THE IMPACT OF THE ECONOMIC CRISES ON FINANCING OF MUNICIPALITIES IN SLOVAKIA

Jenčová S., Litavcová E., Štefko R., Maťovčíková D.*

Abstract: Municipality's financing represents a substantial part of borough politics. It results from the fundamental functioning of the municipality. One of the main tasks is not only to raise enough funds to cover and satisfy their needs, but also to guarantee their effective usage and to apply new approaches to multi-source municipality's financing. The budget of the municipality is closely linked to the state budget and its efficient management on the income site can ease the pressure on the state subsidies funding. The paper deals with the current issues regarding to financing of municipalities of the selected region of Svidník County with its 65 municipalities, yet the results can be applied to all Slovak municipalities. It has been proved that there is the strong link between preferred forms of financing and the view on the deterioration in the availability of financial resources in times of crises.

Keywords: municipality, autonomy, financing, standard resources, alternative resources, cluster analysis

Introduction

Municipalities (basic territorial units of the State) play an important role in regional and micro-regional development. Municipality is an independent self-governing territorial unit which unify citizens with permanent residence on its territory, it is actually the level of local self-government (Tej, 2011). Municipalities with their institutions have to make decisions about their financing. The question is, how they differ in this deciding. In generally, according to Ferencová, organisations, institutions, companies and firms have to be aware of social and cultural influence, they have to observe how they differ inside the society and within the markets where they operate. Consistent knowledge of cultural characteristics and particularities can decide on competitive advantage and right marketing decisions in the favour of target subjects (Ferencová, 2010). The system of financing municipalities has been known as fiscal decentralization since 2005. The basis for implementation of system's operation is to quantify the amount of specific powers to municipalities and therefore to indicate the necessary resources. Existence of fiscal decentralization is not arbitrary, but it is an economic necessity (Lipták, 1999). Its presence tends to lower levels of government decisions on the provision

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* **Ing. Sylvia Jenčová, PhD.**, **Mgr. Eva Litavcová, PhD.**, **Prof. Dr. Ing. Róbert Štefko, PhD.**, University of Presov in Presov, Faculty of Management, Slovakia;
Ing. Daniela Maťovčíková, PhD., VS of Management in Trenčín/City University of Seattle, Slovakia.
✉ corresponding author: eva.litavcova@unipo.sk

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of public goods and services, taking into account local peculiarities (Neubauerová et al., 2001). It is not just about the division of responsibilities, but also the power to obtain revenues. At the same time it is an economic - legal process of an efficient division of tasks between the state and other levels of local government, and decisions on whether public goods should be procured, but also how they should be financed (Medveď-Nemec, 2007). The idea is to replace transfers and subsidies channeled from the state budget to the budgets of municipalities and higher territorial units through tax revenues. Municipalities should be deciding themselves how to use these revenues.

Financing of municipalities

Municipality finances its needs mainly from its own revenues, state subsidies and other additional resources. Their tasks may also be funded from the resources associated with other municipalities, autonomies and other legal or personal entities. The municipality can carry out their tasks by using reimbursable financing resources and extra budgetary resources of financial funds. Thus, a key source of financing are income taxes from personal entities, which in current conditions are not sufficient to perform the original functions that result from the Act 369/1990 of the Statute.

Financial strategy and financial policy is based on relevant indicators, which are subject to evaluation and projection for the future. These indicators include tax strength of the municipality, financial strength of the municipality and debt capacity of the municipality (Žárska, 2007). Apart from those, there are indicators of financial capacity of municipalities such as self-sufficiency rate of 1 (indicator explains how much of the total revenue is obtained from the municipality's own resources and how much from foreign resources), self-sufficiency rate of 2 (applied to models of financing local governments, when the municipality performs well transmitted range of government), the rate of self-financing (MS> 1, → municipality is able to cover expenses from its own resources and allows it to accumulate a part of the means to budget for development activities) (Peková, 2004).

Local budgets, extra-budgetary funds and budgets of organizations constituting the financial system of the municipality, which determines the economy of municipality, should comply with many principles (Peková, 2004). The primary focus should be on the management according to the budget, some degree of financial autonomy, the consistency of the financial system, local public finance as a whole and system stability as a prerequisite for social and economic development and execution of all powers of local self-government. Apart from those mentioned efficiency and transparency of the financial system is expected together with minimizing the cost of tax collection and management of budgetary resources with a certain degree of control from the central government.

There are 25 regions, 8 autonomies, 70 counties, 138 cities and 2793 municipalities in the Slovak Republic. The budget for municipalities was 1.046 billions of euros

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for 2010, out of which current expenses represented 1.04 billions and capital expenditure constituted 6 millions euros (Zbierka zákonov, 2009).

As for the options on standard financing, the priority is to provide external resources (bank loans, bonds, leasing, factoring, forfeiting) and internal resources of financing (income from the municipality's property, income from local taxes and local fees). As for the possibility of alternative funding there is primarily funding through venture capital, financial resources from the EU Structural Funds (the European Regional Development Fund, the European Social Fund, the Cohesion Fund), loan programs, subsidies from state budget, contributory and guarantee programs.

Characteristics of the researched object

All 64 municipalities in the Svidník County in the eastern Slovakia were researched. Analyzed data were derived from a questionnaire filled in by all 64 municipality mayors. Besides questions regarding to standard forms of financing, the mayors were also asked questions about alternative forms of financing, awareness about municipality's funding opportunities, the impact of the crisis on funding and issues related to demographic characteristics of the municipality. In total, the mayors were asked 16 questions, of which 6 related to forms of financing. They have been further broken down to sub-questions for each of the listed form of financing (see Annex 1).

Methodological approach and Hypothesis

The initial focus was on questions about the importance of external and internal standard resources of financing for the existence of the municipality. The mayors had a choice of 4-grade Likert scale from minor to very important at the selected ten forms of financing. The scale did not include indecisive attitude.

With regard to set focus the aim was to find an optimal model describing the sample of data related to the mentioned standard forms of financing, and therefore, on the basis of the found model, divide the municipalities into clusters. Subsequently we described dependencies of specified clusters with other features of municipalities, which allow determining by what characteristics specified clusters differ and describe the dependencies in the context of finance.

Hypothesis 1: All municipalities in the Svidník Country can be divided into two distinct clusters depending on the importance of standard funding.

Hypothesis 2: The deterioration of funding availability is related to indication of the importance of standard sources of funding.

Evaluation

The research results were analyzed by SPSS program (SPSS, 2001). In order to reduce the dimensionality of ten manifest variables (label $o11\_1 - o11\_11$ without one of them) related to the standard forms of financing factor analysis was used,

which is according to SPSS knowledge base "*best for the interval variables, but also works well with ordinal data and also dichotomous data*". The resulting model explained the three extracted factors with eigenvalue greater than 1 to 76.787% of the variability of the original manifest variables. Reviewing communalities for 10 chosen variables has been very promising; the lowest reached communality was 0.515. Analyses of reliability of 10 chosen variables lead into Cronbach's alpha equaling 0.724.

Bryant and Yarnold criterion were moderately satisfied for 64 respondents and 10 variables (Agresti, 2002). According to them the STV ratio (the ratio of the number of subjects to number of variables) must be less than 5. The principal components analysis (PCA) was the best chosen extraction method. It is computed without regard to any underlying structure caused by latent variables. Varimax rotation is by far the most common choice as it minimizes number of variables having high load factor in a number of factors. Keiser-Mayer-Olkin test of the adequacy of the value of 0.731 confirmed the adequacy of the chosen set of variables. Bartlett test of sphericity (chi2 = 437.767, df = 45, sig = 0.000) confirmed that the correlation matrix of variables considered is not the unit matrix. Consideration of the factor weights (correlation coefficient between factor and variable) rotated solution gives a result shown in Table 1.

Table 1. Factor loadings

Standard financing form	Component		
	F1	F2	F3
o11_1 depreciation	−.834		
o11_2 profit			.860
o11_3 income from municipality property			.802
o11_4 revenue from local taxes and local fees		.607	
o11_5 shares of taxes in state administration		.898	
o11_6 bank loans		.595	
o11_7 bonds	.848		
o11_8 leasing	.834		
o11_9 factoring	.832		
o11_11 supplier credit	.702		

Source: own processing

Factor F1 is loaded with variables *o11_1*, *o11_7*, *o11_8*, *o11_9*, *o11_11* (How important is a specific external/internal resource of financing for your existence? *o11_1 - depreciation*, *o11_7 - bonds*, *o11_8 - leasing*, *o11_9 - factoring*, *o11_11 – supplier credit*). The appropriate name for F1 is *active financing*.

Factor F2 is loaded with variables *o11_4*, *o11_5*, *o11_6* (*o11_4 - revenue from local taxes and local fees*, *o11_5 - shares of taxes in state administration*, *o11_6 – bank loans*). The appropriate name for F2 is *passive financing*.

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Factor F3 is loaded with variables *o11_2*, *o11_3* (*o11_2 - profit*, *o11_3 – income from municipality property*). The appropriate name for F3 is *equity financing*.

The obtained factor model led to the extraction of standard financing from the perception of three factors, namely: factor *active financing*, *passive financing* and *equity financing*. These 3 factors generated by model were used as inputs for further analysis. Our primary goal was to find the breakdown of communities in terms of degree of importance of the standard forms of funding for municipal financing. Secondly, we intended to determine whether this breakdown is in a significant relation with perceived impact of the crisis on obtaining resources to finance community. Cluster analysis was chosen as an appropriate tool because it requires orthogonality of input variables provided by the Varimax rotation. The Varimax rotation was used in factor analysis of the original manifest variables, which led to the acquisition of three latent variables, which were further relied on. Application of cluster analysis on three extracted factors divided 64 municipalities into relatively balanced two clusters. These are obviously the clusters for the use of standard forms of financing. Numerous and percentage representation of municipalities in each cluster is indicated in Table 2. It has been verified by ratio assurance test (not listed here) , that the new variable cluster, acquiring the values 1 and 2, therefore number of cluster which the municipality belongs to, is a significant connection with nine out of ten considered standard forms of financing (except of *o11_2* characteristic - *profit*) .

Table 2. Cluster distribution

Cluster	N	% of combined
1	35	54.7
2	29	45.3
Combined	64	100.0

Source: own processing

Standardized variables are entering the algorithm of cluster analysis, whereas it works with distances and they must be of uniform scale. The principle of analysis is to search for similarities in the data sample based on distances between points in multidimensional space. Nearby clusters of points are searched on the basis of suitably chosen scale to measure distances between points and appropriately selected algorithm (like in Litavcová, 2011). Assumption of independence of variables entering the cluster analysis has been fulfiffed; it is clear from their nature as they are a product of a previous analysis of the PCA algorithm. Number of clusters found is the result of optimization of the used algorithm. A mean is

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calculated in each found cluster. A statistical test is evaluated for each variable to find out whether its mean is significantly higher, respectively lower than the overall centroid for all municipalities. We evaluated the cluster depending on which variables and in which direction they significantly differ from the overall centroid. One variable may occur in the description of both clusters. There are average values for individual clusters in individual factors in Table 3. Negative averages significantly lower and positive averages significantly above than overall centroid are formated bold.

Table 3 shows that cluster 1 is made of municipalities focused on significantly negatively at active *financing*, in *passive financing* and in *equity financing* cluster 1 is not significantly different from the whole group of municipalities. On the other hand, municipalities in cluster 2 are focused significantly positively on *active financing* and negatively on *passive financing*.

Table 3. Centroids

		Mean of Factor1 - *active financing*	Mean of Factor2 - *passive financing*	Mean of Factor3 - *equity financing*
Cluster	1	**-.7230087**	-.0909935	.3177343
	2	**.8725967**	.1098198	**-.3834725**
	Combined	.0000000	.0000000	.0000000

Source: own processing

In addition Table 3 demonstrates the dominant influence of the chosen factor. F1 - *active financing* factor is therefore the main element that affects the division of municipalities into two clusters. Cluster 2 represents municipalities with a significant important source of financing type *active financing*, cluster 1; on the other hand, consist of municipalities uninterested in *active financing*. Cluster 2 compared to cluster 1 has significant unimportant resources of financing of type *equity financing*. In the financing resources of type *passive financing*, two clusters of municipalities financing do not differ significantly. These financing sources are balanced for both types of municipalities.
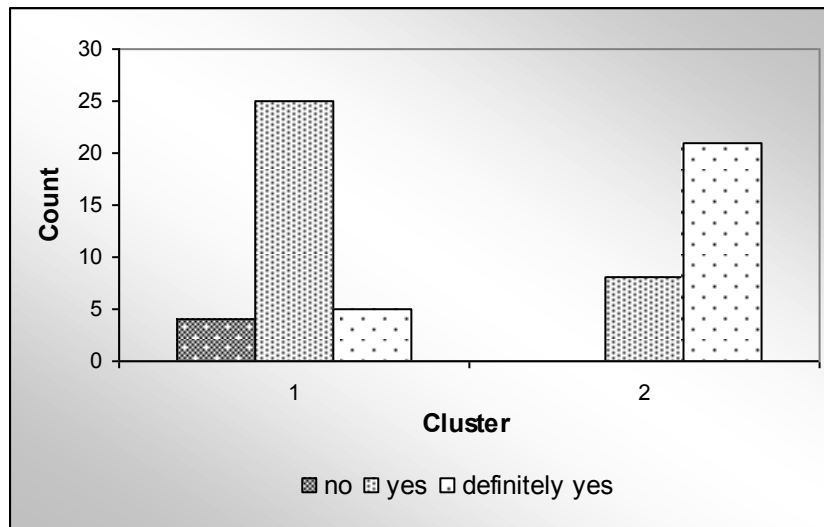
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Figure 1: Relation of belonging to cluster and deterioration of availability of financial resources
Source: own processing

Municipalities divided into two clusters perceive impact of the financial crisis differently. Mayors had a chance to express their opinions regarding to matters related to the crisis. Figure 1 shows that variable in consideration derived from question with: *"During the financial crisis, was the availability of financial resources necessary to fund in your village reduced?"* is a significant variable with regard to dividing the municipalities into two clusters (likelyhood ratio test G^2 = 39.693, p = 0.000). It is clear that municipalities from cluster 2 are significantly more inclined to a radical view on the impact of the crisis from Figure 2. Some municipalities from cluster 1 did not feel the impact of the crisis on the deterioration in the availability of financial resources. Note, both clusters have been based on the importance of the standard sources of funding to finance community. Hypothesis 2, namely: "*The deterioration of funding availability is related to indication of the importance of standard sources of funding*" is confirmed.

Dividing municipalities into two clusters was made on the basis of questions about statements on the use of standard financial resources on finer 4 grade scale. It turned out that the division into clusters is statistically significant in relation to several questions regarding to funding sources, where mayors were able to express only a strong position yes/no to the use of the resource.

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Table 4. Using financial resources in municipalities clusters.

Are you using internal standard resources for municipality financing?	
depreciation	all mostly no
profit	all mostly yes
income from municipality property	all use
revenue from local taxes and local fees	all use
shares of taxes in state administration	all mostly yes
Are you using external standard resources for municipality financing?	
bank loans	cluster 2 significantly more
bonds	cluster 2 significantly more
leasing	cluster 2 significantly more
factoring	nobody uses
forfeiting	nobody uses
supplier credit	nobody uses
Are you using alternative financial resources for municipality financing?	
financial resources from Structural funds	all use
venture capital	nobody uses
subsidies from state budget	cluster 2 significantly more
loan programs	cluster 2 significantly more
contributory programs	cluster 2 significantly more
guarantee programs	cluster 2 significantly more
financial resources from other funds	cluster 2 significantly more

Source: own processing

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Table 4 displays a brief use of resources. It is visible that the previous algorithm divided the municipalities into clusters so that the cluster 1 uses significantly fewer resources than the cluster 2. Hypothesis 1 is confirmed.

More detailed questions have also been analyzed - *"Has there been a situation deterioration in the use of a particular financial resource in times of financial crisis compared to the period before the financial crisis?"* It is evident in Table 5 that issues related to expressing an opinion on the reduction of availability of eighteen standard and alternative sources of funding in times of crisis are all but two (supplier credit, subsidies from the state budget), which were on the border of refusal of the null hypothesis, in a significant relation with relation to dividing the municipality into two clusters.

Table 5. Relation of belonging to cluster and usage of financial resources during the crisis.

Financial resources	G^2	d.f.	sig.
depreciation	12.874	3	0.005
profit	18.845	3	0.000
income from municipality property	31.688	3	0.000
revenue from local taxes and local fees 1	11.232	2	0.004
shares of taxes in state administration 2	19.938	3	0.000
bank loans 2	36.473	2	0.000
bonds 2	36.381	4	0.000
leasing 2	30.600	4	0.000
factoring	11.450	3	0.010
forfeiting	6.561	2	0.038
supplier credit	7.630	3	0.054
financial resources from Structural funds 2	17.600	4	0.001
venture capital 1	8.676	3	0.034
subsidies from state budget 2	7.632	3	0.054
loan programs 2	39.693	2	0.000
contributory programs 2	50.831	2	0.000
guarantee programs 2	10.903	2	0.004
financial resources from other funds 2	27.147	2	0.000

Source: own processing

Individual values on 5 point scale after the merger of two values (a value of 0 for definitely not + no + don't know; value 1 for yes + definitely yes) resulted in a significance which is in Table 5 indicated only by numbers beside the source of

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financing. Number 1 means that municipalities from the cluster 1 consider accessibility of mentioned resource of financing to be deteriorated, number 2 applies analogically to the cluster 2. Resources without number have not provided significant results for the adapted data.

Table 6 summarizes statistically significant contingencies in the layout of opinion to their accessibility against the relevancy to cluster in one selected financial resources. Of this table shows that respondents from cluster 2 more incline to positively values (yes, definitely yes) in response to resource bonds.

Table 6. Relation of belonging to cluster and degradation of availability of resource in times of crisis.

bonds						
	definitely no	no	I don't know	Yes	definitely yes	Sum
cluster1	4 (11.4%)	7 (20.0%)	22 (62.9%)	0 (.0%)	2 (5.7%)	35
cluster2	0 (.0%)	4 (13.8%)	5 (17.2%)	8 (27.6%)	12 (41.4%)	29
Sum	4 (6.3%)	11 (17.2%)	27 (42.2%)	8 (12.5%)	14 (21.9%)	64

Source: own processing

Summary

Municipalities of the Svidník County in the Slovakia can be divided into two clusters after the application of cluster analysis. The model captured about 77% of the variability in the data sample. Cluster 1 ranked the municipalities that were using significantly smaller number of financial resources compared to those in cluster 2. It has been proved that the municipalities from cluster 2 strongly preferred to use *depreciation*, *bonds*, *leasing*, *factoring* and *supplier credit* as the main source of financing, otherwise call active financing for our purposes. On the other hand, they consider the *profit and revenue of the municipality* less important as a financial resource and are significantly more sensitive to the deterioration in the availability of financial resources in times of crisis in the majority of resources (these are the sources with number 2 in Table 5, overall 10 out of 18 resources). It was further shown that the municipalities from cluster 1 consider *depreciation*, *bonds*, *leasing*, *factoring* and *supplier credit* as less important, are significantly more sensitive to deterioration in the availability of financial resources in times of crisis in a minority of sources (2 of 18), precisely in *the revenue from local taxes and local fees* and *venture capital*. Municipalities from cluster 2 are significantly more inclined to the radical view on the deterioration in the availability of financial resources in times of crisis.

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The key issue on which we focused in our research was the issue of the degree of importance of the use of standard forms of funding to finance municipalities. Our intention was to get to know the character of villages in order to split them into clusters so that clusters between themselves varied greatly, yet municipalities within each cluster differed the least. It turned out that the village district Svidník can thus be divided into two clusters, which can be identified as "richer" and "poorer". With regards to the mathematical and statistical system, this result can be generalized to all those rural districts of Slovakia that are characterized by the absence of major industrial center in the district and the greater distance from the highway, respectively the main road. Once we identified two specific clusters, we also focused on finding differences in the perceived impact of the crisis on the deterioration in the availability of financial resources. It turned out that clusters differ also in terms of feeling about the impact of the financial crisis.

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WPŁYW KRYZYSU GOSPODARCZEGO NA FINANSOWANIE GMIN NA SŁOWACJI

Streszczenie: Finansowanie gmin stanowi znaczną część polityki samorządu. Wynika to z podstawowego funkcjonowania gminy. Jednym z głównych zadań jest nie tylko zgromadzenie wystarczających środków na pokrycie i zaspokojenie potrzeb, ale także zagwarantowania skutecznego ich wykorzystania i zastosowania nowego podejścia do wielu źródeł finansowania gminy. Budżet gminy jest ściśle związany z budżetem państwa, a jego skuteczne zarządzanie po stronie dochodów może złagodzić presję na finansowania dotacji państwowych. Artykuł dotyczy aktualnych zagadnień związanych z finansowaniem gmin w regionie Svidnik w którym znajduje się 65 gmin, jednak wyniki mogą zostać zastosowanie do wszystkich gmin słowackich. Udowodniono, że istnieje silny związek między preferowanymi formami finansowania a widokiem na pogorszenie się dostępności środków finansowych w czasach kryzysu.

Słowa kluczowe: gmina, autonomia, finansowanie, środki standardowe, zasoby alternatywne, analiza skupień

融資危機對經濟的影響斯洛伐克直轄市

摘要：本市融資代表市鎮政治的很大一部分。它起因於基本功能的直轄市。的主要任務之一是，不僅籌集到足夠的資金來支付，並滿足他們的需求，而且能夠保證其有效使用和運用新的方法，以多源直轄市的融資。市政府的預算是緊密相連的國家預算，其高效的管理收入網站上可緩解壓力，對國家補貼資金。融資直轄市所選區域的Svidnik縣與65個市，但結果與當前問題的論述，可應用於所有斯洛伐克直轄市。它已被證明是首選的融資形式的惡化，在危機時期的財政資源的可用性和看法之間的密切聯繫。