

Analysis of Selected financing the Public Goods by Municipalities

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Abstract: In the Czech Republic but also in other countries, it is seen inefficiencies in the providing of public goods. The main reason is lack of funds of providers by public goods particularly by the founders of public organizations and institutions providing public goods. The founder may be by the valid legislation in the Czech Republic, municipality or country. The reform of public finances, particularly the area of decentralization, brought municipalities considerable burden on their budgets. Municipalities are forced to spend more money on goods and services of social character. Each of the states is looking for new ways to ensure adequate funding, at the present. The Czech Republic is no exception. In the Czech Republic is one of the options to raise funds from the state budget, particularly in the tax assignment. The adjustment methodology used to calculate the share to 21,4% shared taxes would increase tax revenues, which comprise the part of total revenue budgets of municipalities. Change should be in the introduction of new criteria, and it the criterion of inhabitants over 65 years.

Key-Words: Public goods, pure public goods, RUD, criteria of RUD, the number of inhabitants over 65 years, Spearman coefficient correlate.

1 Introduction

Municipalities need for providing ensuring their activities sufficient financial resources. Tax revenues represent the most important municipal budgets income. These are the yields of taxes which are redistributed to municipalities from the state budget on the basis of tax assignment. The yields of taxes represent unstable revenue and municipalities don't exactly know how much amount of funds received from taxes. The tax assignment affects the fiscal autonomy of municipalities and it is undergoing constant development.

In the Czech Republic is providing public goods mainly in the responsibility of the public sector. These are various public institutions, organizations and other organizational units (according to the Act No. 218/2000 Coll. the budgetary rules and the Act No. 250/2000 Coll. the budgetary rules of regional budgets) which are established by authorities state and local governments (municipalities, regions).

Municipalities don't provide effectively public goods at the present. One of the main reasons is the lack of funds founder's public

institutions and organizations that provide public goods. It is necessary to look for ways to find funds. One of the options increase and raising funds to municipalities is to adjust the tax assignment ("RUD"). Adjusting of RUD may contribute to secure additional funding to implement the important and essential public goods, particularly in the social area. This article will deal this issue. The aim of this article is to modify the methodology for calculating the share of shared taxes in the Czech Republic, namely the proportion of 21,4%, which are subsequently redistributed according to laid down by law of criteria.

2 Public goods provided by municipalities in Czech Republic

Municipalities are required to provide its inhabitants a range of public goods and services (sometimes collectively identified as public goods). At the time when it occur decentralization to public administration, municipalities are forced to provide public services social character that they must be financed from own resources. For details [3, 6].

Each municipality is forced to consider which public goods will finance, so as to ensure their adequate level. Municipalities provide the pure public goods and mixed public goods. The pure public goods are provided consumer free of charge. The larger groups of public goods are the mixed public goods that the municipality provides its residents. These public goods don't have zero of marginal cost and consumers can be excluded from consumption through the price system (or can be introduced rationing, but it is applied to a lesser extent).

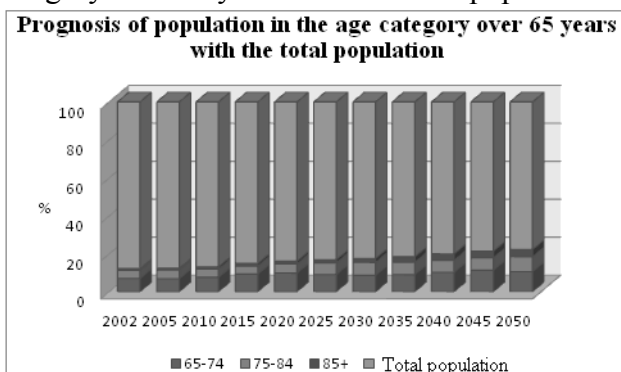
The municipality is trying to social righteousness at the present. She finances public goods that they fall within the social sphere, namely [5]:

- to care for older inhabitants - providing medical care, public transport, running a retirement home, pensions for seniors;
- the socially weak groups - public transport, shelters, various centers which help people in distress;
- basic of education for all population groups.

2.1 Analysis of financing municipalities in the social sphere

At present it occurs reduction of funds from the municipality which expend in the social sphere. In recent years, it occurs aging population and the number of inhabitants in post-productive age (hereinafter referred to as "seniors") it will be to increase continue. (See Fig. 1)

Fig. 1: Prognosis of population in the age category over 65 years with the total population

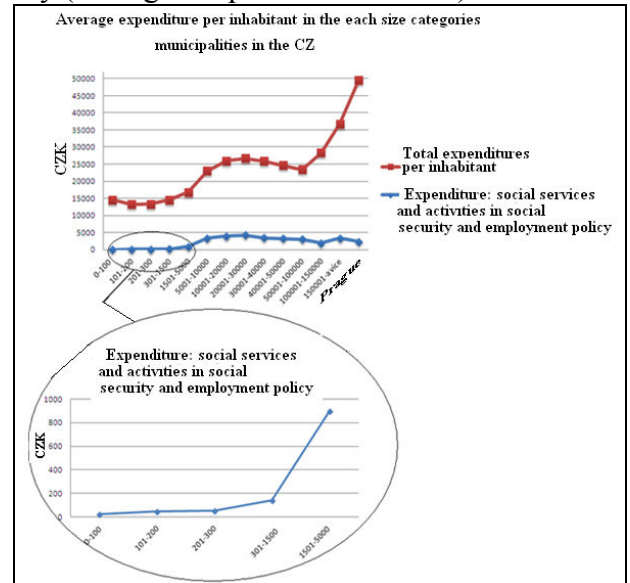


Source: own according to date [2]

The share of expenditure in this sphere on total expenditures represents substantial part and it is expected that this share will continue to

grow. The average share represents almost 5 % in the period 2004-2007. See Fig. 2.

Fig 2. Expenditures on social services and activities in social security and employment policy (average the period 2004-2007)

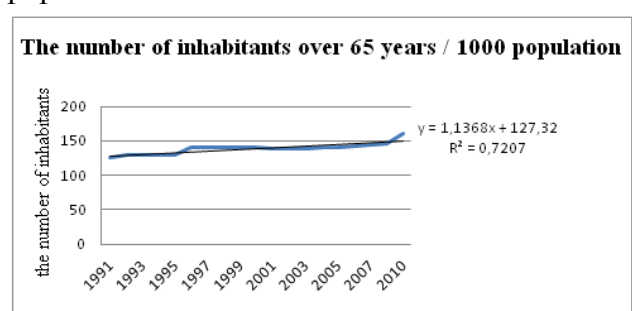


Source: own according to date [1]

Under the aforementioned of figures (Fig. 1 and Fig. 2) it shows that expected the growing trend in the population aged 65 years in the future and the associated the increase expenditures budgetary of municipalities in the social sphere.

Municipalities consist approximately of 30% of inhabitants older over 65 years and they represent about 1/3 of the total inhabitants of municipality. (See Fig. 3) And just increasing number of seniors leads to greater requirements at municipalities on the delivery of social services and social care.

Fig. 3: The evolution of number of inhabitants over 65 years per 1000 in population



Source: own according to date [2,10]

Municipalities receive on the above social services and social care specific grants from the Ministry of Finance from the chapter General

Treasury Administration from state of budget. Other sources of funding are from users of payment services and care, private funds and other sources (presents, sponsorship, etc.). [4]

3 Modified methodology for calculating the share to 21,4% of the shared taxes focusing on municipalities in Czech Republic

The methodology applied in the Czech Republic to the calculation of the share to 21.4% of the shared taxes is governed by the amendment of Act No. 243/2000 Coll. On Tax assignment, as subsequently amended, applicable to municipalities in the Czech Republic (published as Act No. 377/2007 Coll. with effect from 1st January 2008) at the present.

Last year in the Czech Republic it has been discussed about another change of financing municipalities (consequently RUD), which it will redistribute larger funding for budgets municipalities. The similar model is applied in the Slovak Republic (Slovakia), which it is comparable with the model in the Czech Republic. Slovak municipalities funding system is comprehensive in terms of appropriately selected criteria (altitude, number of students of art schools, the number of inhabitants aged over 62, etc) and It based on statistical data, which eliminates a certain degree of subjectivity. [11]

One approach in dealing with the situation in the Czech Republic, which it described above is an adjustment Slovak RUD methodology to conditions in the Czech Republic. Part of the criteria used in the Slovak methodology will be used in the methodology; in particular the criterion of population over 65 years (Slovak model uses for people over 62 years). The question is why the criterion of the number of inhabitants over 65 years to incorporate in the methodology of RUD? The proof is not only the result of correlation analysis, but too Fig. 1, 2 a 3. The correlation analysis examines dependence on whether the number of inhabitants over 65 years depends in the total population of the Czech Republic.

It establishes the null hypothesis if expenditure on social services and activities in social security and employment policy per

inhabitant in Czech Republic doesn't depend on total expenditures per inhabitant, ie. that increase of the total population doesn't lead to increase expenditure on social services and activities in social security and employment policy per inhabitant in Czech Republic. Data will be used for subsequent analysis from each size category of municipalities in Czech Republic.

Dependence will be examined using the Spearman correlation coefficient, because there is doubt about the normal probability distribution of two-dimensional random selection.

The significance level was chosen $\alpha = 0,05$. For the calculation it used statistical software STATISTICA version 5.1. The solution of correlation analysis is following.

Table 1: The result of correlation analysis of statistical software STATISTICA

Variable	Prom1	Prom2
Prom1	1,000000	0,665934
Prom2	0,665934	1,000000

Source: own

where:

Prom1 ... Expenditure: social services and activities in social security and employment policy per inhabitant in Czech Republic,
Prom2 ... Total expenditures per inhabitant.

From the above table (Table 1) it shows that the correlations are significant between the variables. It was rejected the null hypothesis as a result of comparing p -values and level of significance, where p -value reaches a lower value than the significance level 0,05. It was demonstrated that the relationship is between expenditure on social services and activities in social security and employment policy per inhabitant and total expenditures per inhabitant. Value Spearmanova correlation coefficient reaches positive value, ie. positive high correlation. The increasing the value of expenditure referred to above will grow total expenditures per inhabitant. It can occur increased their debt in case of certain municipalities.

Based on the above it can be considered relevant to incorporate of the number of inhabitants over 65 years in the methodology of

calculation of the share to 21,4 % of the shared taxes.

3.1 Application of new criterion in the methodology of RUD

The adjustment methodology of RUD will be based on the new criterion, which it is applying in the Slovakia too.

The current methodology of RUD in the Czech Republic it is consist of criteria:

- simple number of inhabitants with weight 3 %;
- cadastral area with weight 3 %;
- modified number of inhabitants with weight 94 %.

The weights of individual criteria are the result of political negotiations.

The new criterion is instead of criterion the current share of the number of inhabitants in the municipality to the total population in the Czech Republic. The original criterion of the number of inhabitants in proportion to total population in the Czech Republic had assigned a weight of 3%. The new criterion number of inhabitants over 65 in the municipality to the total population over 65 years in the Czech Republic ("the criterion of population over 65 years) took over its weight 3%. The weight remained unchanged in the case of criterion proportion the total cadastral area of the municipality to cadastral area of the Czech Republic. When but it is comparing these two criteria given in terms of weight the resulting percentage, it has certainly the importance of the criterion of population over 65 years.

The importance of this criterion is that the time horizon in terms of its value is variable, ie. that the number of inhabitants over 65 years which they living in the municipality and the total population over 65 years in the Czech Republic according to the above analysis it can increase. Conversely cadastral area is fairly stable and does not anticipate the increase or decrease in comparison with population over 65 years. It therefore follows that it is appropriate to adjust and balance these two criteria. Adjustment consist of increase the weight of criterion the number of inhabitants over 65 years by 1% at 4%, and the criterion cadastral

area to the total cadastral area of the Czech Republic with weight of 2%, because even this criterion cannot be ignored for has importance, for example in terms of the entrepreneurship in the municipalities or municipalities.

The new methodology of RUD in the Czech Republic it is consist of criteria:

- number of inhabitants over 65 years with weight 4 %;
- cadastral area with weight 2 %;
- modified number of inhabitants with weight 94 %.

The resulting methodology should be according to the following formula (1):

$$\begin{aligned}
 PD_i &= PD_1 + PD_2 + PD_3 \\
 PD_1 &= \frac{V_i}{V_n} * 2 \\
 PD_2 &= \frac{OB_{ipp}}{OB_{pp}} * 4 \\
 PD_3 &= \frac{\text{multiples } K_{pi}}{\sum_{i=1}^n \text{multiples } K_{pi}} * PD_n * 94
 \end{aligned} \tag{1}$$

where

PD_i : share of the resulting i -th municipality to 21.4 % of the shared taxes;

PD_n : overall percentage on other municipalities involved in the gross national income tax according to § 4 paragraph 1 point. b) - f) of Act No. 243/2000 Coll. On Tax assignment;

V_i : cadastral area of the i -th municipality in [ha] of 1 January preceding calendar year;

V_n : cadastral area of the Czech Republic [in ha] of 1 January preceding calendar year;

OB_{ipp} : population over 65 years in i -th the municipality on 1 January preceding calendar year;

OB_{pp} : population over 65 years in the Czech Republic on 1 January preceding calendar year;

K_{pi} : multiple of coefficients of gradual transitions [15] i -th municipality;

$\sum_{i=1}^n K_{pi}$: the sum of all multiples of the coefficients of gradual transitions in other municipalities (except cities: Prague, Brno, Ostrava, Plzen);

2, 4 and 94 ... weight of the criteria [in %].

3.2 Comparison of old and new methodology of RUD

For application of the modified method it was chosen city of Brno and the small municipality Pavlice in the Southern Region. Here it can be seen that in Brno (large city in terms of number of inhabitants) is the high number of seniors and that in small municipality share is high the percentage of seniors too. Health and social facilities are established as well in a small village, as Pavlice.

Following the calculation it shows percentage of the share to 21,4% of the shares taxes at selected municipalities in the comparison new methodology and present (old) methodology of RUD. (See Table 2)

Table 2: Comparison of old and new methodology of RUD in Czech Republic

Municipality	The resulting 21,4% share of shared taxes		Difference (New– Old)
	Old methodology	New methodology	
Brno	5,6964 %	5,7552 %	0,0588
Pavlice	0,00307 %	0,00322 %	0,00015

Source: own according to date [15]

The application of the new methodology (inspiration from the model implemented by the Slovakia) it shows that there is the slight increase in the percentage of small municipality.

The percentage increase is dependent:

- the number of inhabitants over 65 years;
- coefficients of gradual transitions;
- intervals of size categories of municipalities.

This step could improve the financing of social care and securing high-quality age for older residents in the municipalities.

4 Conclusion

The current financing of municipalities is focused mainly for calculating the share to 21.4% of the shared taxes in the methodology of RUD. Shares of the revenues are redistributed to municipalities on the basis of three criteria. In order an effective redistribution, it is necessary to have other

criteria that reflect the characteristics of individual municipalities.

The adjustment would help secure additional funding to municipalities. One possible criterion is the number of inhabitants over 65 years. To support the inclusion criteria it was performed correlation analysis using the Spearman correlation coefficient, which confirmed the relationship between expenditure on social services and activities in social security and employment policy per inhabitant and the total expenditures per inhabitants.

It is trend. The outflow of older people from cities to municipalities, where they can find peace, next required of health care and social facilities in the same quality as in the city, at the present. On this basis it arise municipalities other costs they absorb funds.

It is possible conclude that introducing a new criterion of number of inhabitants over 65 years and new weights for the criteria of the cadastral area to the total cadastral area of the Czech Republic and the criterion of number of inhabitants over 65 years in no way it cause any significant change.

Can be expected the aging population will continue in the future. It is therefore necessary to include this aspect in the methodology of RUD in the Czech Republic.

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