

# Local governments' revenue and expenditure autonomy as a determinant of local public spending on culture. An analysis for Polish rural municipalities

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## Abstract

The aim of this paper is to define expenditure and revenue decentralization indicators for Polish municipalities and to analyze if and how the limits of spending and revenue autonomy influence local government spending behaviors. The expenditure decentralization is difficult to measure, that is why the analysis of the effects of limits on spending autonomy are less common in the literature than those which relate to the revenue autonomy. In this paper, I propose indicators of revenue but also expenditure decentralization for Polish municipalities. Using statistical analysis and econometric panel analysis for rural municipalities in years 2000-2014 I study if and how these indicators explain local spending policy. I focus on spending for culture using median voter demand framework. Expenditure for culture is a small part of local budgets, but vital from the social point of view. Municipalities in Poland are important creators of local cultural life, which is especially important in less developed or peripheral regions, where citizens do not have access to private cultural institutions. I present that limits in local governments spending and revenue autonomy influences the local spending behaviors. I found that those limits caused not necessarily effective cost minimizing and create the important problem of horizontal equity. At the same time in less autonomous municipalities spending are less related to citizens demand- so there are problems to attend allocative efficiency. My study presents that the problem of the effects of incomplete expenditure decentralization is very important but poorly recognized in the literature.

**Keywords:** public expenditure on culture, local governments' autonomy, fiscal federalism

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## Introduction

Decentralization is a complicated phenomenon. We can discuss for example political, administrative, fiscal and economic decentralization. (Litvac, Ahmad, & Bird, 1998) All these varieties of decentralization coexist together. The other problem in studying of decentralization is that in practice there is no “full” decentralization, there are different limitations of the local autonomy, which affect different aspects of local government decisions. It can be analyzed different levels or degrees of decentralization/autonomy. In my study, I focus on fiscal aspects of decentralization, and the first goal of this paper is to find measures of spending and revenue autonomy of local governments. The best established in literature indicators of fiscal autonomy are related to local revenues. It is relatively easy to find in public finance data, information about different types of revenues, distinguishing specific and general grants, shared and own taxes. The indicators which use public spending data are more problematic. The local expenditures are very often defined by central regulations, so are not autonomous. However, in contrast to revenues, it is difficult to distinguish less and more autonomous spending looking only on statistical data. The study of regulation is needed. The novelty of this study is that I established expenditure autonomy indicators for Polish municipalities. Subsequently, I use these indicators to analyze if and how the limits of autonomy- on spending and revenue sites, determine local public expenditures on culture. These expenditures are a small part of local budgets, but vital from the social point of view. Municipalities in Poland are important creators of local cultural life, which is especially important in less developed or peripheral regions, where citizens do not have access to private cultural institutions. My paper focuses on rural municipalities, I present the results of statistical and econometric analyses for more than 1500 rural municipalities in years 2000-2014. To analyze municipal expenditures I use median voter demand framework, which is well established in the local public finance literature.

The structure of this paper is as follow. In the first part of the paper, I review the literature related to the problems of limits in local autonomy- its measurement and influence on the efficiency of public finance. In the second part, I present the demand system framework with a special focus on studies related to allocative efficiency and local public spending on culture. In the third part, I introduce indicators of expenditure and revenue autonomy for Polish municipalities, I present the variance of the expenditure and revenue decentralization across rural municipalities in Poland. In last part using econometric panel data analysis for Polish rural municipalities in years 2000-2014 I present the impact of restrictions on the spending and revenue autonomy on local government expenditures on culture.

### **Limits of Local Fiscal Autonomy- Measurement and Effects**

The phenomenon of decentralization is the theme of plenty of scientific researches. The fact, that in practice the decentralization is only partial- and there are limits on local governments autonomy, is an important feature of decentralization that allows

conducting these studies. The researchers, using different measures of decentralization, compare subjects of analysis which are less and more decentralized. There are two main groups of studies on decentralization and its effects. Large literature uses international comparisons, and the subject of analysis are different countries. The second large group focuses on one country analysis and compare local units across one country or in a different moment of time- before and after (de)centralisation reforms<sup>1</sup>.

In international studies, there are two the most frequent strands in the measures of decentralization. First focused on the revenue autonomy and the second on expenditure autonomy of local governments in analyzed countries. The measures of decentralization take into account local revenues (distinguishing local taxes or local own revenues and transfers) or total expenditures and compare them to all public revenues (taxes) or expenditures. There are also studies where authors combine those two sites of autonomy and calculate aggregate indicators of fiscal autonomy or analyze so-called vertical imbalance- the relationship between expenditures and allocated revenues. (for example) (Baskaran, Feld, & Schnellenbach, 2016; Dziobek, Mangas, & Kufa, 2011; Eyraud & Lusinyan, 2013; Gemmell, Kneller, & Sanz, 2013; Rodden, 2004; Sharma, 2006; Stegarescu, 2005) A key methodological problem of cross-country studies is that aggregated data could result in misleading figures. Especially problematic in these studies is autonomy of expenditures, “..it is difficult to know what to make of expenditure data without additional data on regulatory framework for subnational finance” (Rodden 2004).Some researchers have doubts about the results of these studies on the effects of decentralization. (Baskaran et al., 2016; Ebel & Yilmaz, 2002) The solution could be econometric methods with fixed effects or using different indexes defining other than fiscal aspects of country decentralization. (Pina-Sanchez, 2014; Schakel, 2008)

The second important part of studies on decentralization and its effects focused on one country analysis. The subjects of this kind of analysis are different local units or regions in the single country. (for example) (Balaguer-Coll, Prior, & Tortosa-Ausina, 2010; Barankay & Lockwood, 2007; Boetti, Piacenza, & Turati, 2012; Feld, Kirchgässner, & Schaltegger, 2004; Xie, Zou, & Davoodi, 1999; Zhang, 2006) In these studies, the problem of the comparable institutional environment is less important. But still, there is an open question about proper quantification of decentralization and its variation across the country. As in international studies, the most used indicators are related to revenue autonomy. Expenditure autonomy is also analyzed but as the non-autonomous spending are defined only those which are financed by specific grants. (Brueckner, 2009) There are also studies whose authors focusing on particular problems of local revenues or expenditures, use different indicators presenting the local government's autonomy. For example, it is a wide range of

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<sup>1</sup> The preliminary version of the review of literature on measurement of decentralization was presented in (Kopańska, 2016)

literature concentrating on grants effects on local government fiscal behaviors. (for example Inman 2008a; Gramkhar 2002).

There is also a small group of studies which focused on differences of degree of decentralization, without quantifying the level of decentralization. They use the natural experiment method analyzing the local spending behaviors before and after the decentralization reforms in one country. (Ahlin & Mörk, 2008; Borge & Brueckner, 2014; Borge & Rattsø, 1995; Faguet, 2004; Salinas & Solé Ollé, 2009) They do not define the exact size of changes in decentralization, but only define the reforms as shifting the local government system from less to more decentralized.

As presented the most problematic are indicators related to expenditure decentralization. There are no indicators analyzing spending financed from own revenues (or general grants) but strictly define by centrally established rules related to these tasks. (Martinez-Vazquez & Timofeev, 2009). The solution, in that case, seems to be expert analysis, under which is carried out a detailed examination of local regulations and indicates the task with varying degrees of restrictions on autonomy. (Blöchliger, 2014; Oulasvirta & Turala, 2009) In my paper, I propose indicator of expenditure autonomy for Polish municipalities. This indicator is established using analysis of local regulations which influence spending autonomy of municipalities.

Taking into account mentioned above problems of multidimensional aspects of decentralization and also a measurement of the level of decentralization there are some doubts related to the results of studies on decentralization. But generally, literature agree that decentralization (or higher local autonomy):

- enhance cost and allocative efficiency of public sector, thanks to- better responsiveness of local governors to society needs and more active society (in exit or voice activity) - theoretical background for these effects was given by (Oates 1972; Tiebout 1956; Hirschman 1970) and confirmed in many empirical studies for example (Borge & Brueckner 2014; Sørensen & Hagen 1995; Solé-Ollé 2009)
- Limits the size of public sector and its indebtedness (Eyraud & Lusinyan 2012; Cassette & Paty 2010; Marlow 1988; Stein 1999; Jin & Zou 2002)

On the other hand, there were noticed negative effects of decentralization, like:

- Problem of deepening inequalities (Prud'homme 1995; Zhang 2006)
- macroeconomic instability and slower economic growth due to problems of coordination, spillovers and soft-budget constraints (Prud'homme 1995; Ahmad et al. 2008; Alesina & Perotti 1999; Levaggi & Levaggi 2011; Jin & Zou 2002; Eyraud & Lusinyan 2012)

In my study, I focus on the effects of decentralization on local citizens' wealth. I try to answer if and how differences in degree of local autonomy/decentralization influence the municipal spending decisions on culture. First I analyze the variation of these spending across the whole country- looking at the problem of equal access to publicly

sponsored culture. Second I study if those spending are matched to citizens preferences. The background for these problems is given in next part of this paper.

### **Allocative Efficiency of Decentralized Spending With Special Focus on Spending for Culture**

One of the main arguments for decentralization is that local public spending is in line with local citizens preferences. This argument - known as preference matching idea or allocative efficiency in local government - is the theme of very important for local finance theoretical and empirical investigations. The theoretical base for this argument was established by Tiebout and Oates. Tiebout in his seminal paper presented that at local level citizens could "vote with their feet" and choose those local units where cost/benefits composition is the best for them. Local governments compete for citizens and produce what they really want. (Tiebout, 1956) Oates presented, that centralized production of local public goods creates the loss of wealth, and only local units could produce local public goods at proper - expected by local citizens level. (Oates, 1972)

In the empirical studies, the question of allocative efficiency is analyzed using demand system framework. The classical assumption is based on the median voter model. (Downs, 1957) In terms of independent local governments, the "median voter" decides on the expenditure made locally. (Bergstrom & Goodman, 1973; Borchering & Deacon, 1972). The idea of median voter model was the theme of many theoretical and empirical studies, which presents that assumptions of this model are far from reality. (the interesting discussion was presented by Bailey, 1999; Holcombe, 1989) Despite that, the basic idea of a correlation between the voter's preferences measured by socio-economic characteristics of local citizens is still present in empirical analysis on local government expenditures. Those studies analyzed usually local governments in one country<sup>1</sup>, and study the determinant of the variation in spending per capita for analyzed good or services using the linear relation:

$E_i = f(\text{soc}_i, \text{rev}_i, \text{cost}_i)$ ; where

$E_i$ - expenditures per capita for analyzed good of  $i$ 's municipality

$\text{soc}_i$ ,- the vector of a characteristic of a local society in municipality  $i$

$\text{rev}_i$ . municipality  $i$  income per capita, distinguishing own revenues and grants

$\text{cost}_i$ . the vector of characteristics of  $i$ ' municipality which explain the variation of costs of local production

The private income of citizens, as a budget constraint for demand, is usually ignored in those studies. The idea is that taking into account the characteristic of the local systems in many countries, where local tax policy is very limited, it can be assumed that public and private goods are not substitutes for one another and voters maximize

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<sup>1</sup> There are also studies where international comparison is made using the demand model for example (Busemeyer, 2008)

their utility only with respect to public goods. (Borge & Rattsø, 1995) The important is local government income, divided on own and other categories of incomes- which is related to so called fly paper effect of grants (Inman, 2008b) The prices for local public goods do not exist, but important is the variation of costs of public production in different municipalities.

It needs to be noticed, that the allocative efficiency means that public spending varies among municipalities. If such variation is the result only of preference matching it can be positively assessed. But the variation of the level of public spending in different municipalities is related also to the differences of revenue base of local units. As Solé-Olle noticed: *“decentralization has the potential for better matching of regional preferences, but this potential would not be realized in practice if the revenues at the disposal of some regions are severely constrained”* (Solé-Ollé, 2009) This is the core and the unsolved problem of fiscal decentralization policy, because, on one hand, the unequal revenue base create the necessity to established equalizing transfers in local budgets, on the other hand, such transfers decrease autonomy of municipalities and erode the efficiency of local governments. What’s more, previous studies presented that decentralization not only reveals local inequalities but also deepen them. (Lessmann, 2009; Persson & Tabellini, 1996; Prud’homme, 1995; Zhang, 2006) and in the case of culture, such result could be found for example in (Urrutiaguer, 2005) The question about acceptable differences of public spending remains open (see discussion in Hagan, 1996) but the problem of inequalities need to be taken into account in studies on decentralization.

The large literature used demand framework in studies on spending for education (Ahlin & Mörk, 2008; Borge & Rattsø, 1995; Poterba, 1996; Salinas & Solé Ollé, 2009) public investment or the structure of public spending (Borge & Brueckner, 2014; Busemeyer, 2008; Faguet, 2004; Kappeler, Solé-Ollé, Stephan, & Valila, 2013) There are also some studies where demand system framework is used to analyze municipal spending on culture (Benito, Bastida, & Vicente, 2013; Depalo & Fedeli, 2011; Hakonsen & Loyland, 2016), but taking into account the small size of spending for culture in local budgets such analysis are relatively rare and according to my knowledge there are no such studies for Poland and other East European countries.

Below I shortly discuss the most important factors which are presented as an important determinants of local spending on culture.

### *Socio-economic characteristic of local society*

Young people- children and youth- are important consumers of the local cultural offer. This is due to parents perception of the value of cultural heritage. On the other hand, parents have less time to take part in cultural activities, and there are also other spending related to kids, which are important in public budgets (especially education). That is why the influence of the share of young people on cultural spending is unclear. The second important group of society analyzed in cultural studies is old people. They have time to take part in cultural events and studies

present that municipalities, where share of elderly population is higher, spend more on culture. (Benito et al., 2013; Borge & Rattsø, 1995; Getzner, 2004; Werck, Heyndels, & Geys, 2008)

The literature presents, that women pay more attention for cultural heritage, they also are more interested in the wealth of future generations Women tend to consume more cultural goods and services than male. (Diniz & Machado, 2011) That is why we could suspect higher public spending in municipalities where there are fewer men.

As mentioned private income is ignored as a budget constraint for demand for publicly provided goods. But we could use information about citizens income as an information needed to understand their preferences. According to Wagner's law-private income increases causes an increase in public spending (even higher than in private spending). Culture is defined as luxury good, so in the analysis of private demand for culture was found high positive income elasticity of demand for culture but in the case of low-income people it could be a crowd out by spending on more basic goods and it is not purchased at all below a certain level of income. While in the case of high-income citizens the interest in publicly sponsored culture could be a crowd out by private cultural goods. Taking those opposite arguments into account the influence of citizens income on their preferences on public spending for culture is unclear. In most studies, it was found positive income elasticity (Benito et al., 2013; Getzner, 2004) but (Werck et al., 2008) did not find any significant correlation, while (Rose & Schultze, 1998) presented the negative impact of private income on support public spending for culture.

The level of education is positively related to income. So we could suspect the similar effect of higher education on public spending. It needs to be noticed also that higher education makes culture more accessible. Highly educated people enjoy culture more, first because they understand it better, second because culture is positively adjective (the satisfaction is rising with consumption) and those people have more experience with culture goods. (Rose & Schultze, 1998) The positive impact of the higher education on public spending was found in (Getzner, 2004) But in many studies, the level of citizens education was found as not significant explanatory of their support of public spending for culture. (Benito et al., 2013; Werck et al., 2008)

#### Local government financial statement

The studies on local governments spending policy, present that important determinant of the level of spending is the size of the municipal budget. Higher local income means more money for all categories of spending. But in the case of public spending, we need to take into account not only size of local incomes, but also the real autonomy of local budget policy. There are many studies which present that grants influence on public spending more than own local taxes. In the case of spending for culture, the fly paper effect of grants was presented in Hakonsen & Loyland study for Norway (Hakonsen & Loyland, 2016). But there are no studies which analyzed how spending autonomy influence local decisions. I will fill this gap in my empirical study.

### *Characteristic of the local cultural sector- which influence the cost of cultural services.*

The final variables, which are needed to understand variation in local spending for culture, are related to the differences in local cost of cultural services. The important is the size of the local population. In many studies the size of the population was presented as demand factor- more populated municipalities have a central role in relation to cultural public goods. (Benito et al., 2013). But it is also correlated to cost of cultural services. If there are more people who use cultural services, the cultural infrastructure (for example houses of culture, museums, concert halls) is more complicated and costly. (Rose & Schultze, 1998; Werck et al., 2008) That is why we could expect that per capita spending for culture increase with a number of citizens.

Population density is the second factor where demand and cost aspects are correlated. In less populated municipalities, the problem of distance to central places of the local unit may decrease the citizens demand on culture. Simultaneously in more populated municipalities, the economies of scale occur and cost and spending per capita are smaller. (Benito et al., 2013; Werck et al., 2008)

The cost of culture services is related also to a number of real consumers of local services and number of infrastructure objects needed for culture services. That relation is well developed in case of analysis of education- where a number of schools and pupils is presented as an important factor of spending for education. For example- (Ahlin & Mörk, 2008; Borge & Rattsø, 1995; Falch, Ronning, & Strom, 2008; Poterba, 1996; Salinas & Solé Ollé, 2009) Number of consumers represent on one hand demand of local society on other it could be related to economies of scale. In previous studies on local spending on culture these variables were not analyzed, but taking into account they economic validity I add variables of the quantity of cultural objects and users in my empirical analysis.

### **Revenue and Expenditure Autonomy of Polish Municipalities**

Sub-central governments in Poland are responsible for important part of public tasks and local and regional expenditures represent about 30% of public spending. The most important are expenditures of 2412 municipalities (gminas). We can distinguish three types of gminas- rural, urban and mixed municipalities. In my study, I focus on the biggest and most diverse group of gminas- rural. There 1565 rural units and about 29% of Poles live there. The rural municipalities are those where there are no towns, and usually, such municipality consists of several villages. There are rural municipalities where most of the citizens are farmers, but there are also rural municipalities which are strongly urbanized, and the citizens work in non-agricultural sector. The diversity of municipal economy is also related to the history of Poland. In XIX century Poland was occupied by 3 neighboring countries and the differences in regional development, but also social and cultural characteristic of citizens of these regions are still present. (see for example (Gorzelać & Jałowicki, 2001).



The variation of the local economy is visible also in local governments budgets. The important part of local revenues (about 28% of rural municipalities revenues) is own taxes and charges for which local governments could decide about rates and reliefs. The shares in centrally levied income taxes decide about 14% of rural municipalities' revenues. The general grants cover about 35% of rural municipalities revenues and specific grants about 23%. But the diversification of this structure is very important. To analyze it we can use revenue autonomy indicator- see table 1. As presented in first part of this paper revenue autonomy indicator is quite simple to established, and in my study, I define revenue autonomy indicator as

$IRA = OR/R$ ; where

OR = local taxes and charges, and the loss of revenues due to local fiscal policy

R = all budget revenues and the loss of revenues due to local fiscal policy

Table 1 The variation of revenue and spending autonomy indicators and revenues per capita in rural municipalities in 2014 and correlation of these variables

	IRA	ISA	Revenues per capita (in zł)*
mean	0.302	0.449	3 164.23
p50	0.287	0.445	3 041.35
min	0.102	0.272	2 158.59
max	0.771	0.781	13 204.37
cv	30%	45%	20%
Pearson correlation coefficient			
IRA	1		
ISA	0.64	1	
Revenues per capita (in zł)*	0.51	0.36	1

\* without grants from the European Union.

Source: own calculation based on Statistical Office data

The analysis of expenditure autonomy is more difficult. As mentioned, the information about more and less autonomic spending are not simply visible in local budgets. To distinguish them the detailed analysis of regulation is needed. I did such analysis for 5 the most important in local budgets categories of spending- education, social protection, administration, transport and communal services (they cover about 80% of local expenditures). I analyzed policy, budget, input, output autonomy and the rules related to monitoring and evaluation. (Bach, Blöchliger, & Wallau, 2009; Blöchliger, 2014) . I establish an indicator of spending autonomy (ISA):

$ISA = (OE - N\&LA)/OE$ ; where

OE = operational expenditure

N&LA = not- and low-autonomous expenditure

I define non-autonomous expenditure as spending for which budget autonomy is strictly limited; that is, the spending is financed by specific grants or obligatory payments to a central budget are required. I define low-autonomous expenditure as local tasks for which both input and output autonomy are strongly restricted. It is worth noting that the above-mentioned legal regulations are the same for every municipality. Consequently, de jure spending autonomy of local units is the same for all units, but de facto spending autonomy is differential and depends on the real costs of local public services and the size and flexibility of local revenues. As presented in table 1 the spending and revenue autonomy are positively and quite strongly correlated, there is also a positive and moderate correlation between those indicators and wealth of municipalities. But it needs to be noticed, that this correlation is not very strong- it's mean that those indicators represent different problems of local autonomy.

In my empirical study, I ask if and how the limits in autonomy influence local spending policy. To answer this question I divided rural municipalities into groups- those where autonomy is high, moderate and low. Analyzing the whole population of rural municipalities in years 2000-2014, I define the levels of indicator which represents first and third quartile of municipalities. (in case of IRA: Q1=0,215 and Q3=0,35; for ISA Q1=0,381 and Q3=0,465). As highly autonomous units I define those which indicator of autonomy (separately for revenues and spending) is higher than Q3 in eleven or more years. The low autonomous are units which autonomy indicator is smaller than Q1 in eleven or more years. The rest of population I define as moderately autonomous units. Finally, 167 municipalities are defined as low spending autonomic, 1180 as moderately and 218 as high. In the case of revenue autonomy, there are 199 municipalities in the low-autonomic group, 234 in high and 1132 in moderate. As table 2 presents those groups in case of revenue and spending autonomy are not the same. There is an important group of municipalities which are low (or high) autonomous on revenue/spending side, but moderate on spending/revenue side.

Table 2 Number of low, moderate and high -autonomous rural municipalities.

	ISA			total
	low	moderate	high	
low	72	127	0	199
moderate	95	956	81	1132
high	0	97	137	234
IRA total	167	1180	218	1565

\* without grants from the European Union.

Source: own calculation based on Statistical Office data

## Municipal Spending on Culture- The Determinants Of Variance

Dissemination of culture as a public task is strongly decentralized in Poland, and sub-sovereign governments decide about 70% of public spending for culture. What is important in my study there are no strict regulations on local spending for culture. The only important one is related to libraries- in every municipality need to be at least one public library. Local governments are responsible for organization and financing of public cultural entities- especially libraries and houses of culture, but there are also municipal museums, art galleries, cinemas, theatres, philharmonics, orchestras etc. (Kukołowicz, Modzelewska, Siechowicz, & Wiśniewska, 2016) Spending on culture is small part of local budgets (in average about 3%) but steadily growing and rural municipalities spent in 2014 two times more on culture than in 2000 (in real values). But as table 4 presents there is important variation in this spending. In my analysis, I focus on operational spending, without spending financed by EU grants. The most autonomic municipalities spend in average twice more than the less, but the variation inside the groups is also very important. (see table 3)

Table 3 Rural municipalities operational spending on culture per capita in years 2000-2014 (value in zł from 2014)

		mean	p50	Min*	max	cv
ISA	low	42.02	38.64	0.00	191.69	52%
	moderate	52.28	46.31	0.00	381.17	60%
	high	85.53	73.12	0.00	927.70	73%
IRA	low	44.80	39.51	0.00	211.97	57%
	moderate	52.52	46.83	0.00	381.17	59%
	high	81.10	68.41	0.00	927.70	78%
Total		55.81	48.12	0.00	927.70	69%

\* zero means no spending or lack of data, and there are maximum 6 units every year where no spending was noticed

Source: own calculation based on Statistical Office data

To find if and how the level of autonomy influence local spending policy I made econometric panel analysis, using dynamic panel estimator – system GMM (Heinesen, 2004; Zhu, 2013)<sup>1</sup>. First I do the simple demand framework model- as presented in second part of this paper. The table 4 summarized the variables which I use.

$$Eit = \alpha_i + \sum_k \beta_k soc_{it} + \sum_n \gamma_n rev_{it} + \sum_m \delta_m cost_{it} + \varepsilon_{it}$$

Second I analyzed interaction effects, which help me to find if there are differences across groups and if effects of variables defining citizens preferences differ. I include

<sup>1</sup> All analyzes were done in the program STATASE 14

an interaction term between socioeconomic variables and dummy variable -D. Where D=0 for the moderate group, and 1 separately for lowly and highly autonomous groups, so we can compare effects on spending of lowly and highly autonomous groups to moderate municipalities.

$$E_{it} = \alpha_i + \sum_k \beta_k soc_{it} + \sum_k \beta_{Dsoc_k} Dsoc_{it} + \sum_k D\beta_{Dsoc_k} + \sum_n \gamma_n rev_{it} + \sum_m \delta_m cost_{it} + \varepsilon_{it}$$

Taking into account budgetary characteristic and possibilities of GMM analysis, I add in models spending for culture from previous two years (L.E and L2. E), lagged variables for some budget categories and also year effects. The results of analysis are presented in tables 4 and 5. (for clarity of presentation in table 4 I do not present variables for years and in table 5 I present only interaction variables.)

The econometric analysis presents that spending for culture in Poland is determined by noticed in literature budgetary, social and cost variables. In the case of budgetary variables, the most interesting in my study are autonomy indicators. More autonomous municipalities spend more on culture. But the influence of spending autonomy is much stronger than of revenue autonomy. 1% more autonomous expenditures caused 0,77% increase of spending for culture, while 1% more autonomous revenues are responsible for only 0,08% higher expenditure on culture (see table 4). This effect is confirmed in interaction analysis. The more spending autonomous group of municipalities spend more on culture, while lowly less- than the moderate group. In the case of revenue autonomy, there is no difference between moderate and low autonomous group and only high revenue' autonomic municipalities spend more, but the value of interaction is twice smaller than in the case of spending autonomy analysis.

The socioeconomic characteristic of society influence local spending on culture, when we analyze all municipalities together (table 4)- this is in line with preference matching idea. In the case of age structure, the sign of correlation is the same in both models presented in table 4 but the significance of variables is not stable. The model where revenue autonomy is included presents that if there are more small kids in municipality spending for culture are smaller. The other age variables are not significant in that model. While in a model with spending autonomy indicator, significant are: shares of school kids and share of old people in the municipality. Both variables have positive coefficient- more students and old people in society cause in higher spending for culture. The gender structure of municipalities is not significant in both models presented in table 4. Important in both models is the education of society and citizens financial statement. In municipalities, where there is more educated society spending for culture are higher. But the better financial statement of

people in the municipality (bigger houses and more private firms) has a negative impact on public spending for culture.

The interaction analysis presents that the variables representing the influence of share of small kids, the share of old people and number of firms on spending for culture are valid only in case of most autonomous municipalities (in both analyses presented in table 5). These results could represent the problem of preference matching in less autonomous municipalities. Because presented in table 4 results of analysis of the whole population of municipalities, could be- as visible in table 5- related only to the significance of socioeconomic variables in highly autonomic groups.

Only in the case of a variable representing the citizens level of education the interaction model represents validity for moderate group. What interesting the effect of changes in the share of educated citizens in highly autonomous municipalities is smaller than in a moderate group.

The signs of the coefficient in cost variables represent the problem of the small scale of cultural activity when no economies of scale exist. More citizens, higher density, more libraries and readers, houses of culture or cinemas cause more spending per capita on culture. The only number of museums give opposite effect.

Table 4 List of variables and estimation results for demand model for logarithm of spending on culture per capita (E) in years 2000-2014

Variable:		Description of the variable:	E	E	
L.E	Budgetary and revenue variables	Logarithm of spending for culture per capita in year t-1	0.714**	0.721**	
L2.E		Logarithm of spending for culture per capita in year t-2	0.107**	0.112**	
Grantcult_pc		Specific grants for culture from central budget per capita	0.002**	0.001**	
Ownrevcult_pc		Own revenues from culture per capita	0	0	
rev_pc		Logarithm of revenues per capita	0.112**	0.121**	
ISA		Indicator of spending autonomy	0.766**		
IRA		Indicator of revenue autonomy		0.082**	
UEexpendcult_pc		Expenditures on culture financed from EU funds per capita	-0.001**	-0.001**	
L. UEexpendcult_pc		Expenditures on culture financed from EU funds per capita in year t-1	0.00*	0.001**	
investcult_pc		Investment for culture per capita	0.00**	0.00***	
L. investcult_pc		Investment for culture per capita in year t-1	0.00**	0.00***	
Pop0_4_all		So	Share of population 0-4 in	-0.356	-0.668*

		community		
pop5_19_all		Share of population 5-19 in community	0.357*	-0.034
pop60more_all		Share of population older than 59 in community	0.204*	0.128
men_all		Share of men in population	-0.362	-0.412
High_educ_all		Share of people with the highest degree of education in community in 2002 <sup>1</sup>	0.515**	0.655**
House_size_pc		Living area per capita <sup>2</sup>	-0.002**	0.00
firms_pc		Number of private firms per capita	-0.601**	-0.276**
_part_1		Dummy variable representing part of Poland occupied in XIX century by Prussia (Austrian part is comparison)	0.02**	0.034**
_part_2		Dummy variable representing part of Poland occupied in XIX century by Russia (Austrian part is comparison)	-0.017**	-0.02**
popkm2	Cost variables	Density of population	0.015**	-0.00
lnpop		Logarithm of number of citizens	0.017**	0.00
House_of_cult		Number of houses of culture	0.02**	0.018**
readers_pc		Number of readers of public libraries per capita	0.398**	0.367**
museums		Number of communal museums	-0.032**	-0.034**
cinemas		Number of communal cinemas	0.06**	0.06**
cons				-0.504**
Number of observations			19851	19851
number of groups			1527	1527
number of instruments			271	271
Arellano-Bond test for AR(2)			0,152	0.241
Hansen test of overid. restrictions:			0.111	0.061

\* p<0.05; \*\*p<0.01

<sup>1</sup> The data based on census made in 2002, there are no newer data about citizens education for municipalities

<sup>2</sup> There are no data on citizens income in municipalities, the size of living area and number of private firms is a approximation of citizens private financial condition

Table 5 Interactions analysis

variables:	only dummy	pop0_4_all	pop_5_19_all	pop60more_all	men_all	High_educ_all	House_size_pc	firms_pc
ISA-low	- 0.028 **	- 0.037	- 0.018	- 0.026	0.529	- 0.034	- 0.013	- 0.007
ISA-high	0.039 **	0.095 **	0.039	0.015	0.327	0.078 **	0.109 **	0.088 **
variable		0	0.04	0	- 0.432	1.172 **	0	0.019
variable-group low		0.138	- 0.048	- 0.012	- 1.113	0.269	- 0.001	- 0.388
variable- group high		- 1.095 *	0.001	0.297 **	0.741	0.997 **	- 0.003	- 0.703 **
Arellano-Bond test for AR(2)	0.251	0.273	0.248	0.243	0.223	0.255	0.269	0.244
Hansen test of overid. restrictions:	0.062	0.071	0.058	0.054	0.058	0.064	0.065	0.062
IRA-low	- 0.005	0.021	- 0.064 *	0.033	0.059	- 0.012	- 0.043	0.012
IRA-high	0.02* *	0.13* *	0.05	- 0.039	0.103	0.06* *	0.043	0.075 **
variable		- 0.209	- 0.104	0.025	- 0.421	1.113 **	0	0.103
variable-group low		- 0.487	0.284	0.197	0.109	0.379	0.002	-0.29
variable- group high		- 2.077 **	- 0.161	0.33* *	0.167	1.058 **	- 0.001	- 0.806 **
Arellano-Bond test for AR(2)	0.301	0.297	0.272	0.289	0.321	0.37	0.291	0.295
Hansen test of overid.	0.057	0.069	0.05	0.04	0.05	0.057	0.05	0.063

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restrictions:			1	9	2		1	
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\*  $p < 0.05$ ; \*\*  $p < 0.01$ .

## Summary

Partial decentralization is the fact. There are objective reasons for limits of local autonomy. The problem is that those limits influence on local government efficiency-costs and allocative. In the literature, we could find a lot of research which analyze the results of the limits on local revenues. There are less studies focusing on expenditure autonomy. In this paper I proposed indicators of expenditure decentralization for Polish municipalities, having regard to different aspects of expenditure autonomy and also not granted tasks. Those indicators focused more precisely than those which look only at the autonomy of revenues on the problem of adequacy of public money for local services and vertical imbalance problem. I present that there is an important variation of real autonomy between local governments across Poland. I presented that limits in revenue and spending autonomy influence the local spending behaviours on culture. There is an important problem of equal access to cultural services because less autonomic municipalities spend two times less on culture than highly autonomous. As econometric analysis presents to understand these differences better is spending autonomy indicator than revenue autonomy indicator. The second problem related to the important differences in the level of spending for culture is allocative efficiency. Local spending on culture is determine by citizens preferences. But this preference matching is significant more in highly autonomous municipalities. It means, that allocative efficiency is restricted by limits on of local governments revenues and spending.

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