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## REVENUE GAPS IN INCOME TAXES IN PARTICULAR TYPES OF RURAL COMMUNES

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## ZRÓŻNICOWANIA DOCHODÓW Z PODATKÓW DOCHODOWYCH W RÓŻNYCH TYPAH FUNKCJONALNYCH GMIN WIEJSKICH

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**Summary:** The development of rural communes (in Polish: gmina) is strongly correlated with their economic functions. Communes with specific functional structures develop in different ways, which translates to the wealth of their inhabitants. The paper aims to assess relationships between the wealth of the population of rural communes and the functions they perform. The study is based on a ratio which describes revenue from taxes paid by natural and legal persons – a share of taxes constituting central budget receipts per one inhabitant, indicating the wealth of communes' populations. The author employs various statistical methods and indicators: one-way analysis of variance (ANOVA), a changeability coefficient, and Pearson's linear correlation coefficient. The highest PIT and CIT taxes are collected by urbanised communes. Much lower income levels are obtained by the inhabitants of multiple income source communes with fragmented agriculture. The least wealthy ones are dominated by a farming function. These trends have a persistent character.

**Keywords:** rural commune ('gmina') (local administrative unit), functional types of 'gmina', the voivodeship of Małopolska.

**Streszczenie:** Rozwój gmin wiejskich ma ścisły związek z pełnionymi przez nie funkcjami gospodarczymi. Gminy o różnej strukturze funkcjonalnej rozwijają się w odmienny sposób, co przekłada się na zamożność ich mieszkańców. Celem artykułu jest ocena związków zachodzących pomiędzy zamożnością ludności gmin wiejskich a pełnionymi przez nie funkcjami. Badania oparto na wskaźniku określającym dochody z podatków od osób prawnych i fizycznych stanowiące udziały w podatkach tworzących dochód budżetu państwa na 1 mieszkańca, który świadczy o zamożności mieszkańców gmin. Zastosowano różnorodne metody i wskaźniki statystyczne: jednoczynnikową analizę wariancji ANOVA, współczynnik zmienności oraz współczynnik korelacji liniowej Pearsona. Najwyższe dochody z podatków PIT i CIT osiągają gminy zurbanizowane. Znacznie niższym poziomem dochodów wykazują się mieszkańcy gmin wielodochodowych o rozdrobnionym rolnictwie. Najmniej zamożne są

gminy, w których dominuje funkcja rolnicza. Takie tendencje utrwalają się i ugruntowują w czasie.

**Słowa kluczowe:** gminy wiejskie, typy funkcjonalne gmin, województwo małopolskie.

## 1. Introduction

The diversity of locations in geographical space, related to specific natural, economic, social and cultural factors, implies the existence of territorial differences. Socioeconomic development varies in terms of its pace and trends. Spatial development gaps are visible, to varying degrees, at global, national, regional and local levels. The highest development levels are recorded in large agglomerations, while the least developed regions are situated in peripheral and rural areas.

Rural areas do not represent a uniform group of entities, being characterised by large development gaps. Development gaps among rural areas are determined by two groups of factors: historical conditions affecting economic and social structures, and the proximity to multifunctional urban centres [Rosner 2011]. Bański [2008, pp. 115-128] divides economic success drivers in rural communes into three categories: location, socioeconomic, and technical and organizational factors.

The development of rural communes is strongly correlated with their economic functions. The traditional perception of the functions performed by rural areas relates to agriculture, forestry, and farming and forestry products. However, as a result of socioeconomic changes, farming in a number of rural communes has lost its dominant role in favour of industrial functions, tourism, recreation and housing.

The paper assumes that communes representing different functional structures vary in terms of advancement levels, which translates to the wealth of their inhabitants.

The paper aims to assess relationships between the wealth of the population of rural communes and the functions they perform.

## 2. The scope and methods of research

The assessment of changes in rural communes' (local administrative units) wealth is based on the region of Małopolska.

Rural areas are represented by urban-rural communes, excluding cities situated in their territories. The empirical research comprises only rural communes of Małopolska. The analysis does not comprise rural areas in urban-rural communes due to the lack of data concerning exclusively rural areas in urban-rural communes.

The first part of the paper identifies the functional types of rural 'gmina' in Małopolska on the basis of the results of relevant research studies.

The next step of the study aims to identify relationships between commune functions and population wealth. Considering the availability of statistical data,

the author employs a ratio which describes revenue from taxes paid by natural and legal persons – a share of taxes constituting central budget receipts per one inhabitant. Revenue from legal and natural persons constitutes a significant share of local self-governments' own revenue. In 2017, their budgets comprised 37.89% of income taxes paid by natural persons – local residents, and 6.71% of income taxes paid by legal persons and organizational entities without a legal status, based in communes' territories. Consequently, this indicator is a measure of population wealth, providing indirect information on the development levels of particular territorial units. It is a source of reliable and comparable information on inhabitants' income, regardless of its origin. It also happens that income is generated in locations outside of their territories.

Further in this paper the ratio describing revenue from taxes paid by natural and legal persons – the share of taxes constituting central budget receipts per one inhabitant will be referred to, for greater clarity and simplicity, as “revenue” or “income”.

The identified functional types of gminas are compared from the perspective of PIT and CIT revenue on the basis of a special statistical procedure – a one-way analysis of the variance ANOVA. This method examines the significance of differences among several means representing many populations. ANOVA allows for stating whether income disparities in the identified functional groups result from differences between groups or differences within groups. As a result, the method allows for analysing the correlation between revenue (treated as a dependent variable) and a commune's function (an independent variable).

A further part of the paper examines internal revenue gaps in groups of communes with various functional structures with a view to concluding whether the existing gaps are narrowed or widened. The analysis is based on one of diversification measures – a changeability coefficient, calculated as standard deviation in relation to the arithmetic mean. It is used to assess the degree of differences among the analysed properties.

In a further step the author examines correlations between PIT and CIT revenue and other development measures. The calculated Pearson's linear correlation coefficient allows for determining the strength and direction of the two measurable characteristics.

The empirical research comprises the years 2003 and 2017, citing the statistical data published by the Central Statistical Office and the Statistical Office in Kraków. Statistical analyses are based on the SPSS program.

### **3. The functional typology of Małopolska's rural communes**

The typology and functional classification of gminas, including rural areas, is analysed by a number of authors (see [Bański, Stola 2002; Heffner, Rosner 2005; Bański 2014; Śleszyński, Komornicki 2016; Stanny 2013]).

The criteria for dividing rural areas into groups representing different economic functions are determined by three typological factors: location, structure, and the combination of both factors [Bański 2014, p. 442].

A significant role is played by the location of rural communes in relation to major urban centres and their position in the so-called urban-rural continuum, which indicates a more urban character (closer to urban centres) or more rural character (usually farther away from town, located in traditionally rural and peripheral areas). In the structure-based approach, rural areas are classified on the basis of their socioeconomic characteristics and dominant economic functions. The “combination” approach is based on a hybrid of location-related and structural factors.

Bański [2014] proposes a structural approach to the typology of communes, employing ten selected statistical measures (population density, the number of REGON-registered entities, net migration, the share of farmland in the total area, the share of farms offering products to the market, the share of farms exclusively engaged in agricultural activities, the number of overnight visitors, the number of tourist facilities, the share of forests in the total area, and the acquisition of workable timber). On the basis of the adopted measures he identifies eight functional types of gminas: urban gminas, urbanised areas, multi-function transitory areas, strictly agricultural areas, areas with a dominant agricultural function, areas performing tourist and recreational functions, forestry function areas, and areas performing mixed functions.

Śleszyński and Komornicki [2016] present a functional classification of Polish communes. For this purpose, they identify the representative characteristics of the particular types of communes on the basis of administrative and settlement functions, economic functions, functional relationships, morphological characteristics and the intensity of the use of available areas. This allows for identifying ten functional types of ‘gmina’: regional (voivodeship) capital cities, the external zones of the urban functional centres of capital cities, sub-regional towns, the external zones of the functional areas of sub-regional towns, towns – multi-functional centres, communes with a well-developed transport function, those with other non-farming functions (e.g. tourism), those with a well-developed agricultural function, communes with a moderately developed agricultural function, and extensively developed ones.

Bański and Stola [2002] analyse all the rural areas of the country. They classify these areas on the basis of the social and professional structure of rural population, land use structure and the dominant function (agriculture, forestry, industry and construction, tourism and recreation, housing). They identify five functional types of rural areas: dominant agricultural function, equal participation of various functions, dominant forestry function, dominant tourist and recreational function, and dominant non-farming functions.

The members of the research team headed by M. Stanny, in a study included in the report on implementing the project “The Monitoring of Developing Rural Areas” under the Forum of Development Initiatives of the Foundation of the

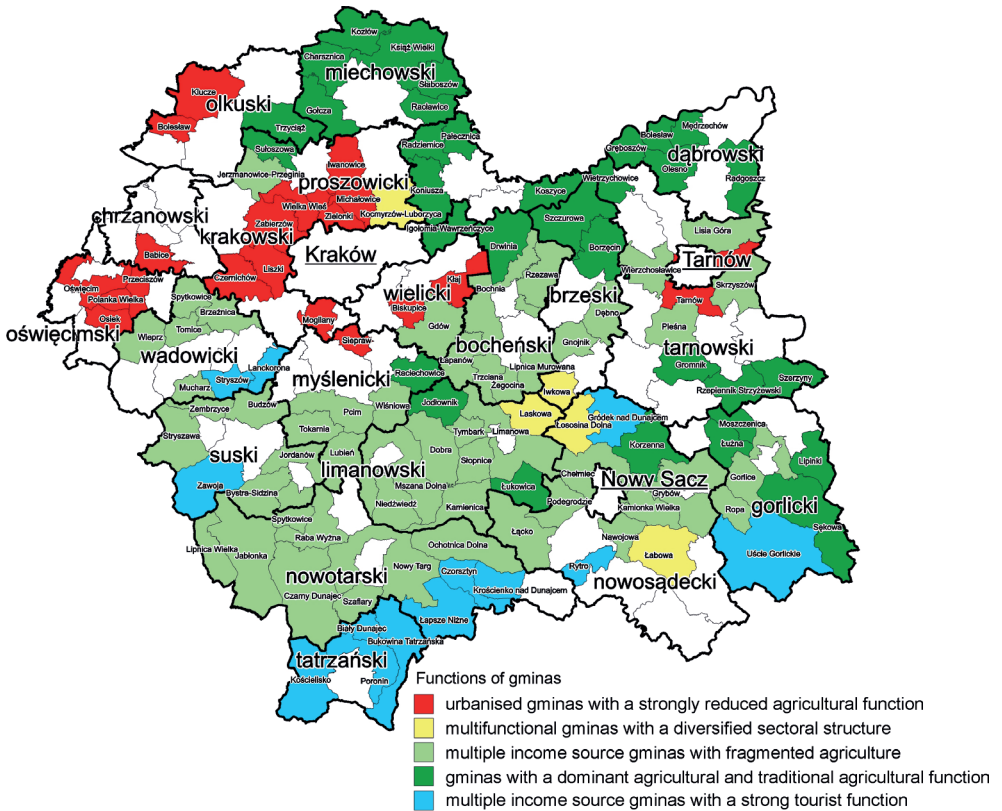
European Fund for Developing Polish Rural Areas, in cooperation with the Institute for Developing Rural Areas and Agriculture of the Polish Academy of Sciences [MROW 2018], present the typology of Polish communes. As a delimitation criterion, they adopt various characteristics of socioeconomic development. In a further step they identify different types of areas with similar social and economic structures, giving consideration to various combinations of development drivers. Finally, they identify seven types of communes: those dominated by traditional agriculture, ones dominated by large farms, transitory communes, ones dominated by an agricultural function, multiple-income-source communes with fragmented agriculture, multi-functional ones with balanced sectors, urbanized communes with a reduced farming function, and strongly urbanised ones.

This paper, in its analysis of functional structures, employs the typology proposed by P. Śleszyński and T. Komornicki, based on the functional classification of communes [Śleszyński, Komornicki 2016], and the typology proposed by a team of researchers headed by M. Stanny, based on differences in socio-economic structure [MROW 2018]. The results of the conducted study result in identifying five functional types of a rural ‘gmina’ in the voivodeship of Małopolska:

- 1) urbanised, with a strongly reduced agricultural function,
- 2) multifunctional, with a diversified sectoral structure,
- 3) multiple-income-source, with a strong tourist function,
- 4) multiple-income-source ones with fragmented agriculture,
- 5) those with a dominant agricultural and traditional agricultural function.

The voivodeship of Małopolska comprises 121 rural communes. The majority of them are multiple-income-source communes with fragmented agriculture (Figure 1). They are dominated by households with various sources of income (also other than farming), which own small farming areas. The voivodeship comprises 51 such entities, which accounts for 42% of all the rural areas of the region. They occupy 46% of the area of rural communes and account for 49% of their populations. They are mainly situated in the south of Kraków, in a wide passage running from south-west to east and north-east. This functional type dominates among rural communes in the following counties (Polish ‘powiat’: Wadowice, Sucha, Nowy Targ, Myślenice, Limanowa, Bochnia, Brzesko, Nowy Sącz and Tarnów. Interestingly, this type of ‘gmina’ is mainly found in the regions of Małopolska and Podkarpacie.

The second largest group comprises communes dominated by a farming and traditionally farming function. There are 33 such areas, accounting for 27% of all rural areas in the region. They represent 26% of the area of rural communes and 17% of their populations. They are situated in the north and north-east of the voivodeship in the following counties (‘powiat’): Miechów, Proszowice, Brzesko and Dąbrowa, as well as those in its south-easternmost part – Tarnów and Gorlice. A number of communes are dominated by traditional and subsistence farming, generating a slight surplus sold in local markets.



**Fig. 1.** Functional classification of Małopolska's rural communes

Source: author's research based on: [Śleszyński, Komornicki 2016; MROW 2018].

The voivodeship has 19 urbanised communes. Over the years they have gradually lost their “rural” character, considerably reducing their farming function. They represent the areas included in the functional centre of Kraków, inhabited by populations moving to suburban regions as part of the on-going processes of suburbanization. Most of them are situated in close vicinity of the regional centre of Kraków in the counties of Kraków, Wieliczka and Myślenice (Czernichów, Liszki, Zabierzów, Wielka Wieś, Zielonki, Michałowice, Iwanowice, Mogilany, Siepraw, Biskupice and Kłaj), as well as the rural commune of Tarnów, developing as a result of the inflow of population from the sub-regional centre of Tarnów. This group also comprises the communes in the counties of Oświęcim, Chrzanów and Olkusz, situated along the communication route from Kraków to Katowice (Oświęcim, Osiek, Polana Wielka, Przeciszów, Babice, Bolesław, and Klucze). The urbanised communes account for merely 16% of rural ones, and their area – for 11% of their



total territory. On the other hand, their population accounts for as much as 21% of the total number of inhabitants.

Thanks to local natural landscape values, a number of multiple-income-source communes have developed in the region, characterised by a significant tourist function, including the highland sections of the county of Tatras, and the southern parts of the counties of Nowy Targ, Nowy Sącz and Gorlice. In total 13 such areas are identified, accounting for 13% of the region and 9% of its population.

The smallest group is represented by multi-functional communes characterised by a balanced development of various sectors, and only five of them have been identified in the voivodeship, including the 'gmina' of Kocmyrzów-Luborzyca in the close vicinity of Krakow, Łabowa in the 'powiat' of Nowy Sącz, and three neighbouring ones at the border of the counties of Limanowa, Brzesko and Nowy Sącz: Laskowa, Iwkowa and Łososina Dolna. They account for a mere 4% of voivodeship's communes both in terms of their area and population.

#### **4. Income gaps in Małopolska's communes with different functional structures**

As already mentioned, the basic measure in the analysis of the development of rural areas, reflecting the wealth of their inhabitants, is revenue from taxes paid by natural and legal persons – a share of taxes constituting central budget receipts per inhabitant.

There are considerable differences in the levels of revenue generated by the particular communes in the voivodeship. In 2003 they ranged from PLN 40.5 in the 'gmina' of Radgoszcz in the 'powiat' of Dąbrowa to PLN 259.2 in that of Zielonki in the 'powiat' of Kraków.

Urbanised communes are among the ten which top the ranking list by the level of generated revenue. They include those close to Kraków: Zielonki, Zabierzów and Mogilany, and those to the west along the communication route from Kraków to Katowice: Bolesław, Klucze, Babice, Oświęcim, Polanka Wielka, Osiek, and Kłaj in the 'powiat' of Wieliczka.

On the other hand, the lowest places in the ranking are taken by those situated in the north-westernmost part of the region, dominated by a farming function: Raclawice, Pałecznicza, Wietrzychowice, Gręboszów, Bolesław, Radgoszcz; multiple-income-source communes with fragmented agriculture: Słopnice in the powiat of Limanowa, Ropa in the powiat of Gorlice, and Lipnica Wielka in the powiat of Nowy Targ, as well as one tourist gmina – Łapsze Niżne in the powiat of Nowy Targ.

Further analysis excludes the group of multi-functional gminas due to their rare occurrence. The region has only five such units, therefore the results of statistical research are not significant and do not lead to reliable generalizations.

In light of the above, the statistical analysis considers four groups of rural communes:

- Group 1 – urbanised, with a strongly reduced agricultural function,
- Group 3 – multiple-income-source, with a strong tourist function,
- Group 4 – multiple-income-source, with fragmented agriculture,
- Group 5 – communes with a dominant agricultural and traditional agricultural function.

The analysis of revenues in particular functional types of ‘gmina’ indicates that in 2003 the highest value of revenue is recorded by urbanised communes – PLN 184.7 (Table 1), which obtain much higher revenue levels than the remaining groups. This group is followed by multi-income-source communes with fragmented agriculture, obtaining a considerably lower revenue level (PLN 94.0), those with a tourist function (PLN 88.9), and those dominated by a farming function (PLN 66.6).

**Table 1.** Mean measures and income changeability coefficient (PIT and CIT per inhabitant) in Małopolska’s rural communes

Description	Group 1	Group 2	Group 3	Group 4	Group 5	Total
Value of revenue in 2003 (PLN)						
Maximum value	259.2	140.0	130.2	177.4	97.8	259.2
Minimum value	101.1	56.7	48.6	45.2	40.5	40.5
Arithmetic mean	184.7	86.4	88.9	94.0	66.6	99.9
Changeability coefficient (%)	24.9	36.8	31.4	37.6	21.5	49.9
Dynamics of revenue growth (%)						
Maximum value	771.2	792.8	628.6	746.0	810.8	810.8
Minimum value	298.9	367.3	230.2	185.0	327.4	185.0
Arithmetic mean	468.4	511.4	387.3	434.6	480.9	450.6
Changeability coefficient (%)	30.1	32.2	30.3	27.0	25.1	28.5
Value of revenue in 2017 (PLN)						
Maximum value	1715.5	811.8	526.7	781.7	590.1	1715.5
Minimum value	714.8	333.5	251.3	215.5	240.5	215.5
Arithmetic mean	1021.5	519.0	409.7	480.7	380.2	532.2
Changeability coefficient (%)	30.3	38.1	19.1	29.5	22.6	51.0

Group 1 – urbanised communes with a strongly reduced agricultural function, group 2 – multi-functional communes with a balanced sectoral structure, group 3 – multiple income source communes with a strong tourist function, group 4 – multiple-income-source communes with fragmented agriculture, group 5 – communes with a dominant agricultural and traditional agricultural function.

Source: developed on the basis of data from the Central Statistical Office and the Statistical Office in Kraków.



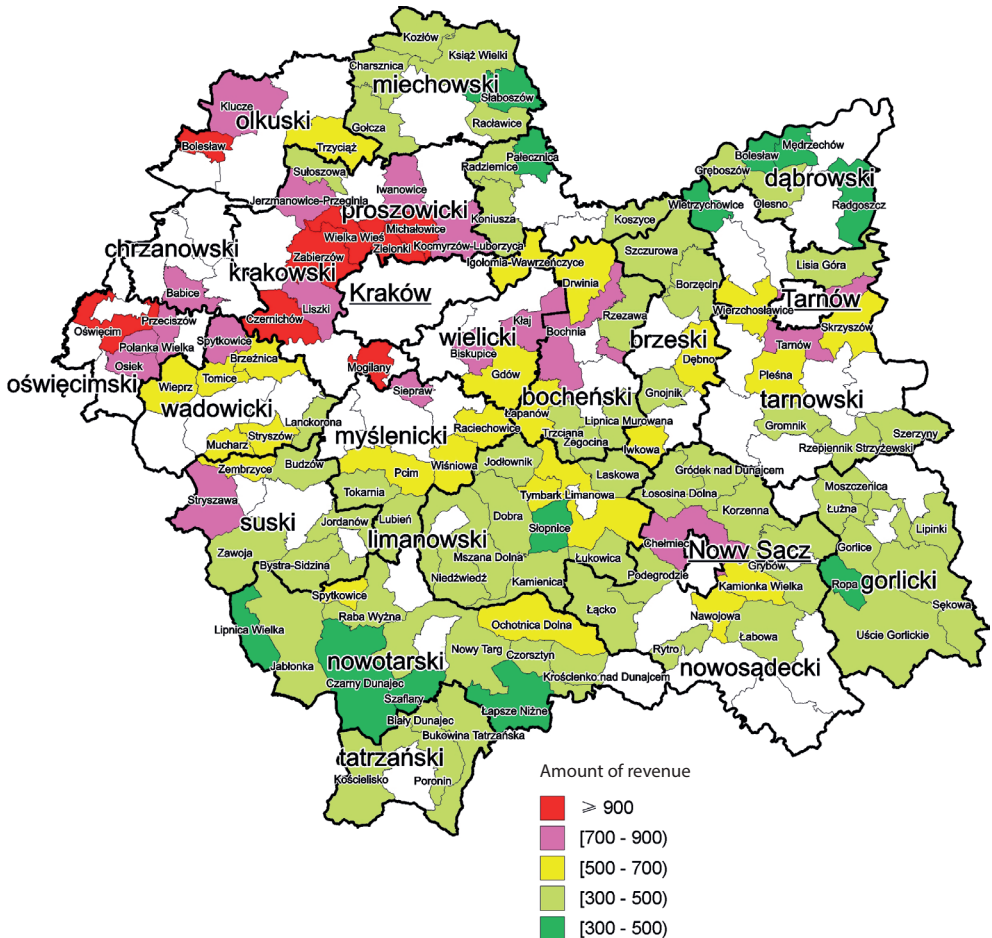
The analysis of the statistical significance of differences among these four groups is based on ANOVA. According to the procedure of employing this method, it should be first checked whether ANOVA's assumptions are fulfilled, i.e. whether the distribution of the dependent variable in the particular groups is consistent with the normal distribution, and whether dependent variable variances are uniform in the groups. The normality of dependent variable distribution is checked with the use of the Kolmogorov-Smirnov test. The result of the test indicates that variable distribution in each group is consistent with normal distribution. In a further step, the condition of variance uniformity is checked with the use of Lavene's test. The result of the test turns out to be statistically significant, which implies the rejection of the hypothesis on the uniformity of variance in the groups. Thus it can be assumed that variances in each group are not uniform and consequently, further analysis of variances is not based on Fisher's classical statistics but Welch's t-test, the results of which are much more reliable when the variance uniformity assumption is not fulfilled [Bedyńska, Brzezicka (eds.) 2007]. The following results are obtained:  $F_{(3; 35,982)} = 43.580$  ;  $p < 0.05$ . Welch's test leads to the conclusion that the result is not statistically significant, so the null hypothesis ( $H_0$ ) on the equality of mean results in each group can be rejected, which implies the existence of statistically significant revenue gaps among the analysed groups.

The final step of the procedure is a post-host analysis based on the Bonferroni test, which facilitates multiple comparisons of pairs of groups aimed to identify groups characterised by considerable revenue differences and those in which such differences are not statistically significant.

Although a "naked eye" assessment of data leads to the conclusion that mean values in all the groups are mutually different, not all the differences are statistically significant. No statistically significant revenue difference can be recorded between groups 3 and 4, and groups 3 and 5, i.e. between tourist communes and multi-income-source communes with fragmented agriculture, and between tourist communes and those dominated by an agricultural function. Differences between the remaining pairs of communes are statistically significant. Consequently, statistically significant mutual differences are recorded for urbanised communes (which rank first in terms of revenue), multiple-income-source communes with fragmented agriculture (second place), and those with a dominant agricultural function (third place). On the other hand, tourist communes are very similar to those with multiple income sources as well as the typically agricultural ones.

The next step is an assessment of the dynamics of changes in revenue levels in 2003-2017 (a percentage difference between revenues in 2017 and 2003).

Similarly to the previous procedure, variance analysis is used to examine the significance of group differences with regard to revenue dynamics. Welch's t-test (which assumes the form:  $F_{(3; 38,502)} = 2.216$ ;  $p > 0.05$ ) does not show any statistically significant differences of the results in all the groups. The dynamics of mean revenue growth in all the analysed groups are comparable.



**Fig. 2.** PIT and CIT revenue per inhabitant in Małopolska's rural communes in 2017 (in PLN)

Source: developed on the basis of data from the Central Statistical Office and the Statistical Office in Kraków.

As a result of changes in 2017, the general ranking of rural communes in terms of their revenue does not change considerably compared to 2003. In 2017, revenue levels range from PLN 215.5 in Lipnica Wielka in the county ('powiat') of Nowy Targ to PLN 1715.5 in the commune of Zielonki in the 'powiat' of Kraków. Similarly to 2013, the unquestioned leaders of the 2017 ranking are strongly urbanised communes in the close vicinity of Kraków: Zielonki, Zabierzów, Mogilany, Wielka Wieś, Michałowice, Czernichów, Liszki, and those in the west of the voivodeship along the communication route from Kraków to Katowice: Oświęcim, Bolesław and Klucze (Figure 2). The bottom places are taken by communes from the county of Dąbrowa with a dominant agricultural function: Bolesław and Radgoszcz,

the county of Proszowice – Pałecznicza, and the county of Tarnów – Wietrzychowice. The bottom group of ten gminas also includes five multiple-income-source communes with fragmented agriculture: Lipnica Wielka, Czarny Dunajec, Szaflary (the ‘powiat’ of Nowy Targ), Ropa (Gorlice), and Słopnice (Limanowa) as well as one tourist commune – Łapsze Niżne (Nowy Targ).

The analysis of mean revenues in the particular functional types of communes indicates that in 2017 the highest levels are reached by those urbanised, averaging PLN 1,021.5 (Table 1). They are well above the levels achieved by the remaining groups. Second place is taken by multi-income-source communes with fragmented agriculture (PLN 480.7), followed by tourist ones (PLN 409.7) and those dominated by an agricultural function (PLN 380.2). The ordering of the particular types of communes in this ranking remains stable.

In this case, the statistical significance of differences among groups is also tested with the use of one-way ANOVA. The condition of the normal distribution of the dependent variable in the particular groups is fulfilled. The variance uniformity condition is not fulfilled. On the basis of Welch’s t-test, which assumes the form:  $F_{(3; 41.009)} = 28.309$ ;  $p < 0.05$ , it is assumed that revenue differences in the analysed groups are statistically significant. The results of a post-hoc test indicate the existence of statistically significant differences between each pair of groups except the pairs: tourist and multi-income-source communes with fragmented agriculture, and tourist communes and those with a dominant agricultural function. Therefore, similarly to the results of 2003, statistically significant revenue differences are recorded for urbanised communes (which rank first), multi-income-source communes with an agricultural function (second place) and those with a dominant agricultural function (third place). Tourist communes turn out to be similar to multi-income-source communes with fragmented agriculture as well as typically agricultural ones.

Another important issue, apart from the dynamics of changes in revenue and external differences between particular functional types of ‘gmina’, are the differences that occur within groups (internal differences).

One of the measures of this phenomenon is the changeability coefficient.

In 2003, the largest revenue gaps occur in multi-income-source communes with fragmented agriculture, in which the changeability coefficient stands at 37.6% (Table 1). The smallest differences are recorded in those with a dominant agricultural function. It is worth checking whether the observed gaps narrowed or widened over the years. The analysis of all Małopolska’s rural communes leads to the conclusion that the gaps between particular areas are very similar in 2003 and 2007 (the changeability coefficient in these years is 39.7% and 40.0%, respectively). The analysed period is characterized by growing gaps among the wealthiest urbanized communes, which record the highest increase in the value of the changeability coefficient from 24.9% to 30.3%. Also, these communes record considerable differences in revenue growth dynamics. Growth rate differences in this group result in greater internal gaps. At the same time, tourist communes record the lowest decreases in revenue

(the value of the changeability coefficient drops from 31.4% to 19.1%). This group is also characterized by different dynamics of changes. The gaps decreased considerably in multiple-income-source communes with fragmented agriculture (the value of the coefficient drops from 37.6% to 29.5%), and simultaneously, in the poorest ones with a dominant agricultural function internal gaps are at comparable levels (the value of the coefficient increases slightly from 21.5% to 22.6%).

The analysed indicator – revenue from taxes paid by natural and legal persons – the share of taxes constituting central budget receipts per one inhabitant (in PLN) can be treated as a reliable synthetic indicator reflecting the wealth of local inhabitants. It is also interesting to examine some other aspects of socioeconomic development which can be correlated with local population's income. The final stage of the analysis aims to identify a correlation between income and other indicators. The analysis is based on 2017 data.

The results point to a strong correlation between income and:

- population density (Person's linear correlation coefficient 0.74),
- net migration (0.74),
- the number of national economy entities registered in REGON per 1,000 population (0.70).

There is also an average positive correlation between income and:

- the number of natural persons engaged in business activities per 1,000 population (0.65),
- average usable floor area of a flat per one inhabitant in m<sup>2</sup> (0.61),
- share of working people in working age population (%) (0.55).

A weak positive correlation exists between income and:

- share of local councillors with university degrees in the total number of councillors (%) (0.31).

No correlations are found between income and:

- a commune's assets-related spending per inhabitant (in PLN) (0.19),
- the number of cultural houses, clubs and recreational centres per 10,000 population (−0.07),
- demographic burden (0.00),
- birth rate (0.00).

The results of correlation analysis point to relationships between the level of communes' income and other indicators which characterise socioeconomic development processes. High income areas, as compared with less wealthy ones, are also characterised by higher population density, higher positive net migration rates, higher rates of working population, and a larger number of economic entities including natural persons engaged in business activities. On the other hand, communes' wealth is not correlated with the education of local councillors, capital expenses, the number of cultural centres, or demographic burden and birth rates.

## 5. Conclusions

The results of the study confirm the hypothesis formulated at the beginning of the paper that communes with different functional structures develop in different ways, which translates to the wealth of their inhabitants. The highest PIT and CIT revenue is achieved by urbanised communes. Such areas are relatively the wealthiest. Inhabitants have high incomes and are frequently employed not locally but in the city of Kraków. In 2003-2017, considerable differences are recorded in these communes in terms of income levels. In 2017, income gaps are much larger than in 2003. The inhabitants of multi-income-source communes with fragmented agriculture are characterised by the lowest income levels. In the analysed period internal gaps in this group decrease, making it more uniform in character. Communes with a dominant agricultural function are the least wealthy. The internal income gaps in this group do not change. No statistically significant differences are found between tourist communes, multiple-income-source ones and those with a dominant agricultural function. This group is also characterised by large differences in income dynamics – income gaps decrease in the analysed period.

Similar conclusions were drawn by other authors who analyse the development of rural areas. Heffner [2011] points out that similar trends are recorded in other Polish regions. Inhabitants and entrepreneurs are aware of the benefits resulting from settling down and carrying out business activities in the vicinity of large urban centres. Kamińska [2011] proves that natural persons show the highest levels of economic activities in the areas located in the close vicinity of the largest urban and industrial agglomerations.

Development trends in Małopolska's rural communes and development gaps in particular functional types of communes are persistent over time, although this is not the rule in all regions. Research by other authors indicates that spatial development gaps may be reduced [Wójcik, Tomczyk 2015].

Wealthier communes are characterised by greater population density, net migrations, and the number of economic entities. They are more attractive for inhabitants and business activities, and they also have a higher proportion of working age population. Simultaneously, no correlation is found between the wealth of inhabitants and birth rates or demographic burden. Similarly, no correlation is found between income and local councillors' education levels and communes' asset-related spending. Income is not correlated with cultural houses and centres.

Among various development drivers in rural areas a significant role is played by population migrations. This phenomenon has major social and economic implications [Cymanow 2010].

The region has very few multi-functional communes with a diversified sectoral structure, which is a negative phenomenon. The multi-functional development of rural areas, which consists in diversifying the rural economy and departing from

activities solely based on plant and animal products in favour of non-agricultural functions, stimulates communes' advancement.

The concepts of developing rural areas have changed over the years. Currently, in the context of the decreasing importance of the agricultural function, the concept of the multifunctional development of rural areas has become a strategic development trend. It is seen as a factor which accelerates development – both in agricultural and other areas – and eliminates various social conflicts and tensions [Jezierska-Thöle 2013]. The study indicates that the diversification of economic activities in rural areas is indispensable. Rural areas in all Polish regions record a moderate pace of diversification, which indicates a weak trend in developing multifunctionality [Kołodziejczak 2016].

## Bibliography

- Bański J., 2008, *Wiejskie obszary sukcesu gospodarczego*, Studia Obszarów Wiejskich, 14, pp. 1-146.
- Bański J., 2014, *Współczesne typologie obszarów wiejskich w Polsce – przegląd podejść metodologicznych*, Przegląd Geograficzny, 86,4, pp. 441-470.
- Bański J., Stola W., 2002, *Przemiany struktury przestrzennej i funkcjonalnej obszarów wiejskich w Polsce*, Studia Obszarów Wiejskich, 3, pp. 1-111.
- Bedyńska S., Brzezicka A. (eds.), 2007, *Statystyczny drogowskaz. Praktyczny poradnik analizy danych w naukach społecznych*, Wydawnictwo SWPS Academica, Warszawa.
- Cymanow P., 2010, *Spoleczne i ekonomiczne konsekwencje migracji zewnętrznych mieszkańców obszarów wiejskich*, Zeszyty Naukowe SGGW w Warszawie, 10(25), pp. 33-40.
- Heffner K., 2011, *Regionalny wymiar dychotomii rozwoju obszarów wiejskich*, Studia PAN KPZK, CXXXVIII, pp. 9-34.
- Heffner K., Rosner A., 2005, *Zróżnicowanie przestrzenne rozwoju gospodarczego na obszarach wiejskich w Polsce*, [in:] K. Zawalińska (ed.), *Rozwój obszarów wiejskich. Doświadczenia krajów europejskich*, Instytut Rozwoju Wsi i Rolnictwa PAN, Warszawa, pp. 229-241.
- Jezierska-Thöle A., 2013, *Modele rozwoju obszarów wiejskich w ujęciu teoretycznym*, Studia Obszarów Wiejskich, XXXIV, pp. 23-38.
- Kamińska W., 2011, *Pozarolnicza aktywność gospodarza osób fizycznych na obszarach wiejskich w Polsce*, Studia PAN KPZK, CXXXIII, pp. 103-127.
- Kołodziejczak A., 2016, *Dywersyfikacja rolnictwa w Polsce*, Biuletyn PAN KPZK, 262, pp. 9-19.
- MROW 2018, *Monitoring rozwoju obszarów wiejskich. Etap III. Synteza*, EFRWP, IRWiR PAN, Warszawa (project coordinator: Monika Stanny).
- Rosner A., 2011, *Zróżnicowanie przestrzenne obszarów wiejskich a pożądanе kierunki ich rozwoju*, Studia PAN KPZK, CXXXIII, pp. 27-42.
- Stanny M., 2013, *Przestrzenne zróżnicowanie obszarów wiejskich w Polsce*, Instytut Wsi i Rolnictwa PAN, Warszawa.
- Śleszyński P., Komornicki T., 2016, *Klasyfikacja funkcjonalna gmin Polski na potrzeby monitoringu planowania przestrzennego*, Przegląd Geograficzny, 88(4), pp. 469-488.
- Wójcik M., Tomczyk J., 2015, *Nierówności w poziomie rozwoju społeczno-gospodarczego gmin wiejskich województwa łódzkiego*, Acta Universitatis Lodzianensis. Folia Geographica Socio-Oeconomica, 20, pp. 85-100.