THE INFLUENCE OF MUNICIPALITY SIZE ON ITS EXPENDITURE- 
CASE STUDY FROM SLOVAKIA

Monika Vámošová42

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Abstract: Changing society (population aging, deepening regional disparities, globalization 
and increasing competition) influence public service requirements. Not only inhabitants but 
also organisations and other market participants require more services with higher quality, cheaper, more available and more modern.

There is a fragmented structure of public administration in many European countries, including Slovakia. Level of local government is made by municipalities (villages and cities) with different size. In the smallest municipalities there live only to 10 inhabitants, in the third highest municipality Prešov there are about 90 000 inhabitants, while all Slovak municipalities (except for capital Bratislava and second highest city Košice) has equal position, status and competences. It leads to problems of small municipalities that do not have enough money to provide all services in required quality. Some authors recommend them to cooperate or connect to bigger municipalities because of saving money.

The aim of this paper is to find out if there exist economies of scale in providing of public services by local municipalities. We tested it on many provided services represented by individual expenditure groups (by COFOG classification) and on total spending of 138 Slovak municipalities with city status. We used regression method and we found out that economies of scale exist, but only in some expenditure groups. It does not occur in others. The rule of economies of scale is partially valid.

Key words: economies of scale, expenditure, municipality

1. INTRODUCTION

There is fragmented structure of public administration in Slovak republic. There are about 2900 municipalities with different size (from 10 to 90 000 inhabitants), but with the equal rights, obligations and competencies. Some experts say that cooperation or creating bigger municipalities instead of small lead to saving money. They come from theory of economies of scale.

The aim of this paper is to find out if economies of scale in providing public services by Slovak municipalities exist. We use descriptive statistics and regression analysis to find out it. We focus on public services with the highest impact on municipality budget and overall expenditure on local public services.

2. ECONOMIES OF SCALE

Theory of Economies of scale comes from microeconomic Theory of the firm; it is dated from Adam Smith. Economies of scale is competitive advantage that firms reach because of larger scope of their activities. The larger amount of outputs, the smaller cost of providing services.

42 University of Economics in Bratislava, Dolnozemská cesta 1, 852 35 Bratislava, Slovakia
The theory of economies of scale is usable in public sector, since municipalities may be understood as production units [1]. In the case of public administration, economies of scale have a wider application. Main argument is that municipalities provide comparable services and there exist aggregate economies of scale, than fragmented structure of administration lead to higher expenditure on equal amount of provided services than in the case of smaller number of bigger municipalities [2].

Decreasing of unit cost comes from economies of scale of production technology and non-rivalry in consumption. Both effects usually decrease with increasing municipality size and result to U-shaped cost curve [3].

Economies of scale is frequent research topic and its existence was confirmed in many empirical studies [4], [5], [6]. In general, it is accepted that efficiency function in relation to unit size is U-shaped where the lowest point represents economies of scale effects. Analysis on economies of scale usually do not focus on location of vertex in U-shaped curve, they usually confirm or negate its existence. Most of these studies use unit cost or expenditure per capita as the dependent variable.

By Byrnes and Dollery [7] whose study came from many empirical studies on economies of scale, it was not sufficiently demonstrated. One third of studies confirmed U-shape, in 40% studies there was no relation between unit cost/expenditure and municipality size, in 24% studies there was diseconomies of scale and only in tenth of studies existence of economies of scale was sufficiently demonstrated.

By Katsuyama [8] several studies indicate that in 80% of provided services there is not possible to identify economies of scale. Similar results comes also from Soukupova et al. [9] who deals with Czech municipalities.

Issue of economies of scale analysis, which focuses on relation of municipality (or other organisation providing public services) size and efficiency is that it is difficult to measure services' outputs and there is no existence of objective measures of benefits of these services [10]. In practice, researchers usually use simplified method focused only on costs/expenditures where the output is only quantification of number of inhabitants or customers of provided [3], [11].

### 3. DATA AND METHODOLOGY

We test the existence of economies of scale in providing public services by 138 Slovak municipalities with city status that cover about 43% of total Slovak population. We use open data on municipality expenditure by COFOG in competence of the Ministry of Finance of Slovak republic and population data from Statistical Office of Slovak republic from 2015. The main variable selected for the analysis is expenditure per capita. Analysis was performed for the 10-year period from 2005-2015, since the result were very similar, we present only latest data from 2015.

We use log-linear regression model, dependent variable is expenditure per capita and independent is municipality size expressed by number of inhabitants. Municipality size is unevenly distributed, so it is transformed to log form. By the theory of economies of scale, we use quadratic function to set the trend of expenditure. We also use descriptive statistics (Table 1) to specify information on expenditure according to municipality size categories (quintiles).
Table 1: Information about expenditure by different municipality size

<table>
<thead>
<tr>
<th>municipality size</th>
<th>general public ser.</th>
<th>economic affairs</th>
<th>housing...</th>
<th>education</th>
<th>total public serv.</th>
</tr>
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<td>median</td>
<td>average</td>
<td>median</td>
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<td>149,88</td>
<td>39,91</td>
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<td>211,23</td>
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<tr>
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<td>61,68</td>
<td>26,44</td>
<td>113,38</td>
</tr>
<tr>
<td>10 170-20 451</td>
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<td>132,19</td>
<td>60,01</td>
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<td>81,18</td>
</tr>
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<td>&gt;20452</td>
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<td>114,73</td>
<td>59,28</td>
<td>46,93</td>
<td>68,24</td>
</tr>
</tbody>
</table>

4. RESULTS

Graph 1: Structure of the expenditure of Slovak municipalities (with city status)

You can see (Graph 1) average expenditure of Slovak cities on examined groups of services by COFOG. It reflects competencies in specific areas of provided services. In our analysis, we focus on services with the largest impact on the municipality budget (general public services, economic affairs, housing and community amenities and education) and overall expenditure on all provided services.
Graph 2: Relation between municipality size and total public service expenditure

Results of economies of scale analysis are shown in the Graph 2. Log-linear regression show that economies of scale is significant in providing of all services. By the average expenditure, we can see bigger the municipality size, lower the total average expenditure on public services.

Graph 3: Relation between municipality size and general public services expenditure

However, if we see analysis of individual services, results are not so clear. We can see economies of scale in the field of general public services (Graph 3). Regression show that economies of scale is significant. By the average expenditure and median too, we can see bigger the municipality size, lower the expenditure on general public services.
From descriptive statistics, we can partially see that average expenditure on economic affairs increase with bigger municipalities. Regression shows economic affairs expenditure as significant, but the coefficient has a positive value. In the Graph 4 there is no U-shaped curve typical for economies of scale.

Although we can see U-shaped curve in the field of housing and community amenities (Graph 5), and average expenditure decrease with increasing number of inhabitants, regression show that economies of scale in this area of public services is not significant.
Regression expressing relationship between education expenditure and municipality size show that economies of scale are significant. By the average expenditure and median too, and in the Graph 6 we can see bigger the municipality size, lower the expenditure on education.

5. CONCLUSION

Results of our analysis are similar than newer studies on economies of scale, there is not clear existence of economies of scale in all the examined public services. There are different results for relationship between municipality size and overall municipal expenditure in compare with expenditure on specified field of expenditure (by COFOG).

The existence of economies of scale is confirmed in total local public expenditure, expenditure on general public services and expenditure on education. In other examined services (economic affairs, housing and community amenities), it is not significant or has a positive value.

By our study, economies of scale is related with administrative cost of municipalities and education. In general, we cannot identify economies of scale in providing public services by local municipalities with city status in Slovakia.

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REFERENCES


