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In Research of An Optimal Size for Local Government in Albania

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Abstract After the organization of local government along democratic lines and the tradition of organizing local government in 1992, as well as the problems created by socio-economic development, the Albanian government reviewed the organization of local administration in 2014. The implementation of the reform was carried out without the consensus of the opposition and without taking into account the constitution, which provided for taking into account the opinions of local communities for such changes. The analysis of an efficient (optimal) local unit is being done now that the two main political forces in Albania, the government-opposition, are debating the revision of the reform, based on the problems brought about by the 2014 reform. Based on the OLS model, we analyze the relationship between the average cost per capita and the residents of the current local units. The model was tested using a database covering the period 2017-2023, for a general measure of local expenditure: local public administration cost (LPAC) and service cost of local public expenditure (CE). Empirical findings evidenced a U-shaped relationship between inhabitants and the costs of local public services. Finally, we obtain an optimal size of local units of 13,047 inhabitants for the cost of local public administration and an optimal size of local units of 15,368 inhabitants for the cost of public services.

Keywords: • scale economies • optimal size • local governments • administrative costs • Albania

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1 Introduction

Socio-economic development has led many countries in Europe and the world to review the administrative-territorial reconfiguration of local units, to increase the efficiency and quality of local services (Dollery & Crase, 2004; Roesel, 2017; Myksvoll, 2023). In democratic societies, governments are responsible for delivering public services to the wider public (Manaf, Mohamed, & Harvey, 2022). Regional and local governments now take more responsibility in policy areas that directly affect the well-being of citizens, from health care to social assistance (Kleider & Toubeau, 2022). Improving the quality of public services can be achieved through state supportive institutions, which increase the efficiency and effectiveness of central and local government systems (Abdillah, Deliarnoor, Yuningsih, & Fatmawati, 2020). Local units in centralized governments are intended to deepen decentralization, then to enable this, mergers of local units were made (Sancton, 2000; Nishimura, 2022). The main reason for structural reform lies in the proposal that different structures of local government display different efficiency characteristics, which in turn means that it is possible- in principle at least—to identify an optimal size for local government (Drew, Kortt, & Dolleri, 2014). We seek efficient local units that provide efficient services, which is a ratio of input-cost to output-service (Li, 2024). However, regional and local governments may in various ways make it more difficult for the central government to implement potentially important stabilization policies. (Bahl & Bird, 2018; Gilley & Laochankham, 2024). It is noted that local jurisdictions often do not meet the optimal scale for the provision of services, given the allocation of competencies and fiscal instruments across different levels of government (Bikker & Van der Linde, 2016). There is a consensus among scholars that nearly 80 per cent of utility services and activities have economies of scale for a population of over 25,000 residents (Holzer, Fry, Charbonneau, Ryzin, & Burnash, 2009; Blom-Hansen, Houlberg, Serritzlew, & Treisman, 2016; Buljan, Švaljek, & Deskar-Škrbić, 2022).

The problem with territorial administrative reform in Albania has been the failure of and the debate upon the review of the administrative-territorial reform 2015, the opposition wants more units than 61 today (small units) and the government wants to reduce the number of units and increase their individual size (big units), (Dhimitri, 2018; Kume, 2023). The reform in 2015 in Albania, brought inefficiency in the performance of municipal functions (Dhimitri, 2018; Haxhimali et al. 2019). The Municipality Has spent 89 per cent of its budget on administration and rural municipalities, this percentage is the same with an average of over 70 per cent for all rural municipalities (Haxhimali et al. 2019; Hysi, Pjero, Dede, & Kolte, 2024). Reform has deteriorated rural areas' standard of living; people still live in extreme poverty. Emigration has significantly increased, with over 750,000 Albanians leaving the country since the start of the

reform until today. The rural infrastructure and services, such as health and education have deteriorated (Aliaj, 2022). Efficiency achievement of local unit services is accomplished by two methods: firstly, the political method, which involves reducing local units through mergers, which reduces administrative costs. This method is usually radical from top to bottom and does not take into account the actors and factors affecting the size of local units; secondly, the economic method, aims to reduce administrative costs by decreasing the cost of services per capita. In our study, we analyze the efficiency of services from an economic perspective.

This article focuses specifically on local public administration expenditure in Albania, assessing at which number of inhabitants the optimum size for public administration is achieved. The objectives of the paper are determining the optimal size of the local unit and determining the population to be taken into account for the size of the local unit. In our assessment of the economies of scale and optimal size in local governments in Albania, we follow the strand of after-reform investigations and rely on the cross-section OLS models, like Drew, Kortt and Dollery (2016). This OLS model is based on the relationship between the cost of service per person and the minimum population size to achieve scale or efficiency economies. We have also included population density in the model, which indirectly incorporates the area of local units.

Based on the recommendation of Vidoli, Auteri, Marinuzzi, and Tortorella (2023), factors, such as terrain and economic, financial, and political factors should be considered. We have included the following control variables: for terrain, the distinction between "Urban" units with flat terrain and "Rural" units with mountainous terrain. We have also included wages as a control variable, but Albania is a small country and wages and goods prices do not vary much from one unit to another. The political factor has also been included, considering the political force governing local units. It should be noted that from 2015-2024, 85% of local units are governed by the same political force (the Socialist Party), a period that corresponds to the post-2015 reform and the period under study. All authors who have used this model rely on the aforementioned factors, and we adhere to this model in our study. According to Stoffelen et al. (2023), we do not approach the issue of local unit size in a complex manner, including the socio-economic, demographic, and psychological processes that have been extensively studied, which affect the size evaluation by residents.

2 Literature overview

2.1 The optimal size

Holzer et al. (2009) analyzed 65 studies of the optimal municipal size, those studies show little correlation between size and efficiency, especially for municipalities with populations between 25,000 and 250,000 inhabitants. In general, the largest and smallest municipalities are the least efficient, and therefore there is an inverted U-shaped relationship between local government size and efficiency (Buljan et al., 2022). Based on the emphasis on the policy-making of administrative units, the notion of emergency the "optimal size" of local government has prompted an articulate debate among academics, which has often taken geographical, economic, political and social considering the differences (Bartolacci, Salvia, Quaranta, & Salvati, 2022). The units' environmental factors (demographic, economic, financial, terrain) complicate the assessment of local units' efficiency, as well as the inability of local units to achieve best practices in local unit management due to relatively unfavorable environmental conditions (Vidoli et al., 2023). Another way of approaching the issue of the optimal community size is to use the theory of the firm. The theory of the firm is applied to estimate the optimal size of the local government unit, population size, most commonly serves as a measure of output, the theory of firms implies that the size of jurisdiction should be large enough to reach the minimum efficient size to benefit economies of scale (Buljan et al., 2022).

Higher population density reduces the urban sprawl that is usually connected with services based on networks, such as sewerage systems, waste management, road maintenance, etc. (Hortas-Rico & Rios, 2019; Buljan et al., 2021). Population density requires a larger area to reach the population mass that brings service efficiency: over 25,000 inhabitants per unit (Dollery & Crase, 2004; Holzer, 2013). In essence, the size of a specific governmental entity should correspond to the area of benefit from goods it provides to citizens (Dollery & Crase, 2004; Zibert, Rozman, Rangus, & Brumen, 2020). Based on empirical models, the optimal number of municipalities for a fixed population size in a given aggregation of local units into larger and denser districts would reduce the costs of public services (Bartolacci et al., 2022). According to Holzer (2013) the optimal size of municipalities, and economies of scale usually lead to a decrease in cost per person as the population served increases.

Economies of scope, sometimes also called economies of joint production, refer to the economic advantages that flow from providing a broad range of goods and services in a single organization (Dollery & Crase, 2004; Harasym, Rodzinka, & Skica, 2017). Boyne (2003) presents an empirical review of public service performance studies, he states "Few arguments have been found on the

relationship between organization size and service performance". In general, managerial variables make a significant impact on performance, it is not correct to say that there is an optimal size of local units, because the difference in the activities of municipalities does not correspond to the space of their optimal extension (Sankton, 2000). Local government provide a heterogeneous set and it is indeed recognized that some services are more subject to economies of scale than others (Blank & Niaounakis, 2021).

Local unit size is a problem in perceiving residents' trust in local authorities. The Danish government is going to initiate a process that will make a process at the municipal level merge into larger units, the Commission recommended a minimum of 30,000 inhabitants, but only a specific population of up to 20,000 inhabitants was allowed, which is accepted when municipalities establish a partnership with other vendor governments, this reform in Denmark was successful (Andersen, 2008). Estonia set a minimum population of 5,000 inhabitants per local unit, and 11,000 as the recommended level, except where the territory of the unit would cover more than 900 km². (Sepp & Noorkõiv, 2018).

According to the socioeconomic specifics and features, the size of the population is difficult to achieve when the population density is small as in Iceland (Aalbu, Bohme, & Uhlin, 2008). In the conditions of the contemporary debate on structural reform in local government, the concept and measurement of economies of scale play an important role. Indeed, the underlying rationale for this political position often lies in the belief that larger local government units are more efficient than they are smaller counterparts (Drew et al., 2014). The same authors document that expenditures of merged municipalities in Israel and Denmark decreased (Reingewertz, 2012; Blom-Hansen et al., 2016). The effects of merging local units in Ireland show that in some units and for some services, costs turn out to be lower, and in other units and for other services, they are higher (Callanan, Myrphy, & Quinlivan, 2014).

According to Roesel (2017) based on the studies of Lüchinger and Stutzer (2002), Fritz and Feld (2015) evidenced that the united municipalities in Switzerland and Southern Germany increased expenses. In addition, the optimal size of jurisdictions should not only be determined according to economic considerations, there is no conclusion about the optimal size of local units solely in the economic context, because units operate in different geographic places and have different service costs (Vidoli et al., 2023). Despite some positive results related to reduced administrative costs in specific merger reforms, as highlighted by Blom-Hansen et al. (2016) in Denmark, Blesse and Baskaran (2016) in Brandenburg (Germany), Miyazaki (2018) in Japan, and Cobban (2019) in Ontario (Canada), most studies fail to find significant reductions in costs from the merging of local units. In some cases, authors noted that the decrease in local administrative costs was offset by

increased spending in other service categories. Other studies find unused economies of scale, but these effects tend to be negligible (Tavares, 2018). Moisio and Uusitalo (2013) studied 82 merged local units in Finland compared to 82 non-merged units. It was noted that the mergers did not reduce the costs per, but rather increased them. A similar phenomenon occurred in Denmark with merged units. Reingenwertz (2012) observed that costs per capita reduced to 9 % in 21 merged units without decreasing service quality, compared to 219 units that were not included in the merging process.

The structuring and functioning of local units vary from one country to another, from the governing system and local government levels, due to specific characteristics, such as traditions of local government structuring, terrain, and economic resources. As a result, conclusions about an optimal unit size are not unspecified. Buljan et al. (2022) in their study in Croatia, found that the optimal size (minimizing costs per capita) for local units is 4,740 residents, for cities 15,139 residents, and for municipalities 3,744 residents. Roesel (2017) studied the effect of merging 22 local units in Germany (2007-2013) and did not find a reduction in administrative costs for education and social services in units with fewer than 100,000 residents. Bikker and Van der Linde (2016) found economies of scale in 17% of German local units, while Blom-Hansen et al. (2016) found evidence of significant scale effects. On the contrary, Blom-Hansen et al. (2016) noticed that in some areas, cost savings were compensated by deterioration in others, while for most public services, jurisdiction size was irrelevant. A positive effect of increased population was found for municipalities that were small before the reform (under 2,000 residents) (Hanes & Wikström 2008).

In the study on the optimal size of local government in Italy, Vidoli et al. (2023), found that minimal costs are achieved for 2,000-3,500 residents per unit, for providing services under cost-optimal conditions as a criterion for the size of optimal local units. Regarding the municipalities in Spain, Hortas-Rico and Rios (2019) highlights that the possibility of achieving economies of scale exists as long as the municipality does not exceed a critical size (about 10,800 residents). This led the government to cancel the law for new units with populations ranging from 10,000 to 20,000 residents. In Sweden, the 1952 municipal amalgamation reform had a negative impact on expenditures for municipalities below a critical size, but a lower increase in expenditures was only visible in the case of merging highly fragmented municipalities of the same size, and not when a large municipality was merged with a smaller one (Hanes & Wikström 2008).

Economic analysis cannot hope to determine the exact optimal size", it is further reinforced by the knowledge that local government services are not homogeneous and have their own unique production characteristics (Turley, Mcdonagh, McNena, & Grzedzinski, 2018). In conclusion, evidence of economies of scale Reingewertz

(2012), Bikker and Van der Linde (2016), but no evidence of economies of scale Blom-Hansen et al. (2016). The existence of local government also has to do with local participation and citizen control of politicians and bureaucracy. Like the economic, the political point of view leaves us without a clear instruction on the design of local units, as well (Buljan et al., 2022).

3 Research Methodology

3.1 The Albania local government reform

The biggest reform for the administrative-territorial division was carried out in 2014 with the drastic reduction of the units from 378 to 61 units in 2015 (law no. 7608, 2014). Their borders cannot be changed without first taking into account the opinion of the population living in them (Article 108, point 2) and local self-government is exercised through representatives and referendums (Article 108, point 4, Constitution of the Republic of Albania, 1998). On July 31, 2014, the Albanian parliament approved with 88 votes of the majority (Albanian Parliament, 2014) the law on the new territorial-administrative division with 61 local units out of 373. The process and approval of the territorial reform were carried out without the consensus of the opposition, which addressed the Constitutional Court for the abrogation of the new division in the period August 2014-January 2015, but without result (Ndreu, 2016; Kume, 2023). At the beginning of the reform process, the majority and the opposition agreed and set up a joint commission for the new division, with 8 members each; in March 2014, the majority changed the ratio of members to 9/8 in favour of itself. The majority wanted a variant with 37 or 49 units while the opposition with 89 units, at the end of July 2014 the majority approved the variant with 61 units without the consensus of the opposition which abandoned the commission (Halo, 2015). The variant that met the criteria (economies of scale) was only one with 37 units, which was based on the tradition of organization and administrative functioning in the territorial space of the former districts for central and local services.

In principle, there was no opposition from the population to make the reform, but the government chose the path of the forced union to have advantages in the context of constituencies in creating new units, today the majority (Socialist Party) that made the reform has 53 out of 61 municipalities that has the country. The problem is that Albania has a displacement of over 35 per cent of its inhabitants through emigration (Institute of Statistics, 2012). This situation makes it difficult to achieve economies of scale, when it is known that the local government grant is divided according to the number of residents, the departure of residents requires a larger area to achieve efficiency in services.

The debt in some of the municipalities is as much as 70% of the total annual expenditures (such as in Vora), and the debt for 61 municipalities goes to 49% of the total financial obligations of the general government. Despite the purpose of reform being to increase investment power, according to analysis, this stops only at the maintenance of facilities and the repair and maintenance of roads (Bala, 2017). Local government finances represent 9.8% of public expenditures; municipalities' capacities to manage funds are weak, leading to inefficient expenditures and a lack of transparency (Ministry of Finance and Economy, 2020). There are municipalities where the revenues consist of 9% of the grant, and their revenues are weak at 3.5%- 3.6%, as in the municipality of Has municipality (2020). In recent years, the government has pursued an urban policy, favouring large municipalities. The local government is unable to face the problem of road infrastructure with the current budget, as 60% of the rural network is unpaved, or the lack of water supply in 70% of the rural area (Haxhimali, Cacaj, & Zajazi, 2019), as well as the problems of education and health that increase with depopulation, through the reduction of income as well as an increase in expenses for services.

3.2 The research questions

The research questions are based on factors that theorized to affect local governance performance, in the approach to local services. Based on the literature and what is conceptualized between the concepts of the size of local government and the optimal size of local government there is a fundamental difference. The size of the local government depends on the factors: traditional, social, cultural, economic, and functional terrain.

The optimal size of the local government has to do with the efficiency of the local government in providing low-cost services, this implies a minimum size of the population of the local units to be efficient in the realization of public services. The implementation of services with the lowest cost is realized in two ways: first, the political way, through the territorial reform we reduce the administrative costs, increasing the size of the local government; in two economic ways, reducing the cost of services through increasing efficiency. In a local administration, the costs are of an administrative and economic nature, which we have focused on in our study.

Questions: do the municipalities created after the 2015 territorial reform in Albania have economies of scale? And is there an optimal size of local government in Albania?

3.3 Methods

In our assessment of the economies of scale and optimal size in local governments in Albania, we follow the strand of after-reform investigations and rely on the cross-section OLS models, as authors: Drew, Kortt, and Dollery (2012, 2016), Tavares (2018), Bikker and Linde (2016), Hartos-Rico and Rios (2020), and Buljan et al. (2022). The model is based on the assumption that LPA production technology can be described by a production function that links the various types of LPA output to input factor prices, we take the cost of LPA per capita like input and size population like output Bikker & Van der Linde, 2016). Administrative costs themselves may also be subject to scale economies (Bel, Fageda, & Mur, 2016).

Christensen and Greene (1976) proposed the trans log cost function TCF as a second-order Taylor expansion, usually around the mean of a generic function with all variables appearing as logarithms, this TCF is a flexible functional form that has proven to be an effective tool for the empirical assessment of efficiency (Edirisuriya & O'Brien, 2001; Bikker & Van der Linde, 2016; Thuo & Ndagara, 2021). Several authors have used TCF for economies of scale in local spending: Drew, Kortt and Dollery (2016), Bikker and Van der Linde (2016) and Buljan et al. (2022). A sample TCF read as follows:

$$\text{Ln LPAC (inh)} = \alpha+\beta_1(\ln \text{inh})+\vartheta'(\ln \text{Densi})+{}_{\gamma}'\text{Xi}+{}_{\varphi}'\text{Di} + \varepsilon \quad (1)$$

With LPAC for local public administration cost and 'inh' (the number of inhabitants) for output volume, in the square term we take the logarithm of output in deviation from its mean (Bikker & Van der Linde, 2016).

We test a non-linear relationship between population size and LPAC per capita expenditures by including (ln inh –ln average inh)^2 in our model, we test the U-shaped cost curve hypothesis and use the following specification:

$$\text{Ln LPAC (inh)} = \alpha + \beta_1 (\ln \text{inh}) + \beta_2 (\ln \text{inh} - \ln \text{average inh})^2 + \vartheta'(\ln \text{Densi}) + {}_{\gamma}'\text{Xi} + {}_{\varphi}'\text{Di} + \varepsilon \quad (2)$$

Where ln LPAC represent cost per capita expenditures of local public administration, inh is the number of inhabitants in the respective local government units, and Densi is the population density in units. Vector Xi constant of the number of control variables, vector Di constants the number of dummy variables α, β, θ, γ and ϑ are the set parameters to be estimated, εi- is an error term.

Provide that there is an empirical of the U-shaped relationship between inhabitants and capital expenditures, unused economies of scale exist where $\beta_1 < 0$, while the

concavity average cost function requires $\beta_2 > 0$ (Bikker & Van der Linde, 2016; Hartos-Rico & Rios, 2020).

Based on these conditions for achieving an optimal size for local units ($\beta_1 < 0$, $\beta_2 > 0$), we test the following hypotheses (see research section):

Ho_1: $\beta_1 < 0$, Ha1: $\beta_1 > 0$, for $p < 0.1$ reject the null; $p > 0.1$ do not reject the null.
Ho_2: $\beta_2 > 0$, Ha2: $\beta_2 < 0$, for $p < 0.1$ reject the null; $p > 0.1$ do not reject the null.

In our study we will apply Akaike's (1974) information criterion (AIC), we also know that Cost Elasticity (CE) is defined as the proportional increase in costs as a result of a proportional increase in production. In mathematical terms, this results in the following formula for elasticity (Bikker & Van der Linde, 2016; Hartos-Rico & Rios, 2020):

$$CE = \partial LPAC\ (inh\ )/\partial\ \ln\ (inh) \quad (3)$$

Using Equations (1), this results in for TCF, respectively:

$$CEctf = \beta_1 + 2\beta_2\ (\ \ln inh - \ln average\ inh) \quad (4)$$

The second term of CEs in the TCF becomes zero when the CEs are evaluated around the mean of the sampled logarithms of inhabitants (ln inh – ln average inh) = 0, we have the CE for TCF is equal to β_1 (Bikker & Van der Linde, 2016).

Based on economies of scale SE = 1 - CE, when CE >1, we have diseconomies of scale; if CE < 1, we have economies of scale, and a value equal to 1, which indicates constant returns to scale. We can calculate the indicative optimal size of inhabitants that minimizes the per capita expenditures, a value for inhabitants has to be found to set CE equal to one, or to set SE to zero (Bikker & Van der Linde, 2016; Hartos-Rico & Rios, 2020; Buljan et al., 2022), we have:

$$\partial LPAC/\partial\ \ln\ inh = \beta_1 + 2\beta_2\ (\ln inh - \ln average\ inh) = 0 \quad (5)$$

The optimal size of the local units in terms of inhabitants is calculated as:

$$\ln inh = -\ \beta_1\ /2\beta_2 + \ln average\ inh \quad (6)$$

The studies of many authors are based on the population as a variable, which has an effect on the expenses per capita according to the economic nature (administrative, LPAC) and the expenses according to the function (services, E). We include in the model various additional explanatory variables, according to the specific features of Albania.

3.4 Variable

Dependent variable (Table 1). The first category of dependent variables, according to the economic nature of the expenses, the dependent variable is LPAC (local public administration cost: Personnel Expenses, Operating Expenses, Other expenses, Current Expenses, Capital Expenditure) 2017-2023 period.

The second category of dependent variables and according to the functions of the expenses, the dependent variable is E (expenses for services: Education, Local Public Services, Fire Protection, Waste Management, Rural Road Network, Irrigation and Sewerage Culture, Forests Pastures); Average budgeted expenses per inhabitant for each cost category 2017-2023 (Table 1).

Table 1 presents the average costs per person for the population grouped by size for the period 2017-2023, while in the analysis we have included the average costs per person for each year separately, for the dependent and independent variables. As a measure of cost as the dependent variable, authors mostly use total local expenditures per capita examining overall cost functions, but there are also studies that examine cost characteristics of specific municipal services by functional categories, e.g. waste management, transportation, education and road maintenance.

Independent variable (Table 2), the relevant residents for each municipality as well as the population difference with the respective average (Bikker & Van der Linde, 2016). Considering that population density has an effect on the reduction of expenses per capita, we take it as a variable (Densy), according to the model of Drew, Kortt, and Dollery (2014), and Buljan et al. (2022). In general, modelling includes two types of independent variables – population variables, and control variables. As population variables, apart from the size of the population, models include population squared in order to explore the existence of a U-shaped cost curve and to calculate the number of inhabitants minimizing local government expenditures, and some extended models comprise population growth and population density as well.

Control variables vector (Xi), (Table 2), we have taken the suggested variables from the literature (Buljan et al., 2022), they are as follows: The demographic factor is the population growth, which has a direct impact on expenses per capita, because the population growth increases the need for the growth of the infrastructure of local service variations, the decrease of the population reduces the need for service variations.

In present times, over 700,000 people have emigrated in the last decade, especially in rural areas, as a result of which the cost of services per person increases. Services such as education and health are a problem, and the number of schools that are closed increases year after year because those who leave are young and leave with their families. The young and old age groups were not included in the study as variables, this is due to the lack of statistics at the local level, and the data we found were at the County level.

Social-economic factors, we obtained the average salary for each municipality, which directly affects the increase in demand in quantity and quality for local services. The number of employees in each municipality, the number of employees increases the cost of services or reduces it when the number of employees increases in inverse proportion to the income of the municipalities to provide services, increasing administrative expenses per capita and reducing investments.

Transfers per capita from central governments, in Albania, rural municipalities (mountainous terrain) have little opportunity to collect their income, 70-80 per cent of total income is provided by transfers from the central government according to the principle of vertical balancing.

Dummy variables vector (Di), we took the variables suggested by the literature (Buljan et al. 2022), and they are as follows: According to the roughness of the terrain and the ratio of the village to city (urban to rural) population for the territory of each municipality, they are divided into "urban area 1" and "rural area 0". However, the spatial context in which a municipality is located, e.g. a rural or urban area, also affects the provision of services (Strebel & Bundi, 2022).

While big cities are growing exponentially, smaller cities in suburban areas are shrinking. Political affiliation, according to the report of municipalities managed by representatives of the political force in power and those managed by the opposition: "Left force 3" and "Right force 2". The same methodology is also used for the evaluation of expenses according to functions, we are not elaborating on it in order not to repeat the same logic.

3.5 Data and descriptive statistic

We use the data of expenditures according to the economic nature obtained from the Ministry of Finance of the Albanian government, as well as the data of expenditures according to functions obtained from the realization of the expenditures of each municipality (61) for each year 2017-2023, the data for the costs are in Albanian lek (average, $1 = 100 All Albania).

In Table 1, we reflect the expenses divided into zeros, according to the economic nature and according to the functions, the expenses are divided into population groups for the period 2017-2023, the municipal classes that had the lowest cost per inhabitant are marked in bold (Table 1).

Table 1: Average budgeted expenses per inhabitant for each cost category (2017-2023, in All)

Number of inhabitants (x 1000)	**<10**	**10-20**	**20-30**	**30-50**	**50 - 100**	**<100**	**<650**
Expenses according to economic nature							
a. Personal expenses	10,219	10,803	7,211	6,342	6,313	**5,966**	8,487
b. Operating expenses	3,863	4,376	3,405	**2,912**	3,753	4,662	9,087
c. Other expense	770	1,277	362	332	535	**232**	821
d. Current expenses (a b+c)	14,852	15,661	10,978	**9,587**	10,285	10,589	18,405
e. Capital expendure	5,215	4,097	4,914	3,189	**2,296**	4,088	8,218
I. Local Public Administration (d + e)	20,067	19,759	15,892	12,785	**12, 581**	14,677	26,623
Expenses according to function							
a. Education	2,618	3,217	**1,964**	2,023	2,281	2,092	4,599
b. Local public services	2,773	4,150	2,837	**1,295**	1,662	2,400	4,444
c. Fire proctection	1,985	1,132	589	451	427	**390**	582
d. Wast management	1,340	1,037	1, 212	**637**	798	1,815	3,263
e. Rural road network	2,638	2,000	1,289	839	**661**	1, 849	5,012
f. Irrigation and sewerage	1,644	1,002	533	551	321	350	**167**
g. Culture	**207**	498	318	244	328	434	568
h. Forest pastures	599	523	201	62	112	66	**15**
II. Total expenses	13,804	13,359	8,943	**6,202**	6,598	10,206	18,655
The average number of municipialities	6	11	12	15	10	7	1

- Metropolitan city Tirana

From Table 1, we see for each category of expenses per capita according to the groups for population size limits, that with the increase of the population, the expenses decrease up to a size of the population increase, further with the increase of the population size the expenses start and increase, excluding only expenses for the infrastructure of sewerage and water drainage that only decrease and have no diseconomy of scale (Table 1). Expenditures per capita according to economic nature (LPAC) show the presence of the U-shaped cost curve, the grouping of the population size from 50-100 thousand inhabitants, while the expenses per capita according to functions show the population size group from 30-50 thousand inhabitants. What is noticed from the data, the costs increase a lot for the metropolitan municipality (Tirana) to other municipalities with over 100,000 inhabitants (Table 1). We have presented the main descriptive statistics of the data included in the analysis in Table 2.

Table 2: Descriptive statistics analysis

Variable	Mean	Std.Dev	Min	Max
Expenditure pc.	24,936	8,136	13,424	53,694
LPAC pc.	15,522	4,228	9,016	29,174
Population	53,094	84,332	3,870	648,403
Population growth (%)	-0.012	0.32	-0.7	1.0
Pop. Density (p/km^2)	173	351	15	2,666
Wage pc.	44,170	5,255	32,226	60,954
Transfers from the central state (pc)	19,338	3,255	5,334	17,768
Rate of employed of administration (%)	-0.02	0.07	0.13	0.19
Area km^2	464	279	38	1,110

3.6 Results

The results of the analysis show that for the model tested for the relationship between the expenditure per capita according to the economic nature of LPAC and residents (Table 3), there is evidence of U-shaped relationships for the years 2017, 2018, 2021, for the period (2017-2022). The evaluation parameters near the population density have a negative relationship with the expenses per capita according to the economic nature in 2017, and a positive one in 2018, and 2021 (Table 3).

Population growth has a negative relationship with LPAC expenses per capita for the years 2017, and 2021 and a positive relationship for 2018. Salary and transfers have a positive relationship with LPAC expenses per capita in all the years studied. The trend of increasing employment in the administration has a negative relationship with the administrative expenses of the local units for all the years included in the study.

The political factor has a negative relationship with the expenditure per head except for 2017, which was the first year after the reform. The urban unit variable has a positive relationship with the LPAC expenditures for all the years studied for the period 2017-2022, more urban cities are located in the plains in the west of Albania.

Table 3: Alternative model specification (LPAC)

	(1)	(2)	(3)	(4)	(5)	(6)
	Ln lpac	**Ln lpac**	**Ln lpac**	**Ln lpac**	**Ln lpac**	**Ln lpac**
Ln inhabitans	-0.104**	-0.156*	-	-	-0.102	-
	(0.046)	(0.053	-	-	(0.047)	-
Ln (inh – ln avarage inh)^2	0.077*	0.088*	0.082*	0.092*	0.075*	0.048
	(0.019)	(0.022)	(0.020)	(0.018)	(0.020)	(0.023)
Ln densy	-0.001	0.074	-	-	0.054	-
	(0.059)	(0.068)	(0.005)*	-	(0.061)	-
Ln wage	0.003	0.009	0.002	-	0.006	9.011
	(0.067)	(0.006)	-	-	(0.005)	(6.098)
Ln central transfers	0.005*	3.12*	--	0.007*	0.005*	0.002*
	(0.002)	(2.012)	-	(0.001)	(0.002)	(0.001)
Population growth (%)	-0.078**	0.001*	-	-	-0.136	-0.220**
	(0.017)	(0.020)	-	-	(0.120)	(0.124)
Rate of emplayed (%)	-0.012*	-0.014*	-	-0.001*	-0.006	-0.007
	(0.004)*	(0.005)	-	(0.004)	(0.004)	(0.004)
Urban, rural	0.106	0.109	-	-	0.110	0.139
	(0.079)	(0.091)	-	-	(0.082)	(0.085)
Political factor	0.025	-0.125	-0.187	-0.007	-	-0.129
	(0.066)	(0.077)	(0.070)	(0.064)	-	(0.071)
Constant	9.823*	10.129*	9.735	9.016*	9.873*	9.066*
	(0.650)	(0.749)	(0.687)	(0.628)	(0.671	(0.863)
F- statistic	10.762	7.655	4.614	7.663	5.420	5.793
N	61	61	61	61	61	61
R^2	0.65	0.57	0.44	0.45	0.69	0.47
Optimal size	28,586	13,047	-	-	16,359	-

Standart error in parentheses: p,0.01*, p,0.05*, p,0.1

For the relation between expenditures according to functions per capita and residents, the results show that there is evidence of U-shaped relationships for the years 2017, and 2018, for the period (2017-2022). For these years, we can say that there are economies of scale up to a certain size of the population (Table 4). The parameters of the assessment near the density of residents have a positive relationship with the expenses per head according to the functions in 2017, and a negative one in 2018 (Table 4). Population growth has a positive relationship with expenses according to functions per capita for the year 2017, and a negative relationship for the years 2021 and 2022; it is not statistically significant for the year 2018.Transfers from the central government and salaries have a positive relationship with expenditures according to functions; the salary is not statistically significant for the years, excluded from the model. The employment rate in the local unit has a negative relationship with the expenditure per head for all the years studied in the period 2017-2022. The urban unit variable has a positive

relationship with the expenditure per capita, only for the year 2017 for the period 2017-2022.

Table 4: Alternative model specification services (E)

	(1)	(2)	(3)	(4)	(5)	(6)
	Ln lpac	**Ln lpac**	**Ln lpac**	**Ln lpac**	**Ln lpac**	**Ln lpac**
Ln inhabitans	-0.145**	-0.185**	-	-	-	-
	(0.085)	(0.081)	-	-	(0.047)	-
Ln (inh – ln avarage inh)^2	0.100*	0.182*	0.156*	0.153*	0.159*	0.150*
	(0.035)	(0.034)	(0.037)	(0.035)	(0.032)	(0.038)
Ln densy	0.105	- 0.007	-	-	-	-
	(0.108)	(0.104)	-	-	-	-
Ln wage	0.001	0.005	-	-	-	-
	(0.002)	(0.001)	-	-	-	-
Ln central transfers	0.001*	0.006**	0.006	0.004	0.005**	0.003
	(0.003)	(0.003)	(0.002)	(0.003)	(0.002)	(0.001)
Population growth (%)	0.204	-	-	-	-0.188	-0.216
	(0.214)	-	-	-	(0.178)	(0.204)
Rate of emplayed (%)	-0.004*	-0.010	-0.008	-0.010	-0.006	-0.009
	(0.003)*	(0.007)	(0.006)	(0.007)	(0.004)	(0.007)
Urban, rural	0.019	-	-	-	-	-
	(0.014)	-	-	-	-	-
Political factor	0.025	-0.180	-0.137	-	-	-
	(0.066)	(0.117)	(0.122)	-	-	-
Constant	8.390*	10.727*	9.498*	9.976*	9.210*	9.489
	(1.141)	(1.145)	(1.935)	(1.127)	(1.126)	(1.423)
F- statistic	10.762	7.655	4.614	7.663	5.420	5.793
N	61	61	61	61	61	61
R^2	0.45	0.56	0.45	0.39	0.51	0.43
Optimal size	15,368	19,047	-	-	-	-

Standart error in parentheses: p.0.01*, p.0.05*, p,0.1

3.6.1 Optimal size of local units in Albania

Based on the results of the analysis of the non-linear model, we find the size of the local unit that minimizes the expenditure per head, (equation 6). Table 3 shows the optimal size of the local unit (13,047 inhabitants) for expenses according to nature, while Table 4 shows the optimal size of the local unit (15,368 inhabitants) for expenses according to functions, these results are also reflected in Table 5. The optimal size allows us to find the number of local units with larger and smaller populations than the optimal size found by the analysis of the model.

Table 5: Optimal size of local units

	LPAC local units	Services local units
Optimal size	13,047	15,368
Mean	19,331	17,247
Median	16,359	17,133
St.Dev	8,184	2,656
The number above optimal	51	45
The number below optimal	10	16

For expenses according to the economic nature, we have 10 local units below the optimal size, or 16.3 per cent of all local units in Albania, and 51 local units above the optimal size, or 83 per cent of the local units in Albania (Table 5). For expenses according to functions, we have 16 local units below the optimal size, or 26.2 per cent of the total number of local units, and 45 local units above the optimal size, or 73.7 per cent of all local units in Albania (Table 5).

3.6.2 Sensitivity of the results on the optimal size of local units

To avoid the uncertainty of the model first, we take into analysis 6 different model specifications, for each sub-sample of the analysis, we calculate the minimum and maximum for the calculated optimal size of the local units. The variation of the optimal size between the models is given in Table 6.

Table 6: Optimal size of local units - different model specifications

	Min	Max	St.Dev
Local units (by lpac)	13,047	28,586	8,184
Local units (by service)	15,368	19,125	2,656

To avoid the uncertainty of the model that comes from the coefficient and the non-linearity that increases the sensitivity of the result, secondly, we calculate the optimal size (Table 7) based on the models presented in Table 3 and Table 4 with a 95 per cent confidence interval.

Table 7: Optimal size of local units – confidence intervals

	Estimate	Std.Error	[95% cof. Intervals]	
Local units (by lpac)	13,047	8,463	1,477	26,388
Local units (by services)	15,368	9,610	1,388	34,260

According to Table 3 and Table 4, we see that 16.3 per cent of units for expenses according to economic nature and 26.2 per cent for expenses according to function, are below the level of optimal size. Then we can conclude that: they are within the "optimal range" of 54 per cent of local units for expenses according to economic nature and 52 per cent of local units for expenses according to functions, while 45 per cent of units for expenses according to economic nature and 47 per cent of units for expenses according to the function, they have a population size below the lower band of the interval.

4 Discussion

We analyzed the optimal size of local units in economic terms, but in concept, the size of local units is the identity of connections, economic, functional ground, social connection, and local administrative tradition. Many authors analyze local units focusing on the economic aspect; it is difficult to have an accurate value for other factors influencing the size of local government. From the literature on reforms in many countries, it appears that, in the end, the mandatory way of creating large (efficient) units was used, so the problem in the end is a political process, especially in those countries with a unique government system. Amalgamation reforms are rarely designed to reach an optimal jurisdiction if it exists at all and whatever it may be, reform is the result of a political process.

Many authors find evidence of economies of scale and optimal size of the local government, but there are also works where no evidence of economies of scale was found from their studies, in general, 36 per cent of the authors found economies of scale in units taken in the study. Each country has its own social, economic, and government organization and political organization characteristics, which are not unique to other national societies. In the case of Albania, it is more the political spectrum that has influenced the implementation of reforms without agreement; this does not give the reforms longevity and brings economic and social consequences. In the 2014-2015 reform, the opinion of the opposition was not taken into account, but the implementation time was short for 6 months, which brought a unilateral decision on the ruling party of the time, and from 2015, the ruling party has more than 80 per cent of sales units.

We analyzed the expenses per head in two directions, the administrative ones and those for the services; we identified the optimal size only for three subsamples for the administrative expenses and for two subsamples for the expenses for the services. What is noticed is that the records were only for the years after the reform (2017, 2018) and only for administrative expenses (2021). There is no proportionality between the ratio of population growth and the respective area per unit, which distorts the model, Kamez Municipality has a population of 111 thousand inhabitants and an area of 82 km2, while Pustec Municipality has a

population of 3,680 inhabitants and an area of 243 km2, the Municipality of Tropoje has an area of 1 058 km2 and a population of 28 thousand inhabitants, while the Municipality of Tirana has an area of 1,110 km2 and a population of 648 thousand inhabitants. Expenditures for firefighting and civil defence services were almost similar for more than 50 per cent of municipalities, regardless of the respective population and surface area.

The managerial implementation, work was carried out at a time when there was an economic, political, and social debate in Albania for the review of the reform and the determination of an optimal size, the results of the work can help the parties in political conflict for fair decision-making. From the theoretical side, this work is added to the works of authors from other countries.

Limitations: first, are the data used in the study, if the data for the expenses according to the economic nature were received from the Ministry of Finance and Economy, the expenses according to the functions were received from the municipality. There are cases when local entities are not very reliable in the data, they make public their activities, the standard of reflecting expenses was different for the structure of expenses, and in many cases, there was a lack of reporting and ambiguity, for example for social care, which we do not include in the study for this reason. Secondly, during the analysis, other models are also used in the analysis, which did not give any evidence of economies of scale, perhaps another methodology cannot be ruled out. Thirdly, we have expenditure data as input and it would be more accurate to have an evaluation of service satisfaction in different units as output.

5 Conclusion

The purpose of this article is to provide an answer to the debate on the possibility of the existence of economies of scale and the optimal size of local units, formed after the reform of 2015. In 2022, the joint parliamentary commission was set up, which did not produce a result, as the opposition wanted smaller units in size, while the ruling party was for an increase in the size of the units. We tested the post-reform period from 2017-2022, in two different directions: expenditures according to the economic nature of LPAC and expenditures according to functions (services), with quadratic regression, which seems to offer an optimal model.

We found evidence of the existence of economies of scale for the studied period (2017-2022), and for expenses according to the economic nature of LPAC only for three years (2017, 2018, 2021). The optimal size varies from 28,047 inhabitants in 2017 to 13,047 inhabitants in 2018. We found evidence of the existence of

economies of scale for expenses according to functions (services) for two years (2017, 2019).

The optimal size for services depends on 15,368 inhabitants in 2017. As can be seen from the result of the existence of the economy of scale, it was evident only in the first years of the reform, from observing the data during processing them, there was a disproportionality of the expenses in years for the same service, which may be the reason for the non-evidence of the existence of economies of scale.

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Notes:

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[2.] https://buxheti.info/
[3.] https://bashkiteforta.al/monitorimi-i-performances-se-bashkive-publikime/

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