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The Role of Municipal Statistics in Georgia

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Abstract

The article discusses regional and municipal development asymmetry in Georgia, focusing on the main sources of financing for the economic policies of self-governing territorial units, including the budget, central budget assistance, and the support fund of international donor organizations.

Based on the analysis of key economic indicators such as Gross domestic product (GDP) per capita as well as living conditions such as absolute poverty level, the article identifies significant variations in public prosperity among different regions of Georgia.

The article examines the following hypothesis: "The size of regional asymmetric development is inversely proportional to the growth of the country's territorial scale". This hypothesis is supported by two pieces of evidence: first, a 2019 study conducted by the World Bank (WB) on poverty indicators; and second, an analysis of average monthly values of household incomes and expenditures within relatively small territorial units.

To address the high marginal relative error resulting from the small sample size, future research should consider empirical implementation of the following models: Fay-Herriot (FH), Elbers, Lanjouw, and Lanjouw (ELL), and time series analysis.

Keywords: Equal public prosperity; Asymmetry of regional and municipal development in Georgia, Statistical indicators of the living conditions in a small area

Abbreviations

GDP	Gross domestic product
Geostat	National Statistics Office of Georgia
UNDP	United Nations Development Programme
WB	World Bank

1. Introduction

Every country has the responsibility to ensure equal economic prosperity for all its citizens. Typically, economically strong nations are more successful in achieving equal development across their various territorial units. However, in most countries worldwide, economic development tends to be concentrated primarily in the capital, with only a few rare instances of other regions experiencing comparable levels of development.

Georgia is no exception to this significant asymmetry in economic development. This viewpoint is supported by a thorough examination of various statistical indicators across different regions. For instance, the per capita gross domestic product (GDP) in the Tbilisi region is nearly three times higher than the region with the lowest indicator. Additionally, the share of the population below the absolute poverty line is 0.4 times lower, among other notable disparities (National Statistics Office of Georgia - Geostat, 2023).

Within the scope of the research, it is desirable to test the hypothesis that *the size of regional asymmetric development is inversely proportional to the growth of the country's territorial scale*. Specifically, the study aims to examine whether the disparities in economic conditions widen or narrow when considering relatively smaller territorial units. The economic policy of Georgia includes providing assistance from the central budget to the budgets of municipalities, serving as a significant means of implementing the economic policies of the local self-governing bodies (Parliament of Georgia, 2023). The objective of the paper is to assess the state of the country at a relatively small territorial level using available empirical data. By determining the necessary statistical characteristics, the research aims to establish statistically reliable indicators of living conditions. The work also takes into consideration the assessment of regional economic policies, their effectiveness, and the need for a municipal development program.

2. Body of paper

2.1 Regional and municipal development asymmetry in Georgia

Georgia is composed of various administrative divisions, including the capital city of Tbilisi, nine regions, two autonomous republics, 69 municipalities, and 11 districts.

Note: *Any statistical information is collected on the entire territory of Georgia except the occupied territory.*

Figure 1: Regional map of Georgia

The table below illustrates the per capita gross domestic product by region at current prices in 2021. It highlights significant differences in economic status among the regions.

Table 1: *Gross domestic product at current prices per capita in 2021, by Regions*

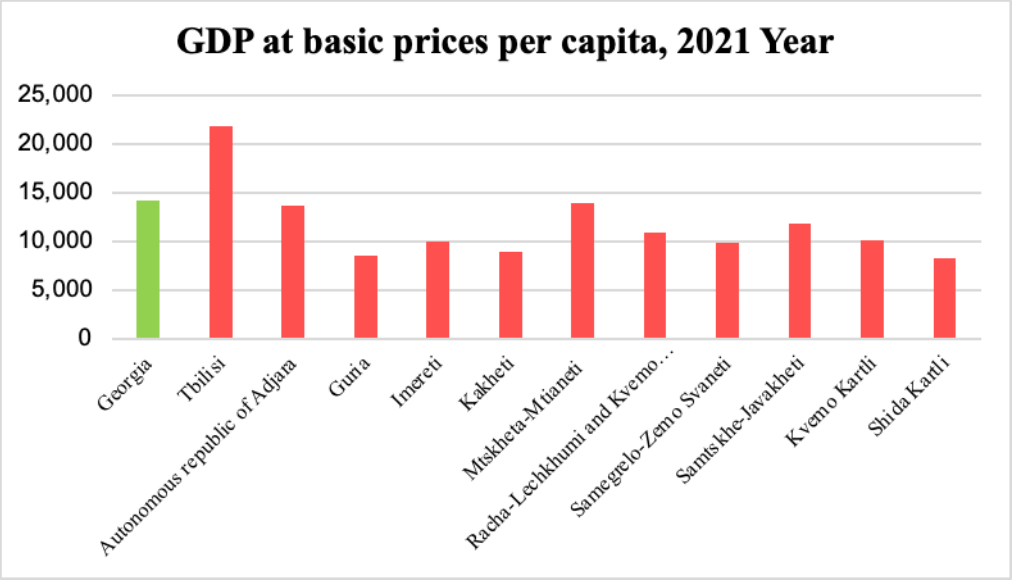
Regions	GEL
Georgia	14,133
Tbilisi	21,866
A.R. of Adjara	13,676
Guria	8,546
Imereti	10,007
Kakheti	8,990
Mtskheta-Mtianeti	13,951
Racha-Lechkhumi and Kvemo Svaneti	10,841
Samegrelo-Zemo Svaneti	9,865
Samtskhe-Javakheti	11,868
Kvemo Kartli	10,052
Shida Kartli	8,272

Source: author's calculation

Gross domestic product per capita according to the regions of Georgia is calculated at current prices using the territorial distribution of the gross domestic product and the average annual population.

In 2021, Tbilisi had the highest gross domestic product per capita at current prices, with a value of 21,866 GEL. The figure is 1.5 times higher than the country's average value and 2.6 times higher than the average value of the region with the lowest indicator, Shida Kartli.

Figure 2: Gross domestic product at current prices per capita in 2021



Source: author's calculation

The table below presents the share of the population under the absolute poverty line by regions. The indicators were calculated by the authors based on the Households Incomes and Expenditures Survey databases using the World Bank's (WB) methodology of poverty indicators.

Estimation methodology of the share of population under absolute poverty line:

Share of population under absolute poverty line represents the percentage of the poor population in the total population. According to the used methodology, the population under poverty line is considered to be people living in households whose consumption expenditures per equivalent adult are less than the absolute poverty line.

Detailed information on cash consumption expenditures of households is collected based on the Households Incomes and Expenditures survey.

In order to estimate the value of non-cash consumption expenditures of households, it is necessary to determine the price of each consumed product. For this, the average price of each purchased food product is calculated for each household – with the ratio of the paid amount to the volume of the purchased product. Based on the obtained data, the weighted median price for each food product is calculated at the country and regional levels. Relevant weighted median prices are used to evaluate the value of non-cash food consumption of households. As a result, non-cash consumption expenditures are obtained for each household.

Total consumption expenditures are calculated by summing up the cash and non-cash expenditures of households. Because some non-food expenditures do not reflect the standard of living of households, such expenditures are excluded from non-food expenditures according to the World Bank's recommendation. The following categories are excluded: expenditures on ceremonies, expenditures on transportation in agriculture, expenditures on durable goods, expenditures on medical services (except expenditures on pharmaceutical products and medicines), expenditures on rented dwellings and other rented property, and corresponding expenditures received from medical insurance free of charge.

Regional and time deflators – During the reference year, the prices of various products and services in different regions are diverse. In order to ensure comparability, a regional deflator is calculated for each region, which represents how many times the total cost of a consumed product is more expensive or cheaper in a specific region compared to the country's median price. In addition, during the reference year, the prices of different products and services are changing, due to which households' consumption expenditures are deflated (base month – January). Adjusted consumption expenditures of households are obtained using these two deflators.

Number of equivalent adults in the household, considering the scale (cohabitation) effect – in order to assess the level of household welfare, in addition to assessing its expenditures, it is necessary to consider the size and composition of households, as the needs of people differ according to gender and age. The calculation of the number of equivalent adults is done by summing up the relevant coefficients of the members of the household. In addition, since several people living together leads to certain cost savings (for example, the utility costs of a two-person household are not twice as high as those of a one-person household), it is necessary to consider the scale (cohabitation) effect. According to the used methodology, the number of equivalent adults in the household is adjusted using the established rate of cohabitation.

Consumption expenditures per equivalent adult – represents the ratio of adjusted consumption expenditures to the adjusted equivalent adults in the household.

Share of population under absolute poverty line – represents the percentage of the population living in households whose consumption expenditures per equivalent adult are less than the absolute poverty line.

Absolute poverty line - To determine the value of food component of the absolute poverty line, the price of one consumed kilocalorie is calculated for each household in II-IV deciles, which represents the ratio of the total cash value and energetic value of consumed food products. In order to obtain the value of a food component, the median price of one kilocalorie is multiplied by the daily norm of the energetic value for an equivalent adult.

The share of the food component in the absolute poverty line is determined based on the households in the II-IV deciles whose food expenditures per equivalent adult are close to the obtained value of food component. The absolute poverty line is calculated by dividing the value of the food component to its share.

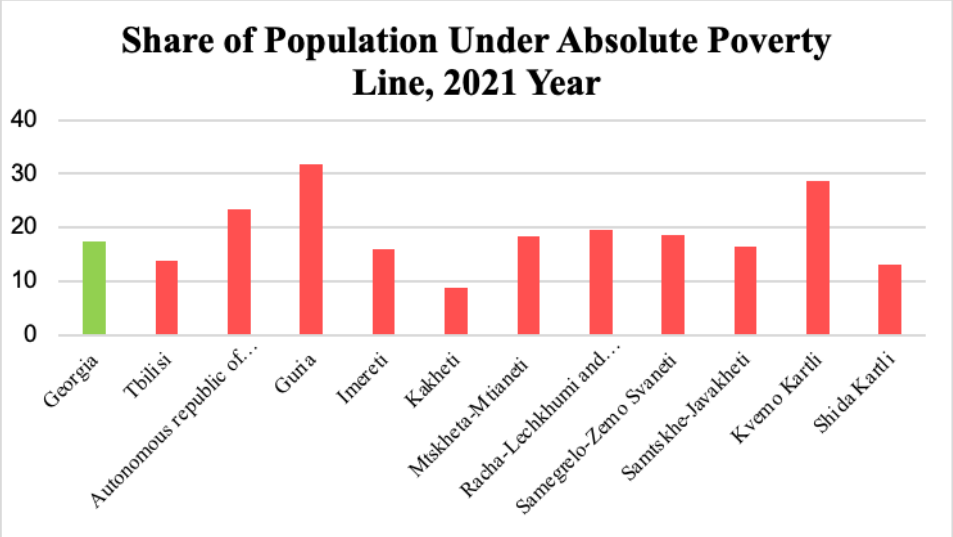
Table 2: *Share of Population Under Absolute Poverty Line by regions, %*

Region	Share of Population Under Absolute Poverty Line	Standard Error	95% Confidence Interval		Coefficient of Variation	Design Effect	Square Root Design Effect
			Lower	Upper			
Kakheti	8.87	1.340	6.24	11.49	0.151	8.376	2.894
Tbilisi	13.90	1.379	11.20	16.61	0.099	23.267	4.824
Shida Kartli	13.20	1.592	10.08	16.32	0.121	6.839	2.615
Kvemo Kartli	28.71	3.316	22.21	35.22	0.115	28.593	5.347
Samtskhe-Javakheti	16.41	1.862	12.76	20.06	0.113	4.649	2.156
Adjara A.R.	23.36	1.903	19.63	27.09	0.081	8.742	2.957
Guria	31.74	2.086	27.65	35.83	0.066	2.619	1.618
Samegrelo-Zemo Svaneti	18.57	2.031	14.58	22.55	0.109	10.242	3.200
Imereti	15.96	1.619	12.78	19.13	0.101	11.451	3.384
Mtskheta-Mtianeti	18.24	1.979	14.36	22.12	0.109	2.986	1.728
Racha-Lechkhumi and Kvemo Svaneti	19.52	1.675	16.23	22.80	0.086	0.620	0.787

Source: author's calculation

In 2021, the share of the population below the absolute poverty line varied across regions. The Tbilisi region had a lower value of 13.9%. However, the Kakheti region, where a significant share of population is engaged in agricultural production, recorded a higher value of 8.9%. Conversely, the region of Guria had the highest value at 31.7%. In comparison, the value of Tbilisi is 0.8 times less than the corresponding country-wide value and 0.4 times less than the value in the Guria region (National Statistics Office of Georgia, 2023).

Figure 3: Share of the population below the absolute poverty line, 2021



Source: author's calculation

The average monthly values of incomes and expenditures of private households, calculated per household and per capita, show no significant regional differences. However, as the territorial scale increases, the disparity between the average values becomes more pronounced. This difference is particularly notable when comparing indicators calculated at the municipal or district level. It is important to note that the indicators derived from the selective survey of Households Incomes and Expenditures in relatively small territorial units have a high marginal relative error, due to the small size of the sample, ranging from 4% to 65% (Mikeladze, 2022).

It is important to mention that when calculating the standard deviation, confidence interval, and marginal relative error for the main indicators of the sample survey of Households Incomes and Expenditures at the municipal or district level, is based on a modified formula of standard error of the complex, survey taking into account the effect of the cluster sampling design, as well as the adjustment of the statistical weights in the strata (Lohr, 2021):

$$SE(\bar{y}_{str}) = \sqrt{\sum_{h=1}^{H} \left(\frac{N_h}{N}\right)^2 \left(1 - \frac{n_h}{N_h}\right) \frac{S_h^2}{n_h} deff_h deff_{W_h}} \quad (1)$$

where $SE(\bar{y}_{str})$ represents the standard error under stratified sampling conditions, H - the number of strata, n_h - the number of elements interviewed in h strata, N_h – the size of the same strata h (the sum of all elements of strata h), N - the number of selected elements, $deff_h$ −design effect during cluster random sampling, and $deff_{w_h}$ - design effect of stratified adjustment of weights.

The survey conducted by the World Bank revealed notable differences in the social situations of the population within small areas. In 2019, World Bank initiated an assessment of poverty indicators by municipalities using the Small Area Estimation (SAE) method. As part of the research, the Elbers, Lanjouw, and Lanjouw (ELL) models were empirically applied at the level of the statistical observation unit, based on the data of the 2014 general Census of Georgia and the Integrated Survey of Households. The Fay Herriot (FH) model was implemented at the aggregate unit of statistical observation, mainly at the settlement level. Based on the statistical characteristics, the World Bank preferred the results of the ELL model (Nozaki, Cancho, and Fuchs, 2019). The research findings revealed significant statistical differences in the indicators to the share of the population below the absolute poverty line.

2.2 Economic policy of existing municipal development

The state support program for the development of municipalities: The state support program for the development of municipalities ensures that all local self-governing units have their own independent budget. The autonomy of local self-government bodies in budgetary activities is guaranteed by their own revenues determined by the law, the independent determination of payments for the exercise of exclusive powers, and the right to make independent decisions within the limits set by the law on delegated powers. The state authorities in Georgia, as well as the authorities of the autonomous republics of Abkhazia and Adjara, are prohibited from interfering in the budgetary powers of local self-government bodies (Parliament of Georgia, 2023).

In order to ensure equalization of the socio-economic development of local self-governing units, financial assistance is allocated from the state budget of Georgia.

In order to ensure the exercise of exclusive powers, the local self-governing unit will receive an equalization transfer in the form of financial assistance from the state budget of Georgia.

The directions of use of the equalization transfer are determined independently by the local self-government representative body within its jurisdiction.

The amount of the equalization transfer to be transferred to the budget of the local self-governing unit is determined by the following formula (Parliament of Georgia, 2023):

$$Ti=(E-R)*K \quad (2)$$

Where,

– Ti is an equalizing transfer allocated to the budget of the local self-governing unit;

– E is the sum of budget expenditures and the growth of non-financial assets of the local self-governing unit;

– R denotes the budget revenues of the local self-governing unit, excluding grants;

– K is the support ratio.

Furthermore, E – the sum of budget expenditures and growth of non-financial assets of the local self-governing unit is calculated by the formula (Parliament of Georgia, 2023):

$$E=\sum Cn*Pn \text{ That is } C1*P1+C2*P2+C3*P3+C4*P4+C5*P5+C6*P6 \quad (3)$$

here,

– Cn, that is C1, C2, C3, C4, C5, C6, represents statistical indicators of the local self-governing unit, including population, children aged 0 to 6, area, number of adults aged 6 to 18, status of the capital, and roads of local importance;

– Pn, that is P1, P2, P3, P4, P5, P6, are equalization coefficients that reflect the relationship between each category of payment and statistical indicators. These coefficients are calculated through regression analysis and remain constant for all local self-governing units.

R denotes the budget revenues of the local self-governing unit, excluding grants. These revenues are calculated based on the current year's forecast and the trend of the actual indicators over the past 3 years.

K represents the lower limit of the support ratio is 60%.

Support from international donors: In 1997, the Municipal Development Fund of Georgia was established in Georgia, to collaborate with all major investment banks and financial institutions operating in the country. The fund aims to strengthen local self-government, investment in infrastructure and services, and improve the economic and social conditions of the local population, etc. (Municipal Development Fund of Georgia, 2023).

Furthermore, the involvement of international organizations is crucial in enhancing governance, policies, and services in municipalities. Currently, projects are being implemented in six municipalities of Georgia with the support of the European Union, the United Nations Development Program (UNDP), and the National Association of Local Self-Governments. These projects contribute to urban transformations in the same municipalities, the preservation of historical and cultural heritage, the rehabilitation and enhancement of public spaces, the improvement of pre-school education, and the development of quality municipal services.

It is worth noting that the European Union Ambassador and the representative of the United Nations Development Program in Georgia actively support local projects that address the needs and expectations of the people, thereby fostering an environment of quality. By minimizing and eliminating social and economic inequalities between regions, integrated territorial development is achieved, resulting in an equal environment and improved well-being for individuals (UNDP in Georgia, 2023).

3. Conclusion

The amount of public goods at the regional level of Georgia varies significantly, as supported by the following facts: 1) Analysis of statistical characteristics shows that the main economic indicators differ greatly at the regional level, with a concentration of public prosperity observed in one area of the country; 2) local self-governing bodies in these territorial units have relatively small budgets due to limited economic activity.

In order to improve the economic situation of municipalities, the following measures are in effect: a) the state policy, which provides financial assistance to local self-governing units from the central budget; and b) the Municipal Development Fund of Georgia, which cooperates with all the major investment banks and financial institutions to promote the strengthening of local self-government, infrastructure, and investment in services, aiming to improve both the economic and social conditions of the local population.

The hypothesis that *"the size of regional asymmetric development is inversely proportional to the growth of the country's territorial scale"* is confirmed by the analysis of average monthly values of household incomes and expenditures in a relatively small territorial unit. However, it should be noted that the marginal relative error values of the main statistical indicators within a small territorial unit, which are based on the modification of the standard error formula of a complex survey, taking into account the effect of the cluster sampling design and the correction of the statistical weights in the strata, due to the small size of the sample, are characterized by having a relatively high value. To address this limitation, it is recommended to consider using statistical methods such as: 1) Fay-Herriot (FH) (Fay, Herriot, 1979); 2) Elbers, Lanjouw, and Lanjouw (ELL) (Elbers, Lanjouw, and Lanjouw, 2003); and 3) time series analysis models and methods.

Additionally, the survey conducted by the World Bank indicates different social situations in small areas. The research evaluated poverty indicators using small area estimations at the level of the statistical observation unit of Elbers, Lanjouw and Lanjouw (ELL) and the Fay Herriot (FH) model at the level of the aggregate unit of statistical observation (mainly settlement) in small territorial units. The research findings revealed a significant statistical difference in the indicators of the share of the population below the absolute poverty line.

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