the one hand, fiscal autonomy is organized not around four, but essentially around two distinct poles: on one side, industrial clusters with a strong tax base and low dependence; on the other, service-oriented small towns with a weak tax base and high dependence. On the other hand, contrary to expectations, diversified urban centers do not occupy an autonomous position but rather an intermediate one, similar to that of agricultural areas; This is due in part to the

solidarity contribution, which diverts resources from municipalities with the highest tax capacity, and in part to the fact that the tax base of diversified centers does not match the concentrated tax capacity of industrial municipalities. The difference that remains even after controlling for size suggests that these positions stem not from the size of the municipality but from the structure of the economy. This phenomenon aligns with the municipal tax policy dilemma, according to which the local business tax is not merely a revenue tool but also a battleground for tax competition among municipalities (Szalai, 2005).

Conclusion

This study links the typology of the economic structures of Hungarian municipalities with indicators of municipal fiscal autonomy and tests the relationship between the two using a population-level empirical analysis based on three hypotheses. The theoretical framework—fiscal federalism and the domestic regulatory environment—suggests that a financing system based on HIPA favors capital-intensive industrial and diversified centers, while keeping agricultural and small service-sector municipalities heavily dependent on transfers; The key question is whether this difference persists even after controlling for settlement size.

The empirical analysis confirmed that economic structure independently explains municipal fiscal autonomy even after controlling for settlement size and region. The most important lesson is policy-related: reducing regional disparities cannot be achieved solely through population- -based resource allocation or tax competition, because municipalities with weak tax bases cannot change their structural position on their own. Catching up requires the structural development of capital-deficient regions—including technology transfer, infrastructure development, and endogenous economic revitalization—whose regional disparities are also documented in the Hungarian literature (Miklósne Molnár, 2009). A limitation of the analysis is that the indicator measuring the local tax base was available only for municipalities that file their own financial reports; however, the inclusion of the smallest municipalities belonging to a joint administrative office is a task for further research.

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