

The determinants of local public spending on culture. An analysis for Polish rural municipalities.

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One of the decentralized public tasks in Poland is culture. Local governments are important creators of local cultural life and decide about 70% of public spending for culture. Municipalities are responsible for organization and financing of public cultural entities- libraries, houses of culture etc. The local spending on culture in Poland steadily grows in last years. But there are important variations in the level of this spending between municipalities. The aim of my study is to find determinants of these differences and to evaluate if those spending are matched to citizens preferences.

Public spending for culture is especially important in less developed or peripheral regions, where citizens do not have access to private cultural institutions. That is why in my study I focus on rural municipalities- 1565 units. Using econometric panel data analysis I study their spending for culture in years 2002-2014. As potential determinants of local spending for the culture, I analyzed four group of factors- variables which characterize a local society, financial condition of local government, local politicians and the factors which could influence the costs of cultural services in particular municipality. Such approach has its roots in median voter model and is widely used in studies on decentralized spending. But the studies related to cultural spending are relatively rare. According to my knowledge, there is no such analysis for Poland or other East European countries. The other novelty of my study is that to understand the variation in the level of spending for the culture I established fiscal autonomy indicators. I found that not only the size of local budget determine the size of local spending on culture, but limits on local fiscal autonomy are also very important, and especially expenditure autonomy. I found also that local government spending is explained by the socioeconomic characteristic of the local citizens, what could be presented as the allocative efficiency of decentralized spending. In my study, I did not prove that this allocative efficiency is significantly different in municipalities with different levels of fiscal autonomy.

Keywords: fiscal decentralization, municipal spending on culture, expenditure demand model, allocative efficiency

JEL: H7; H4; H3

Acknowledge: The study is part of research project project No. 2014/13/B/HS4/03204, financed by National Science Centre, Poland.

Introduction

Public sector support for culture is explained by many factors. First, there are market failures. Cultural activity creates positive external effects, especially for future generation. Some cultural goods have public goods characteristic (for example historic monuments). The second sort of arguments is related to human and social capital which is created thanks to the cultural activity of individuals and societies. The cultural activity increase the wellbeing of people and takes also an important part in the local and regional development. (Bille 2006; McGuigan 1996; Rushton 2004; Karwińska 2015; Poprawski 2016) These last arguments for public support for culture are especially important in places where private cultural institutions are not present- in rural and peripheral regions.

In Poland, as in many other countries, public tasks for culture are deeply decentralized. About 70% of public spending on culture goes from sub-sovereign budgets. Local governments are responsible for organization and financing of public cultural entities like libraries, houses of culture but also museums, cinemas etc. Spending on culture is a small part of local budgets, in 2014 spending for culture decided about 2,9% of rural municipalities expenses. But there is important variation in this spending. In 2014 there were municipalities which spent for culture less than 1 zł per citizen and such which spent more than 700 zł per citizen.

The aim of my study is to find determinants of these differences and also to evaluate if those spending are matched to citizens preferences. Hypotheses are derived from an expenditure demand model. I analyze four group of factors. The first group contains variables which characterize local society. One of the main benefits of decentralization is matching of local spending to citizens preferences. Based on median voter idea, in empirical models, the existence of that benefit is analyzed using the information about the structure local society. There is an assumption that when in the municipality are more citizens which prefer particular kind of local goods more, the spending for that good is higher. The second group of variables defines the financial condition of the municipality. In that group are the revenues of the municipality but I add also the fiscal autonomy indicators. This indicator represents the differences in the real elasticity of local revenue and spending policy. The problem of relation of preference matching to the level of local autonomy is very rarely analyzed in literature. (Lockwood 2005; Porcelli 2009). But it is important taking into account that in practice the local autonomy in most countries is only partial. The third group of variables, which I use, defines the costs of cultural services, which are different in various municipalities- due to the number of citizens, population density location, former investment's decisions etc. The fourth group of factors characterizes

the local political scene. As presented in the second generation of fiscal federalism theory, the politicians and their particular interests are an important explanation of local public spending. In the first part of my paper, I make a short overview of the literature on determinants of local government spending where the base is expenditure demand model. I focus on decentralized spending for cultural services. In the second part, I present basic information on local governments finance and organization in Poland. In that part, I present also regulations, structure, and size of municipal spending related to culture. In last two parts of this paper, using econometric panel data analysis for Polish rural municipalities in years 2002-2014 I present the factors which determine local spending on culture. Finally using interaction analysis I try to answer if and how limits in fiscal autonomy influence allocative efficiency of local spending.

1. Determinants of local governments' spending policy. Literature review.

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 (1956) 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. Oates (1972) 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.

The idea of preference matching were used as an important assumption in many studies related to local government spending policy. One of the most used empirical strategies of local spending analysis is demand system framework. The roots of this framework are in the median voter model. (Downs 1957) In terms of independent local governments, the "median voter" decides on the expenditure made locally. (Bergstrom and Goodman 1973; Borcharding and 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, 209–32) and Holcombe (1989)) Despite that, the basic idea of an influence of the voter's preferences measured by socio-economic characteristics of local citizens is still present in empirical analysis on local government expenditures. The private income of citizens, as a budget constraint for their demand for public spending and tax as a price for local public goods, is very often ignored in those studies. The idea is that taking into account fiscal illusion, and the characteristic of the local revenues in many countries,

where local tax policy is very limited, it can be assumed that local and private goods are not substitutes for one another and voters maximize their utility only with respect to local goods. (Borge and Rattsø 1995) The outcome preferred by local citizens (median citizen) in municipality i , is defined by maximization of their utility function subject to municipal budget constraint. The citizen chooses the composition of local production, for example for culture (cult) and other locally provided services (other). The local revenues (R) need to cover expenditures (E) for all local goods.

$$\max U_i(\text{cult}, \text{other}) \text{ s. t. } R_i = E_{\text{cult}} + E_{\text{other}}$$

As mentioned earlier, unlike analyzes in the case of demand for private goods, this analysis does not deal with prices. But production costs, hence important is the assessment of costs, which affect the amount of expenditure (E). (Heinesen 2004) The other important modification of classical median voter model, is the observation, that in practice the decision on the size of local spending is made by politicians and their preferences need to be taken into account. The simplified form of expenditure demand functions (for municipality i) can be written on this general form:

$E_i = f(\text{soci}, \text{fini}, \text{costi}, \text{poli})$; where

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

soci ,- the vector of a characteristic of a local society in municipality i

fini - income, and more generally financial condition of municipality i ,

costi - the vector of characteristics of i ' municipality which explain the variation of costs of local production

poli - the vector of characteristics of local political scene, determines what preferences are decisive.

The large literature used demand framework in studies on spending for education (Ahlin and Mörk 2008a; Borge and Rattsø 1995; Poterba 1996; Kappeler et al. 2013; Heinesen 2004) public investment or the structure of public spending (Borge and Brueckner 2014; Busemeyer 2008; Faguet 2004; Kappeler et al. 2013) There are also some studies where demand system framework is used to analyze municipal spending on culture (Benito, Bastida, and Vicente 2013; Depalo and Fedeli 2011; Håkonsen and Løyland 2016; Nogare and Galizzi 2011) 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 econometric studies on that theme for Poland and other East European countries .

Below I shortly discuss the most important factors which were presented as significant determinants of local spending on culture in previous studies. That literature review is the base for formulation of detailed hypotheses on the determinants of variation of local spending on culture.

1.1. Socio-economic characteristic of local society, as an determinant of local spending on culture

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 group. They have time to take part in cultural events and studies present that municipalities, where the share of the elderly population is higher, spend more on culture. (Benito, Bastida, and Vicente 2013; Borge and Rattsø 1995; Getzner 2004b; Werck, Heyndels, and 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 and Machado 2011; Muñoz, Rodríguez, and Suárez 2014; Yoon and Heo 2017) That is why we could expect higher public spending in municipalities where there are more women.

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 sometimes defined as luxury good, so in the analysis of private demand for culture was found positive income elasticity of demand for culture but in the case of low-income people it could be a crowded out by spending on more basic goods and it is not purchased at all below a certain level of income. We could expect that similar relation is in case of demand for publicly provided culture. But in the case of high-income citizens, the interest in publicly sponsored culture could be crowded 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, Bastida, and Vicente 2013; Getzner 2004a; Bille 2006). Bartkowski (2005), who analyzed the statistical correlation between spending for

culture of Polish municipalities and different characteristics of local societies found a positive relationship between the citizens incomes and local expenditures on culture. But Werck et al (2008) in their study for Finland did not find any significant correlation, while Schulze and Rose (1998) presented the negative impact of private income on support of public spending for orchestras in Germany.

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. (Schulze and Rose 1998) The positive impact of the higher education on public spending was found in Getzner (2004a) and positive correlation was presented by Bartkowski (2005) But in other studies, the level of citizens education was found as not significant explanatory of their support of public spending for culture. (Benito, Bastida, and Vicente 2013; Werck, Heyndels, and Geys 2008). The last characteristic of local society which worth to take into account in analysis of local preferences on culture is social capital. Culture is social process (Holden 2015). That is why we can expect, that in municipalities where social capital is stronger the demand for culture is higher (Nogare and Galizzi 2011).

1.2. Local government's financial statement and its influence on local spending

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. (Benito, Bastida, and Vicente 2013; Werck, Heyndels, and Geys 2008) But in the case of local governments spending, we need to take into account not only size of local incomes, but also the real autonomy of local budget policy. Mentioned earlier Oates' and Tiebout's' models are based on the assumption of complete fiscal autonomy of local governments. In those models, local governments solely decide about the size and structure of local spending and finance these spending by own local taxes levied on local citizens. Unfortunately, in practice such totally decentralized system does not exist.

Limitation of decentralization affects the autonomy of the policy of local governments, which therefore affects the results of decentralization. There are many studies which present that grants influence on public spending more than own local taxes. This effect is called fly-paper effect and was presented in plenty of studies. (Inman 2008) In the case of spending for culture, the fly paper effect of grants was presented in Hakonsen & Loyland (2016) study for Norway.

There are also studies where the revenue autonomy is measured –as the share of local taxes or own local revenues in total local revenues. It is presented that less revenue autonomic units tend to over-spend and over- debt. (De Mello 2000; Weingast, Shepsle, and Johnsen 1981) But the studies on the influence of spending autonomy on local decisions are rare. Usually, as spending autonomy indicators are used shares of un-granted expenditures to all local spending. But not only grants affect spending autonomy, there are also different regulations which determine the quantity and quality of locally supplied goods. Boex&Edwards (2015) called that kind of expenditures as “nondevolved local expenditures”. It means, that in case of existence in local budget of expenditures which are regulated centrally, there are less money for other no- or less-regulated tasks. For example Hakonsen & Loyland (2016) suggested that “greater regulation and standardization of welfare services lead to negative effects for the cultural sectors in the municipalities”. It seems to be a logical consequence of the restrictions in public budgets, but there is an open question about the possibility of reaching allocative efficiency in case of less autonomous budgets.

The problem of relation of preference matching to the level of local autonomy is very rarely analysed in literature. (Lockwood 2005; Porcelli 2009) There are some studies where this relation is analyzed indirectly- looking at the citizens satisfaction or comparing citizens and politicians preferences in case of centralized and decentralized regime (Diaz-Serrano and Rodríguez-Pose 2014; Espasa, Esteller-Moré, and Mora 2017; Sørensen and Hagen 1995; Azfar, Kähkönen, and Meagher 2001). There are also studies where natural experiment methodology is used. For example in studies for Bolivia (Faguet 2004) Sweden (Ahlin and Mörk 2008b) and Norway (Borge and Brueckner 2014) researchers compare the determinants of local spending before and after reforms which gave municipalities more fiscal autonomy. They analyzed if and what are the differences of the influence of socioeconomic characteristic of society on local spending. Those studies presents that in more decentralized (more autonomous) regime the variables which represents citizens characteristic are stronger determinants of local spending. But the results are not unequivocal.

In my study I use similar assumption, and I analyze the differences in local spending but taking into account not time variance but variation in space. To do this I established the indicators of revenue and spending autonomy for Polish municipalities and I choose municipalities which could be define as low, moderate and highly autonomous. The details of this classification are presented in last part of this paper.

The indicator of revenue autonomy I define similarly as in other studies:

$IRA = OR/R$; where

OR = own local revenues and the loss of revenues due to local fiscal policy

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

The only difference is that in denominator and numeral I add the results of local own tax policy.

Thanks to that in my indicator the information about the revenues elasticity which is decided by law, not by own local decisions is presented.

To established spending autonomy indicators the detailed analysis of these regulations is needed. (Bach, Blöchliger, and Wallau 2009; Martinez-Vazquez and Timofeev 2010; Oulasvirta and Turala 2009) I did such analysis for Polish local governments using the concept presented by Bach at all (2009) I distinguished not- and low-autonomous spending, and proposed indicators of spending decentralization:

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

OE = operational expenditure

N&LA = not- and low-autonomous expenditure

As not autonomous spending I define those which are financed by specific grants and some categories of obligatory spending (for example related to reversed grant). As low autonomous, I defined spending which is not financed by grants, but the regulations strictly define the budgetary obligations (and budget autonomy is very limited) It is worth to be mentioned, that regulations which define some spending as not- or low- autonomous are the same for every municipality. But in reality, due to the variation of local own revenues but also the costs and local needs related to regulated expenditures, the share of unrestricted local spending is different in different local units. That is why we could distinguish de-jure local autonomy, which is equal for all local units, and de-facto local spending autonomy – which differ municipalities. That real differentiation is the basis of my analysis.

1.3. Characteristic of the local cultural sector

The next group of variables, which is needed to understand variation in local spending for culture, is 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, Bastida, and Vicente 2013; Muñiz, Rodríguez, and Suárez 2014) 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. (Schulze and Rose 1998; Werck, Heyndels, and Geys 2008) That is

why some authors expect that per capita spending for culture increase with a number of citizens. But we could expect also the economies of scale, and when the population exceeds a certain level, the per capita spending will decrease. 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, Bastida, and Vicente 2013; Werck, Heyndels, and Geys 2008)

The cost of cultural services is related also to a number of infrastructure objects needed for culture services. That relation is well developed in case of analysis of education- where a number or size of schools is presented as an important factor of spending for education. (Ahlin and Mörk 2008a; Borge and Rattsø 1995; Falch, Ronning, and Strom 2007; Poterba 1996; Salinas and Solé-Ollé 2009) 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 in my empirical analysis.

The other important factor which influences the organization and costs of the local cultural sector is localization. Municipalities which are closer to big cities could spend less on culture because its citizens have access to the cultural sector (public and private) which is located in economic centers. Such free-riding behaviors of municipalities close to “central places” was presented for Finland by Werck et al (2008).

1.4. Local politicians and their influence on public spending on culture

The second generation of fiscal federalism theory presents that the very important determinant of local policy is local politicians and their preferences and behaviors. One of the examples of these behaviors is a political business cycle when the governors change spending for different categories of local tasks in years close to the election to increase chances to win. In case of spending on culture, taking into account its small size in local budgets, and low importance as a "political pork barrel" the direction of changes is not obvious. For example Benito et al (2013) presented that in Spain in election year spending for culture are higher compared to others years, while in study for Italy, Nogare and Galizzi (2011) showed that in election year expenditure for culture decrease.

Important could be also the ideology of party which is represented by politicians, and also their private opinion and interests. (Benito, Bastida, and Vicente 2013; Getzner 2004a) As in case of

analysis of citizens' preferences, important could be the local governors' age, gender and their level of education.

1.5. The determinants of local spending on culture- summary of literature review

Summarizing the above literature review, among variables which are potential determinants of local spending on culture are:

- 1) the characteristics of local society:
 - a) share of the youngest and the oldest people in local society
 - b) share of women in local society
 - c) share of the most educated people
 - d) local citizens private financial situation
 - e) the level of social capital
- 2) Financial condition of local unit:
 - a) The size of local revenues
 - b) The level of fiscal autonomy
- 3) The characteristics of local cultural sector
 - a) Number of citizens
 - b) Population density
 - c) Number of communal cultural institutions
 - d) The neighborhood of a big city
- 4) The characteristics of local political scene
 - a) Election year
 - b) The characteristic of local politicians

In the next part of this paper I will check if these variable determine Polish rural municipalities spending on culture. But first I present the basic information about the local governments in Poland, its revenues, expenditures, fiscal autonomy and tasks related to culture.

2. Local government in Poland

The decentralization reforms were part of transformation and decommunization process in Poland. The municipalities (gminas) as independent local units was established in 1990 and it was one of the firsts reforms undertaken by new, Solidarity governments. In 1999, due to the second phase of decentralization reform, the upper levels of sub-sovereign governments (powiats-counties and voivodships-regions) were set up.

Sub-central governments in Poland are responsible for important part of public tasks. Gminas tasks, are defined by law very broadly- all local tasks, which are not given to other institutions, and there are also enumerated list of more than 20 obligatory tasks related to social (education,

culture, healthcare etc.) and communal services (water supply, roads, transport etc.), and also local development. We can distinguish three types of gminas rural, urban and mixed (urban-rural) municipalities. In my study, I focus on rural municipalities (1565 units).

Local governments in Poland have four basic categories of revenues: own revenues, shared-taxes, conditional grants, non-conditional fiscal transfers (subwencja). Conditional grants decide about (in average) 17% of local revenues. Most of these grants are related to social protection services. The share of general grant in local revenues is about 44%. The most important part of the general grant is educational subvention (in average 70% of general grant), which is calculated according to a number of so-called “calculated” pupils and teachers in schools. But as a general grant, it could be used by local governments for any local purposes. In practice, local governments spend much more on education, then receive from educational subvention (in average it covers about 73% of municipalities spending on education). Taking together transfers from central budget decide in average about 61% of municipal revenues.

The municipalities receive also the shares of personal and commercial income taxes. According to Polish law, these shares are defined as own local taxes (the tax base is local), but local units do not have any fiscal power related to them. Every local unit receives about 39% PIT of taxes levied on their citizens and 6,7% of CIT levied on firms from its territory. In case of rural municipalities, where important part of citizens are farmers the PIT is relatively small part of their budgets- the farmers do not pay PIT in Poland. PIT in average decide about 9% of rural municipalities’ revenues and CIT about 0,3%.

Own revenues include own taxes (real estate, agricultural, forestry, small businesses) income from user fees and charges, from the sale or rental of municipal property. Gminas, have the right to impose own taxes, however, the Ministry of Finance determines both the base and maximum rates of these taxes. Those own revenues decide in average about 25% of municipal budgets. Using the equation presented in part 1.2 I established IRA for every municipality in Poland, below in the table 1 are presented the basic statistics of IRA for rural municipalities.

As presented above local governments are responsible for important part of public tasks. Among them are welfare services- education and social assistance. They decide about 50% of local budgets. Those two services, as in other countries are strongly regulated. (Bach et al., 2009; Kvalsund, 2009; Tranvik and Fimreite, 2006) In the case of social assistance, there are specific grants for tasks commissioned by central government (like poor or unemployment benefits). There are also tasks defined as own local responsibilities (and not financed by specific grants) but where are given strict instructions related to the type and size of assistance. In the case of education, there are no specific grants, but the most important part of these spending-

teachers' salaries and more generally the rules related to teachers employment are defined by special law. In the case of education, there are also defined some obligatory payments- for non-public schools and kindergartens. The other parts of educational spending- like schools' maintenance, materials and equipment's for schools are not defined in law. Taking above into account I established spending autonomy indicators for Polish municipalities. In addition to the above-mentioned categories of non-autonomous education and social assistance expenditure, other spending financed by conditional grants and obligatory contributions to the state budget were included. Table 1 presents the basic statistics of spending autonomy indicator (ISA) for Polish rural municipalities.

Table 1 Differentiation revenue and spending autonomy indicators (IRA&ISA) in years 2002-2014. (in real terms)

stats	ISA	IRA
mean	0.427	0.320
min	0.117	0.087
max	0.816	0.886
cv	0.156	0.348

Source: own calculation based on budgetary data

It needs to be noticed, that proposed by me indicators defined un-autonomous spending and revenues very cautiously. Among own local revenues, there are taxes where the local fiscal power is very limited. The other than analyzed spending are also quite strictly defined by law. But I take into account the most important parts of local budgets so even when the size of local autonomy is in reality even smaller than defining by proposed indicators, the variation of the autonomy among towns and cities is properly presented. That variation gives me the possibility to find the answer how differences in local fiscal autonomy influence their spending on culture. Culture is only small part of municipal expenditures. Spending on culture is a small part of local budgets (in average about 2,6% of budgets of rural municipalities) but there is important variation in this spending. There are municipalities where this spending decides about less than 0,005% of their operational budgets and those which spend on culture more than 16%. Those differences are also dramatic in monetary terms, in table 2 the information about municipal spending per capita on culture are presented. In contrast to tasks related to education and social welfare, the spending for culture could be defined as autonomic local tasks. Municipalities establish and finance cultural institutions- libraries, the house of culture, museums, theatres, cinemas or orchestras, choirs etc. They are also responsible for the protection of historical monuments. Sub-sovereign governments finance also non-public cultural institutions. The decision related to organization and financing of the cultural sector is only broadly defined by

law. The only expectations are libraries- according to the law in every municipality need to be at least one library. There are also rules which define the legal form of public cultural institutions and rules related to their financial planning, but (except the rule of the obligatory library) without any detailed specifications to the quantity or quality of cultural offer or rules related to employment. The grants to private institutions are awarded according to general rules related to public finance. It needs to be noticed that public and private cultural institutions could receive money also from other public and private units, they also could establish charges for the access – so could partly cover the costs of their activity. In my analysis I look only at municipal budgets, so part of mentioned above financial flows related to cultural institutions which are at the territory of municipality is not visible in my study. But those other than sub-sovereign grants sources decide only about the app. 17% of revenues of cultural institutions and most of these sources is related to cultural institutions located in towns and cities, and not rural municipalities. (Kukołowicz et al. 2016)

Table 2 Differentiation of per capita operational spending* on culture in rural municipalities in years 2002-2014. (in real terms)

year	mean	p50	max	Min**	cv
2002	38.9	34.9	225.2	0.0	0.6
2003	41.1	36.5	242.8	0.0	0.6
2004	43.3	38.5	322.7	0.0	0.6
2005	46.7	41.7	513.1	0.0	0.6
2006	50.2	44.5	365.7	0.0	0.6
2007	53.8	46.8	583.0	0.0	0.6
2008	60.2	52.9	750.2	0.0	0.7
2009	65.7	58.3	689.4	0.0	0.6
2010	70.4	63.3	768.4	2.4	0.6
2011	68.6	62.7	715.1	2.3	0.6
2012	70.8	65.3	927.7	0.0	0.6
2013	73.7	67.4	853.8	4.1	0.6
2014	79.2	72.5	863.5	0.8	0.6
Total	58.7	51.4	927.7	0.0	0.7

*without spending co-financed by grants from EU

** every year 2-6 municipalities reporting zero in cultural expenditure

Source: own calculation based on budgetary data

3. An empirical analysis- expenditure demand framework.

To find the determinants of municipalities spending policy for the culture I made econometric panel analysis for 1565 rural units in years 2002-2014. To take into account the dynamic character of local spending I used dynamic panel estimator – system GMM. (Zhu 2013; Darby, Muscatelli, and Roy 2005) GMM model the best suit to the budgetary policy problems. It takes into account the dynamic issue and uses the past realizations of the dependent variable as

explanatory variables. It is also well designed for situations with short time and a large number of observations (what is the case in our sample) and the issue of independent variables that are not strictly exogenous (Roodman 2006) The basic equation estimated in our models is:

$$E_{it} = \alpha_1 E_{it-1} + \alpha_2 E_{it-2} + \sum_k \beta_k soc_{it} + \sum_l \gamma_l rev_{it} \vartheta_t + \sum_m \delta_m cost_{it} + \sum_n \epsilon_n pol_{it} + \vartheta_t + \mu_i + \varepsilon_{it}$$

E_{it} are natural logarithm of operational spending for culture per capita in municipality i in year t . The statistics of dependent variable were presented in previous part (table 2). ($E_{i(t-1)}$ and $E_{i(t-2)}$) are spending for culture in previous years. Soc_{it} , rev_{it} , $cost_{it}$, pol_{it} represents the vector of four groups of determinants – social (k characteristics), financial (l -characteristics), costs (m -characteristics) and political (n -characteristics) of municipality i in year t . The basic information and summary statistics about these variables is in Table 3.. β_k ; γ_l ; δ_m ; ϵ_n are coefficients which we look for. ϑ_t are time effect and μ_i are the municipality field effect. ε_{it} is i.i.d

Most of the explanatory variables directly refer to the variables analyzed in other studies on culture expenditures. But in case of some determinants I use approximation. In Polish public statistics, there are no data on citizens income on the level of municipalities. Usually as an approximation of variation of citizens incomes is used municipal revenues from the PIT. Unfortunately, Polish farmers do not pay PIT. So to analyze differences in citizens financial condition among municipalities I decided to use information on the size of living area and revenues from CIT paid by firms which operate in the municipality. The higher revenues from CIT and bigger houses could be understood as a better citizens' financial situation.

To find differences in the level of social capital I used information on the existence of Village Fund in the municipality in the year 2014. Village Fund is a special fund established in 2009 by law. It is not obligatory, it can be separated from the municipal budget and allocated to individual villages at their citizens' discretion. In the empirical studies, it was presented that Village Fund was established more likely in regions with high bridging-type social capital. (Swianiewicz 2018). The second variable related to social capital which I used, is the information on the of the historical borders of partitions of Poland. In XIX century Poland was occupied by 3 neighboring countries and the variation in different aspects of social and cultural characteristics of citizens of these regions are still visible in empirical studies- see for example Gorzelak&Jałowiecki (2001) or Herbst (2008)

The results of econometric analysis are presented in Table 4. All analysis were made in STATA 14SE, using `xtabond2` commands. The year effects are not presented in the table, for the clarity

of presentation. The first model contains all variables except IRA and ISA, in next models indicators are added.

Table 2 List of explanatory variables and summary statistics (average for years 2002-2014)

variable:		Description of the variable:	Statistics*			
			mean	max	min	cv
pop5_19_all	Socioeconomic characteristic of local popul	Share of population 5-19 in community	0.20	0.31	0.10	0.15
pop60more_all		Share of population older than 59 in community	0.19	0.47	0.08	0.21
female_all		Share of women in population	0.50	0.55	0.46	0.02
high_educ_all***		Share of people with the highest degree of education in community in 2002 ¹	0.03	0.20	0.01	0.48
lncit_pc		Logarithm of local revenues from commercial income tax	9.46	1032.58	-116.81	3.60
house_size_pc		Living area per capita	25.54	64.70	15.16	0.16
i.villfund**		Information about existence of village found in municipality, data from 2014 (dummy variable)	754 units (48,2%) have village found in 2014			
i.part_1		A dummy variable representing part of Poland occupied in XIX century by Prussia (Austrian part is comparison)	524 units (33,4%) are on part of Poland controlled in XIX century by Prussia (West part of Poland)			
i.part_2		A dummy variable representing part of Poland occupied in XIX century by Russia (Austrian part is comparison)	802 units (51,2%) are on part of Poland controlled in XIX century by Russia (East part of Poland)			
grantcult_pc**		Financial	Specific grants for culture from central budget per capita	0.25	129.16	0.00
lnrev_pc	Logarithm of municipality revenues per capita (without grants from EU)		2613.71	22719.75	1185.65	0.28
ISA	Spending autonomy indicator		0.427	0.816	0.117	0.156
IRA	Revenue autonomy indicator		0.320	0.886	0.087	0.348
lnpop	Cost variables	Logarithm of number of citizens	6830.46	27531.00	1615.00	0.53
Popkm2		Population density -number of citizens per km2	69.19	585.21	4.40	0.87
i.rent		A dummy variable, equal 1 if there is big city (more than 100,000 citizens) close to the municipality	438 units (28%) are close to big cities			
Library**		Number of libraries	3.00	26.00	0.00	0.69
house_of_cult**		Number of houses of culture	1.16	21.00	0.00	1.84
Cinemas**		Number of communal cinemas	0.01	2.00	0.00	11.30
i.election	Political	A dummy variable, equal 1 if there is election year (2002, 2006, 2010, 2014)				
female_counc		The share of women councilors in council	0.22	0.80	0.00	0.60
edu_counc		The share of councilors with the highest degree of education in the council	0.23	1.00	0.00	0.62

* statistics present the information on data without logarithm

** variables used as endogenous in analysis

*** The data based on census made in 2002, there are no newer data about citizens education presented at municipal level

The local spending for culture are various between municipalities due to variation of some characteristics of local society- age structure, level of education, private income and social and cultural capital. The significant in all models was the influence of share of old people in municipality. As in previous studies I found that in municipalities where are more the old people the spending for culture is higher. The share of young people positively influence the local

spending on culture, but it is significant explanation only in models where the indicators of autonomy are added. Share of women in municipality seems to positively influence local spending on culture, but it is not stable conclusion (it is significant only in first model).

Table 4 Results of expenditure demand model

	Model 1		Model 2		Model 3		Model 4	
L.E	0.563	(29.04)***	0.595	(28.00)***	0.598	(30.09)***	0.595	(29.20)***
L2.E	0.183	(13.66)***	0.152	(10.65)***	0.173	(12.84)***	0.158	(11.35)***
pop5_19_all	-0.002	-0.01	0.978	(3.32)***	0.385	-1.29	0.827	(2.66)***
pop60more_all	0.405	(2.65)***	0.55	(3.40)***	0.521	(3.24)***	0.495	(3.07)***
female_all	0.725	(1.67)*	0.481	-1.09	0.687	(1.71)*	0.601	-1.42
high_educ_all	1.346	(4.37)***	0.758	(2.60)***	1.063	(3.84)***	0.717	(2.58)***
lncit_pc	0.006	(3.26)***	0.004	(2.15)**	0.003	(1.75)*	0.004	(2.34)**
house_size_pc	0.001	-0.67	-0.003	(2.43)**	-0.001	-0.93	-0.004	(2.86)***
i.villfund	0.141	(6.24)***	0.19	(6.44)***	0.096	(3.52)***	0.157	(5.40)***
i.part_1	0.044	(3.92)***	0.024	(1.95)*	0.033	(2.93)***	0.025	(2.15)**
i.part_2	-0.037	(2.71)***	-0.026	(1.92)*	-0.036	(2.82)***	-0.023	(1.76)*
grantcult_pc	0.003	(4.91)***	0.002	(3.40)***	0.003	(5.52)***	0.002	(3.99)***
lnrev_pc	0.231	(10.73)***	0.186	(9.08)***	0.15	(4.59)***	0.205	(7.54)***
ISA			0.934	(5.44)***			1.112	(6.48)***
IRA					0.255	(2.48)**	-0.132	-1.49
lnpop	-0.073	(4.03)***	-0.07	(3.63)***	-0.064	(3.72)***	-0.068	(3.69)***
Popkm2	0	-0.02	0	-0.26	0	-0.34	0	-0.14
i.rent	-0.015	(2.02)**	-0.014	(1.88)*	-0.015	(2.25)**	-0.014	(2.04)**
library	0.012	(2.15)**	0.014	(2.44)**	0.011	(2.12)**	0.016	(3.00)***
house_of_cult	0.017	(5.93)***	0.017	(5.48)***	0.016	(5.58)***	0.016	(5.33)***
cinemas	0.117	(4.51)***	0.1	(4.54)***	0.103	(3.93)***	0.091	(4.02)***
i.election	0.05	(3.11)***	0.071	(4.59)***	0.023	(1.65)*	0.111	(5.01)***
female_counc	-0.014	-0.69	-0.03	-1.42	-0.002	-0.12	-0.03	-1.46
edu_counc	-0.011	-0.55	-0.039	(1.99)**	-0.012	-0.66	-0.031	-1.63
_cons	-0.762	(2.44)**	-0.894	(2.94)***	-0.402	-1.27	-1.105	(3.45)***
Hansen test, chi2	0.09		0.08		0.08		0.06	
AR(2)-z	0.07		0.84		0.27		0.69	
number of instruments	152		173		173		194	
Number of groups	1,561		1,561		1,561		1,561	
Number of obs	16,644		16,644		16,644		16,644	

z-Stats in parentheses; Significance: * p<0.1; ** p<0.05; *** p<0.01;

The spending on culture is influenced by the level of citizens education, if there are more highly educated citizens in the municipality, it spends more on culture. Also income of citizens, represented by revenues from CIT, positively influence public spending on culture.

To understand the differences in local spending on culture important is also to look at social capital. In my study, I found, that municipalities where is established village fund, spend more

on culture. The openness between different local groups or organizations (bridging social capital) is an important factor creating the demand for culture. My study presents also, that interest in public culture is different in various historical regions of Poland. Comparing to the south part of Poland, the western parts spend more on culture, while eastern parts less.

Most of the costs' variables are significant in most models. The scale effects are visible, if there are more people in municipality and population density is higher, the spending per capita on culture are smaller. But if there are more cultural institutions is higher- the spending on culture are higher. My analysis presents also that municipalities which are close to big cities spend less on culture. This is the effect of spillover of services offered by central places.

The cultural spending is influenced by political cycle. In election year municipalities spend more on culture.

The financial condition of local government is an important explanation of local spending on culture. 1% more revenues per capita causes 0,15-0,23% more spending on culture. Also, the grants from the central budget increase the spending on culture.

Level of fiscal autonomy, and especially spending autonomy, importantly influence spending on culture. 1 percent point more autonomous budget on the spending side, means 0,93-1,12% more spending on culture. In case of IRA, the significant relation is presented only in model 3, when (in model 4) I added ISA, the IRA is not significant explanatory of local spending on culture.

4. An empirical analysis- differences in fiscal autonomy and variation in determinants of spending on culture

The results of presented econometric analysis are consistent with the theory and other studies and seem to represent preference matching effect in local spending policy. As mentioned important is a question if and how this effect changed with the level of fiscal autonomy. To answer that question I analyzed interaction effects, which help me to find if there are differences across groups of municipalities with the different level of autonomy. I divided rural municipalities into groups- those where autonomy is high, moderate and low. Analyzing the whole population of rural municipalities in years 2002-2014, I define the levels of indicator which represents first and third quartile of municipalities. (in case of IRA: Q1=0,241 and Q3=0,378; 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 ten or more years. The low autonomous are units which autonomy indicator is smaller than Q1 in ten 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 194 municipalities in the low-autonomic group, 221 in high and 1150 in moderate. As table 5 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 5 Number of low, moderate and high -autonomous rural municipalities.

		IRA			
		low	moderate	high	total
ISA	low	71	96	0	167
	moderate	123	966	91	1180
	high	0	88	130	218
	total	194	1150	221	1565

Source: own calculation based on Statistical Office data

In table 6 I present the basic statistics of the level of spending for culture in those groups. The differences of the mean and median value of this spending among groups are logical taking into account the results of previous models which presented the strong positive relationship between the level of autonomy and size of spending for culture.

Table 6 Rural municipalities operational spending on culture per capita in years 2002-2014 (value in zł from 2014)

		mean	p50	Min*	max	cv
IRA	low	45.93	41.41	0.00	191.69	0.54
	moderate	55.28	49.99	0.00	381.17	0.57
	high	87.62	75.73	0.00	927.70	0.75
ISA	low	43.95	41.00	0.00	191.69	0.51
	moderate	54.96	49.30	0.00	381.17	0.58
	high	90.18	78.07	0.00	927.70	0.72

* 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

But even within those groups, it is a variation of spending for culture, so it is worth to ask if and how that variation is the results of the same as presented above determinants public spending for culture. Especially if and what are the differences of the influence of these determinants across groups and if effects of variables defining citizens preferences differ. To

do this, I analyzed interaction effects. (Williams 2015; Brambor, Clark, and Golder 2006) I included 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.:

$$E_{it} = \alpha_1 E_{it-1} + \alpha_2 E_{it-2} + \sum_k \beta_k soc_{it} + \sum_k \beta_{Dsock} D sock_{it} + \sum_k \varphi_{Dsock} D$$

$$+ \sum_l \gamma_l rev_{it} \vartheta_t + \sum_m \delta_m cost_{it} + \sum_n \epsilon_n pol_{it} + \vartheta_t + \mu_i + \varepsilon_{it}$$

The basic model for interaction analysis is model 1 in table 4, but without variables which were reported as not significant. The results are presented in Table 7. In most (but not all) models it is proved that less autonomous units (1) spend less on culture than moderate and more autonomous (2) more.

Local fiscal autonomy informs not only on the size of local budgets (but it is correlated to it) but also on the level of local independence- so the level of decentralization. Taking the basic models of fiscal federalism we could expect that more autonomous units spend more in line with the preferences of citizens - so the allocative efficiency of the spending of more autonomous units is higher than in case of less autonomous municipalities. As mentioned in previous studies on that problem researchers compared local spending policy before and after reforms which gave more fiscal autonomy to local units. In my study, I compare less and more autonomous units in the same time period. The results of my analysis are not clear. First there are no statistically important differences among the group with the lowest fiscal autonomy and group with moderate fiscal autonomy. Second, in case of group with the highest autonomy level, only the share of old people and level of education, influenced differently than on the group with moderate fiscal autonomy. In case of old people, the differences are in line with our expectation- in case of more autonomous municipalities the impact of older population is stronger, it means such municipalities spend not only more on culture, but also the response on preferences of older society is stronger (we need to add the coefficient for moderate group and interaction coefficient). The second significant interaction is in case of a share of highly educated people in the municipality. In most autonomous municipalities the spending is higher, but surprisingly the impact of educated citizens is weaker (the sign of the interaction coefficient is negative).

Table 7 Analysis of interaction

	pop60more_all - ISA	pop60more_all - IRA	female_all - ISA	female_all - IRA	high_educ_all - ISA	ihigh_educ_all - IRA	lncit_pc - ISA	lncit_pc - IRA	villfund - ISA	villfund - IRA
IRA_1		0.008		-0.498		-0.019		-0.024		-0.024
		-0.13		-0.72		-0.53		(2.23)**		(1.75)*
IRA_2		-0.097		-0.584		0.075		0.024		0.018
		(2.64)***		-1.34		(3.69)***		(1.72)*		-1.16
ISA_1	-0.012		-0.611		-0.026		-0.047		-0.033	
	-0.21		-0.78		-0.65		(3.97)***		(2.18)**	
ISA_2	-0.007		0.391		0.082		0.046		0.044	
	-0.23		-1		(4.25)***		(3.73)***		(3.52)***	
Variable- moderate group	0.263	0.36	0.443	0.286	1.387	1.933	0.003	0.005	0.023	0.02
	(1.82)*	(2.80)***	-0.91	-0.63	(3.16)***	(5.46)***	(1.77)*	(2.57)**	(3.19)***	(2.68)***
ISA_1*variable	-0.184		1.132		-0.706		0.001		-0.005	
	-0.58		-0.72		-0.54		-0.14		-0.26	
ISA_2*variable	0.328		-0.669		-0.819		0.004		0.012	
	(2.06)**		-0.86		(1.83)*		-1		-0.76	
IRA_1*variable		-0.172		0.947		-0.013		-0.001		0.002
		-0.55		-0.68		-0.01		-0.25		-0.1
IRA_2*variable		0.685		1.204		-1.376		-0.001		0.022
		(3.40)***		-1.39		(3.39)***		-0.32		-1.23
Hansen test, chi2	0.08	0.06	0.08	0.08	0.08	0.12	0.08	0.07	0.17	0.17
AR(2)-z	0.07	0.04	0.07	0.05	0.06	0.04	0.07	0.05	0.07	0.09
number of instruments	151	151	151	151	151	151	151	151	152	152
Number of groups	1562	1562	1562	1562	1562	1562	1562	1562	1562	1562
Number of obs	16658	16658	16658	16658	16658	16658	16658	16658	16658	16658

z-Stats in parentheses; Significance: * p<0.1; ** p<0.05; *** p<0.01;

Conclusion

The aim of my study was to find determinants of local spending on culture with special focus on preference matching problem. I presented that expenditure demand model well suit to that analysis. I found that local spending on culture is influenced by four groups of variables- socio-economic characteristics of society, the financial condition of the municipality, costs of cultural services and decisions of local politicians.

In case of the first group, I presented that when in the municipality are more old people, citizens are better educated, richer and the level of social capital is higher- the spending on culture is higher. That results are usually in literature presented as a manifestation of the allocative efficiency of decentralized spending.

I found also that financial condition of local government is an important determinant of differences in local spending on culture. First important is the size of local revenues, but also the level of local autonomy on spending and revenue side is vital. The level of fiscal autonomy inform on the real elasticity of local budget on revenue and spending side. That autonomy is limited by the grants from central government but also by the central regulations, which define the quality and quantity of locally provided goods. In Poland, as in many countries, those detailed regulations are related to important welfare services- education and social protection. So its mean that in local budgets on revenue and spending side only part of fiscal decisions are made independently by the local government. Culture is an example of a task which is almost autonomous. But it means that as Håkonsen& Løyland (Håkonsen and Løyland 2016) suggested in their study on Norway “Local cultural spending seems to be facing rather a hard struggle, with increased financial pressure from other, more immediate needs and requirements.” My study presents that this pressure is different in various municipalities and is an important determinant of differences in local spending on culture. It rises questions on equity of the access of people to public services and adequacy of money in local budgets.

The other important question is if and how those limits in autonomy influence allocative efficiency of local spending. I tried to answer that question analyzing municipalities which level of autonomy was different. But results of that analysis are unclear.

In my study, I found also that in the analysis of local spending on culture important are differences in local cost of cultural services. More cultural institutions mean higher spending, but in case more populated municipalities spending is smaller. I found also that municipalities which are close to big city spend less on culture, probably because their citizens use services provided by these cities. The results of my study suggest that in case of central support for

cultural services the special focus need to be taken on poorer, less populated and peripheral municipalities. But that support would be more effective if it is in the form of general grants which cover horizontal inequalities. Thanks to that the public spending would be closer to citizens' needs.

The other interesting result of my study is that culture is used by Polish local politicians as an instrument of electoral struggle- the spending on culture in the election year are higher comparing to others years.

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