

Analysis of financing the Municipalities in the Czech Republic

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Abstract— Municipalities not only in the Czech Republic need for providing ensuring their activities sufficient financial resources. In the Czech Republic tax revenues represent the most important income of municipal budgets. These are the yields of taxes which are redistributed to municipalities from the state budget on the basis of tax assignment. The tax assignment affects the fiscal autonomy of municipalities and it is undergoing constant development.

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 providing local services. 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.

Keywords— Tax Assignment, Criteria of Tax Assignment, The number of inhabitants over 65 years, Shared tax revenues

I. INTRODUCTION

Territorial self-government in the Czech Republic is performed by municipalities in the form of basic self-governing territorial divisions. The competence and principles of these self-governing territorial divisions have been formed over several decades with regard to the ongoing reforms being made to public administration and public finance.

Currently in the Czech Republic the model of mixed public administration is applied. In this model public administration is performed by authorities of self-governing territorial divisions (municipalities and regions). The principle of these basic self-governing territorial divisions, particularly the principle of self-government, is enshrined in the Constitution (Chapter Seven). The Constitutional Act states that in specified public affairs at the local level municipalities make decisions by themselves without state interference, which aims to

establish a functioning legal and regulatory framework and to supervise its observance.

Another law governing the competence of municipalities is Act No. 218/2000 Coll. on municipalities, as amended. This law states that the municipality is an essential part of territorial self-government; it is a public corporation that manages its own property, regularly prepares its own budget, acts in all legal matters in his own name, is responsible for its own actions, takes care of its citizens by satisfying their needs and takes care of the overall development of its entire territory. Furthermore, this law defines exhaustively the dual competence of the municipality, i.e. autonomous and delegated. In exercising delegated powers the municipality performs selected activities of government and its range of powers depends on the legal authority, the so-called state/municipality entrusts the execution of specific activities. In the case of independent jurisdiction, the municipality assists in ensuring regional policy objectives, particularly by creating conditions for economic, social and cultural development of its territory. In order to fulfill these objectives it is necessary for municipalities to ensure a stable income of funds.

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

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area and transport infrastructure. For more next details to this area is [3, 4, 12].

The main objective of the article is to analyze and evaluate present models of the Tax Assignment in the Czech Republic according to defined criteria in period 2008 - 2011. Will be analyzed 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.

II. MODEL OF TAX ASSIGNMENT FOCUSED ON MUNICIPALITIES IN THE CZECH REPUBLIC IN PERIOD 2008-2011

The key legislation that governs the allocation of resources within the system of public budgets is Act No. 243/2000 Coll. on the budgetary allocation of taxes (called also Tax Assignment). Budgetary allocation of taxes in the Czech Republic has developed since 1993. At this time there was an increase in the share of income tax revenues of municipalities. In 2001, regions emerged as "higher territorial self-governing divisions". This led to changes in the Tax Assignment by means of Act No. 243/2000 Coll. on the budgetary allocation of certain tax revenues of self-governing territorial divisions and certain state funds, as amended, otherwise known as the Act on the Tax Assignment.

The significance of the Act No. 243/2000 lies in fact that it determines which public budget receive the revenues (or the % share of the revenue) of the existing types of taxes, and it is these tax revenues which are a critical part of regional and state budgets.

Tax Assignment defines certain types of taxes that are allocated to the budgets of local authorities. These are "assigned" taxes. Tax theory defines "assigned taxes" as taxes imposed under nationwide applicable tax laws, the proceeds go directly to the municipality's budget. They are entrusted by the municipality to administration. It is for example: real estate tax; tax on corporate income, if they are taxpayers of the municipality).

Another type of tax that accrues to the budget of territorial self-governments according to Tax Assignment is tax levied in accordance with nationally applicable tax law (i.e. nationwide). This is a so-called "shared tax". Shared taxes pursuant to the law are law are taxes where the revenue from income tax is split as a percentage between the central budget and the budgets of lower levels, or the revenue is shared by multiple budgets. Here the fiscal autonomy of municipalities is limited, almost to the point of being insignificant.

Tax revenues are one of the most important sources of income for municipalities in the Czech Republic and affect their financial stability. At present they represent about half of all the total income of municipalities. [15, 16]

The tax revenues represent an important portion of revenues from shared taxes, namely the yield tax on personal income from dependent activities (aggregate, excluding 30 % of the yield tax on personal income from independent business activities), the yield value added tax, the yield legal entity

income tax without taxes paid by municipalities. Since 2009 tax yields represent shared almost 80% of tax revenues municipal budgets. (See Fig. 1, 2)

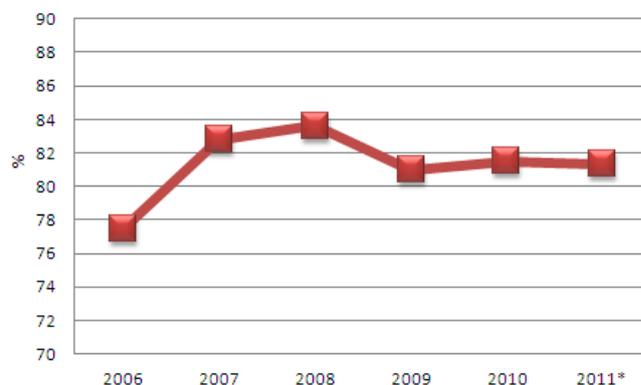


Fig. 1: The development proportion of tax revenues in total revenues of municipalities in period 2006-2011

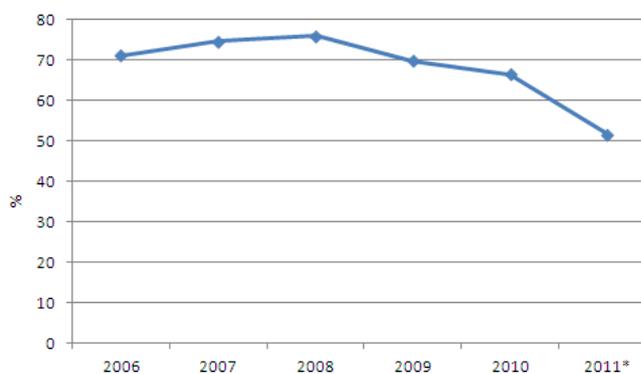


Fig. 2: The development proportion of shared tax revenues in total tax revenues of municipalities in period 2006-2011

A. Methodology for the redistribution of yields from shared taxes

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.

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

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

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

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

$$\begin{aligned}
 PD_i &= PD_1 + PD_2 + PD_3 \\
 PD_1 &= \frac{V_i}{V_n} * 3 \\
 PD_2 &= \frac{OB_{ipp}}{OB_{pp}} * 3 \\
 PD_3 &= \frac{\sum_{i=1}^n \text{multiples } K_{pi}}{\sum_{i=1}^n \text{multiples } K_{pi}} * PD_n * 94
 \end{aligned}
 \tag{1}$$

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} : number of inhabitants in i -th the municipality on 1 January preceding calendar year;

OB_{pp} : number of inhabitants in the Czech Republic on 1 January preceding calendar year;

K_{pi} : multiple of coefficients of gradual transitions [23] 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);

3 and 94 ... weight of the criteria [in %].

The methodology for calculating the percentage of the share of concrete municipality is described nearer in [15].

B. Weaknesses in the system of financing municipalities in period 2008-2011

The current model is confronted with weaknesses, which consist in:

- criterion of cadastral area with a weight of 3%, which leads, paradoxically, not to a merger of small municipalities in terms of size but to the benefit of small municipalities whose area built up of less than 2% (for example municipality Krystofovy Hamry).
- lack of consideration of individual characteristics and requirements of the municipalities in terms of the redistribution of revenues from shared taxes, especially number of residents over the age of 65 years which currently shows a growing trend in the Czech Republic. This also relates to the specification of weight of the individual criteria, which also does not respect the characteristics of individual municipalities.

- lack of respect to the principle of stimulation¹ of the revenue from personal income tax from dependent activities and from personal income tax from independent business activities.
- separate assessment of three major cities (Plzen, Brno and Ostrava) in terms of the intervals of size categories and the allocation of coefficients of successive transitions to other municipalities.
- intervals of size categories of municipalities: due to the significant reduction from the original 14 to 4 - grouped heterogeneous municipalities in the intervals 301 – 5,000. (See Fig. 2)

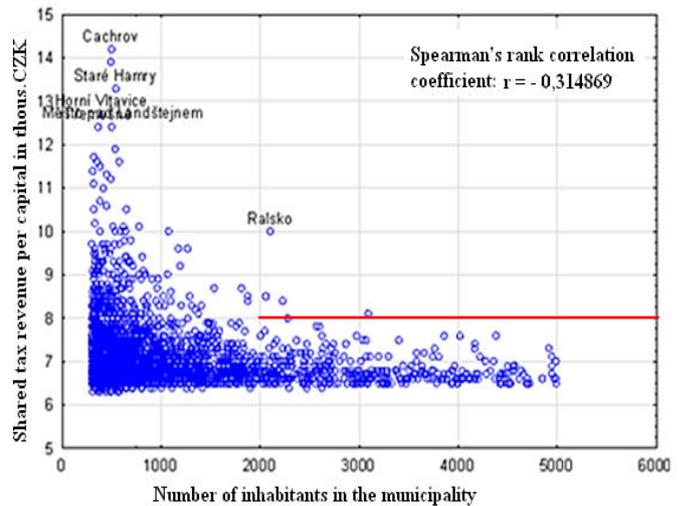


Fig. 2: Size of the shared tax revenue per capita in the interval size categories of municipalities from 301 to 5,000

- progressivity in the tax yield in the interval size categories of municipalities 5,001 – 30,000. (See Fig. 3)

¹ Principle of stimulation is one of three principles applied in the current financing of municipalities, which should be taken into account when analyzing the issue of Tax Assignment. Next principles are principle of mobility (catchment) and principle of regionalization.

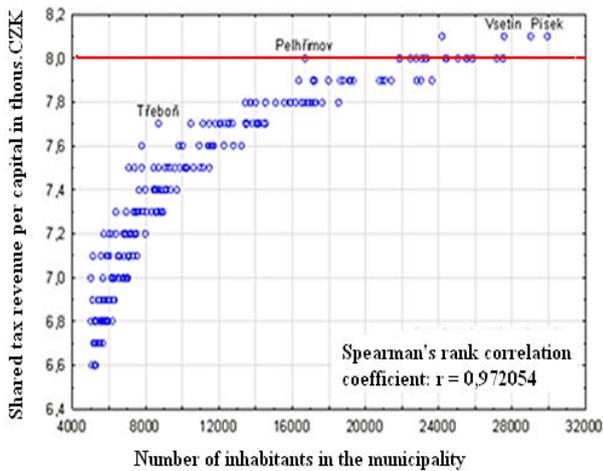


Fig. 3: Size of the shared tax revenue per capita in the interval size categories of municipalities from 5,001 to 30,000

Can be expected reduction of funds from the municipality in the future which the municipalities must expend not only in the social sphere, but and in this context in the transportation infrastructure. See more is [3]. 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. 4)

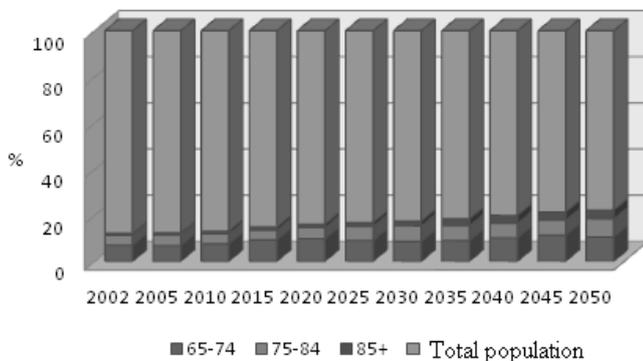


Fig. 4: Prognosis of population in the age category over 65 years with the total population

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. 5.

Average expenditure per inhabitant in the each size categories municipalities in the CZ

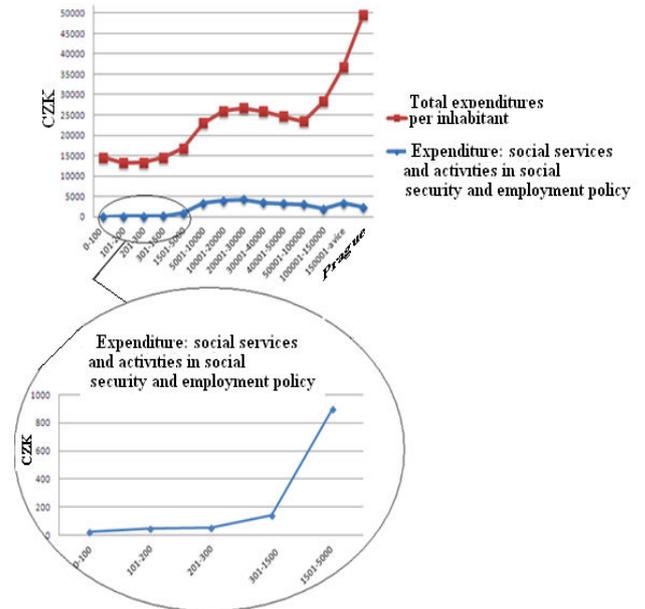


Fig. 5. Expenditures on social services and activities in social security and employment policy (average the period 2004-2007)

Under the aforementioned of figures (Fig. 4 and Fig. 6) 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. 6) And just increasing number of seniors leads to greater requirements at municipalities on the delivery of social services and social care.

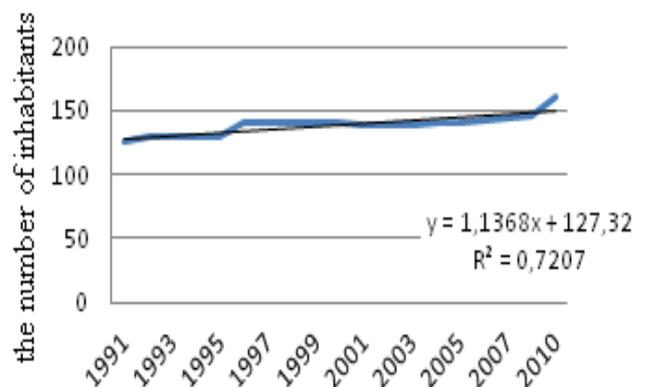


Fig. 6: The evolution of number of inhabitants over 65 years per 1000 in population²

² R² is Index of Determination. See more is [15].

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.). [10]

C. Tax on personal income from self-employment

Tax on personal income from self-employment is called too tax person income from independent business activities.

According to the current Tax Assignment of model, tax revenue to the sum of 30% of the advances for personal income tax belongs to municipalities. This is a so-called motivational component in the framework of shared tax revenues flowing into municipal budgets, which aims to create favorable conditions for entrepreneurship and entrepreneurs in the municipality. At present the tendency to create conditions for business is low or nonexistent.

Municipalities have no motivation to create favorable conditions for business, since they do not guarantee that the entrepreneur will also have their permanent residence in the given municipality. This is the application of the same approach in the redistribution of income as in the case of taxes on corporate income tax.

The current Tax Assignment of model redistributes income from this tax to the budget of the municipality in which the entrepreneur resides on the last day of the taxable period to which the tax applies.

It is possible to change this situation on the basis of changes in the redistribution of this yield of tax and it to redistribute the revenues based on the permanent address of the business as it is stated in the commercial register. The argument for this approach is based on ideas from mayors, particularly those of municipalities that are dependent on tourism (e.g. Boží Dar, a municipality in the Central Krušnohoří). Another argument in favor of the changes is the emergence of an additional financial burden on the budgets of those municipalities that create a favorable business environment and try to attract and retain entrepreneurs in their municipalities.

III. IMPACTS OF MUNICIPAL FINANCING IN PERIOD 2008-2011

In 2008 there was an amendment to the law on budgetary allocation of taxes, which was published as Act No. 377/2007 Coll. with effect from the 1st of January 2008. This amendment is the result of the working group of the Association of Towns and Municipalities of the Czech Republic and the Ministry of Finance, the Chamber of Deputies of the Czech Republic and the so-called Zlin initiative.

The amendment reduced the size categories of municipalities from the original 14 to 4³. This important step

³ The amendment provides a separate conversion coefficient for large cities like Prague, Brno, Ostrava and Plzeň. These are cities that are ranked to the largest size category.

eliminates the large gaps between the size categories. In other words, previously if a municipality reached the boundary population and thus a higher size category, they could significantly increase their revenues from shared taxes. There has been a gradual introduction of the coefficients of transitions between size categories which has led to shares of individual municipalities forming a continuous curve. See is in the following table 1.

Table 1: Coefficients of gradual transitions

Number of inhabitants		Coefficients of gradual transitions	Multiple of gradual transitions
0	300	1,0000	1.000*number of inhabitants
301	5 000	1,0640	300 + 1.0640*number of inhabitants over 300
5 001	30 000	1,3872	5,300.8 + 1.3872*number of inhabitants over 5,000
30 001	a vice	1,7629	39,980.8 + 1,7629*number of inhabitants over 30,000

Another change is the increase in municipality allocation of shared taxes from the original 20.59 % to 21.4 %.

The resulting impact of the methodology is a paradoxical effect, consisting in an extreme increase of shared taxes revenue by almost 400 % (percentage of municipalities grew by almost 1,500 % in small municipalities into 100 inhabitants and by almost 600 % into 200 inhabitants) in small municipalities into 100 inhabitants with a large cadastral acreage. For example these are municipalities Modrava, Krystofovy Hamry, Prasily. The original idea to create the current model consisted in calling the economic pressure on small municipalities to merge in larger units. But the effect was the opposite. See is in the following table 2.

Table 2: Percentage of selected municipalities

Municipality	Number of inhabitants (1.1.2010)	Percentage of Municipality in yields of tax according to § 4 paragraph 1 point b) - f) of the Act on Tax Assignment		Percentage increase
		2006	2010	
Modrava	55	0.000215	0.003443	1,601.4
Krystofovy Hamry	77	0.000228	0.003016	1,322.8
Prasily	156	0.000776	0.005144	662.9

The size of shared tax revenue in each of size category of municipalities is show on following graphs (see Fig. 7, 8, 9). Requirements for a graph are:

- calculation of shared tax revenue per capita is based on the prediction of shared taxes in the amount of 116.8 mld. CZK;

- shared tax revenues include the following for the purpose of calculating percentage to 21.4% of national gross yield of: value added tax, aggregate of taxes on personal income (excluding redistributed 1.5% by number of employees in the municipality), legal entity income tax without taxes paid by municipalities;
- shared tax revenues include the following for the purpose of calculating percentage to 21.4 % from 60 % of national natural person income tax from independent business activities.

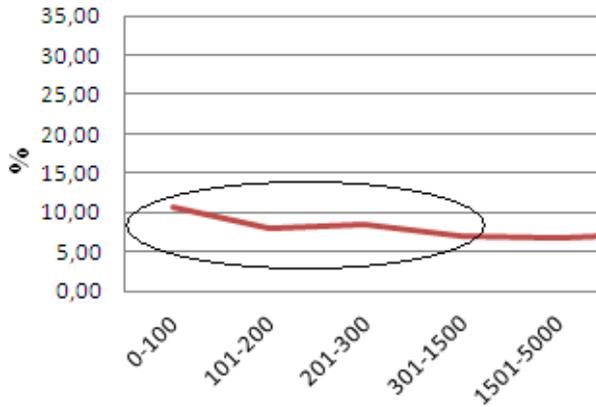


Fig. 7: Shared tax revenue per capita in thous. CZK in selected size category of municipalities

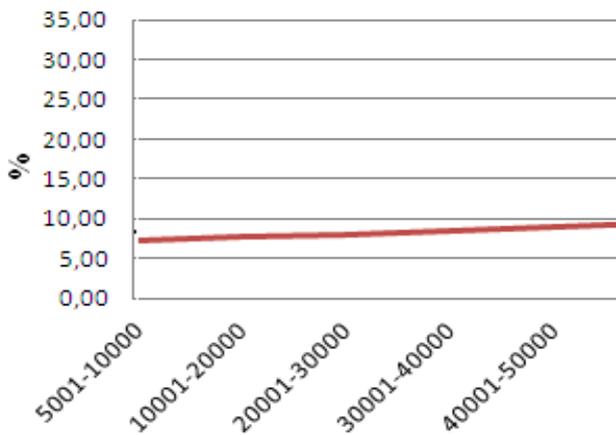


Fig. 8: Shared tax revenue per capita in thous. CZK in selected size category of municipalities



Fig. 9: Shared tax revenue per capita in thous. CZK in selected size category of municipalities

The marked part in the figure (see Fig. 7) represents many municipalities (approximately 5,300 municipalities). In the Czech Republic it is 6,245 municipalities (in the years 2012) and 4,867 municipalities have less than 1,000 inhabitants.

A. The proposal change in the financing of municipalities in the Czech Republic

Last years 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.

Table 3: Overview of selected characteristic focusing on financing municipalities in the Czech Republic and in the Slovakia

	Czech Republic	Slovakia
The combined model of fiscal federalism	Yes	Yes
Intervention of central government in the determination of tax rates	Yes only to local fees it is determined by law maximum limit	Yes only to local taxes the municipalities determined by rate themselves
Local Taxes	Don't used. There are only local fees.	Yes
Property tax	Yes	Yes
Tax powers	Low (except for property taxes and local fees)	Low (except for local taxes making up source own taxes)
Fiscal autonomy of municipalities	Low with tendencies to reduce state grants the benefit of their own tax revenues	Low, since 2004 is increasing the tax powers

The above table 3 shows, that the Czech Republic is the most similar with Slovakia. Important role in this case most likely represents a historic bond between them.

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. [14]

Czech Republic introduces changes in the financing of municipalities from 1st January 2013. The methodology includes only the introduction of one new criterion: the number of students and children of primary and nursery schools. It would be more appropriate to consider the introduction of criteria population over 65 years. This criterion respects the principle of mobility (catchment) and responds the process of aging population and increasing expenditures of municipalities in the area of health and social care. The Fig. 4, 5 and 6 are argument for the introduction of criterion population over 65 years, but and the result of correlation analysis in the following text.

B. Correlation analysis of dependence expenditure on providing social and health care in the total expenditures

The correlation analysis examines dependence expenditure on providing social and health care in the total expenditures per capita of municipalities.

It establishes the null hypothesis if expenditure on social services and activities in social security and employment policy per capita in Czech Republic doesn't depend on total expenditures per capita, 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 capita 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's rank 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 4: The result of correlation analysis of statistical software STATISTICA

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

where:

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

From the above table 4 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 capita and total expenditures per capita. Value Spearman's rank correlation coefficient reaches positive value, i.e. positive high correlation. The increasing the value of expenditure referred to above will grow total expenditures per capita. 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.

For other and more detailed analysis and further research it can be taken into consideration as the number of children and of students of primary and nursery schools established by municipalities.

IV. CONCLUSION

The ongoing reform of public administration and financial management of territorial self-government in the Czech Republic and in most European countries contribute to stronger and more efficient fiscal decentralization or to more efficient redistribution within the system of public budgets.

The current system of financing municipalities in the Czech Republic in force since 2008 reduces progressivity in their tax revenues at a minimum rate, but this system includes important weaknesses, e.g. progressivity in the tax yield in the interval size categories of municipalities 5,001 – 30,000 favors municipalities with high value cadastral acreage with small the number of inhabitants. These serious weaknesses are necessary to consider in future changes the system of financing municipalities in the Czech Republic.

Within finance system of municipalities is important area methodology of redistributed yields of shared taxes from the state budget into the municipal budgets. 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, which reflects the expenditure on social services and activities in social security per inhabitant. To support this criteria it was performed correlation analysis using the Spearman's rank correlation coefficient, which confirmed the relationship between expenditure on social services and activities in social security and employment policy per capita and the total expenditures per capita. This criterion is implemented to Slovakia in its system of financing municipalities.

The Slovak system of financing municipalities is exact and sophisticated in terms of appropriately selected criteria (altitude, number of students of art schools, population aged over 62, and others) in the redistribution of shared taxes which are based on statistical data, thereby eliminating the possible introduction of subjectivity into the system of financing municipalities. Disadvantage of this system can be seen in the introduction of only one shared tax revenue: personal income tax (until 2011).

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

Can be expected the aging population will continue in the future. It is therefore necessary to include this aspect in the methodology of Tax Assignment in the Czech Republic. It is necessary to look at the model as a dynamic model, as it includes number of inhabitants that changes over time. It is necessary to look at the model as dynamic model because it includes number of inhabitants (too number of inhabitants over 65 years), which changes over time. This aspect must be taken into account.

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