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# The determinants of local public spending on culture

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**Abstract:** Municipalities in Poland are important makers of local cultural life. Municipalities organise and fund public cultural entities: libraries, houses of culture and so on. They decide on 70% of public spending on culture. The local spending on culture was grown in the past years. But the level of this spending varies between municipalities. The aim of this study is to find determinants of these differences. Public spending on culture is important in less-developed or peripheral regions where citizens do not have access to private cultural institutions. That is why this study focuses on rural municipalities. In econometric panel model, 1,565 units and their operational spending on culture in the years 2002–2014 is analysed. Four groups of potential determinants of spending are analysed: characteristics of local society, the financial condition of local government, characteristics of local politicians and the factors that influence the costs of cultural services. Such an approach has roots in the median voter model and is widely used in the analysis of decentralised spending, but the studies related to cultural spending are rare. To my knowledge, there is no such analysis for Poland or other East European countries. This study proved that an expenditure demand model is good for the analysis of local spending. This kind of analysis can help to understand local spending's variation. It also helps to design the proper revenues equalisation system.

**Keywords:** fiscal decentralisation, municipal spending on culture, expenditure demand model

**JEL Codes:** H7, H4, H3

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*The article dedicated to prof. Krzysztof Opolski on the occasion of the 70th birthday anniversary.*

## 1 Introduction

Many factors explain public sector support for culture. Cultural activity creates positive external effects for future generation. Some cultural goods have public goods characteristic (e.g. historic monuments). The cultural activity of individuals and societies create human and social capital. This activity increases the well-being 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 important in places where private cultural institutions are not present: in rural and peripheral regions.

Culture is local, not central government, task in many countries. This is also the case in Poland. A total of 70% of public spending on culture goes from local budgets. Local governments organise and finance public cultural entities: libraries, houses of culture, museums, cinemas and so on. Spending on culture is a small part of local budgets; in 2014 it was 2.9% of rural municipalities' operational expenses. There is a huge diversification of this spending. In 2014, there were municipalities where operational spending on culture was less than 1 zł per citizen as well as those where it was more than 700 zł per citizen.

The aim of this study is to find determinants of local spending on culture. It focuses on Polish rural municipalities (1,565 units). I derived the detailed hypotheses from an expenditure demand model and analysed four groups of potential determinants. The first group of variables defines the characteristics of local society. One of the main benefits of decentralisation is that local spending is in line with citizens' preferences. I analysed the preference-matching using the information about the structure of local society. The median voter model suggests that when there are more citizens in a municipality that demand cultural services more, the spending on culture is higher. The second group of variables defines the financial condition of the municipality. The revenues of the municipality and also the fiscal imbalance indicator are included in this group. This indicator represents the differences in the real elasticity of local fiscal policy. The third group of variables defines the costs of cultural services: the number of citizens, population density, location, the former investments and so on. The fourth group of factors characterises the local political scene. As presented in the second generation of fiscal federalism theory, the politicians and their particular interests explain local public spending well.

An overview of the literature on the determinants of local government spending is presented in the first part of this article. It focuses on decentralised spending on cultural services. In the second part, the basic information on local governments' finance and organisation in Poland is presented. In that part, regulations, structure and size of municipalities spending on culture are also presented. The econometric panel data analysis is discussed in the last part. It studies the factors that determined Polish rural municipalities spending on culture in the years 2002–2014.

## 2 Determinants of local governments' spending policy. Literature review

The fundamental benefit of decentralisation is to match that local spending to local citizens' preferences and enhance the allocative efficiency of public finance. It is the theme of important theoretical and empirical studies. Tiebout and Oates established the base for this argument. Tiebout (1956) in his seminal paper suggested 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 want. Oates (2013) showed that centralised production of local public goods creates the loss of wealth and only local units could produce local public goods at level, expected by citizens.

The idea of preference matching was 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 a demand system framework. The root of this framework is the median voter model (Downs 1957). The 'median voter' of local unit decides on the local government's expenditure (Bergstrom and Goodman 1973; Borcharding and Deacon 1972). The median voter model is the theme of many theoretical and empirical studies, which presents that the assumptions of this model are far from reality (the interesting discussion was presented by Bailey (1999, 209–32); Holcombe (1989)). Despite that, the basic idea of an influence of the voter's preferences on local government spending is still present in empirical studies. They test these preferences using the information on socio-economic characteristics of local citizens. These studies often ignore the private income of

citizens as a budget constraint and local taxes as a price for local public goods. They assume that public and private goods are not substitutes and voters maximise their utility for these two kinds of goods separately. The reason for this assumption is the fiscal illusion in local finance and the fact that, in many countries, local tax policy is limited (Borge and Rattsø 1995).

The outcome preferred by local citizens (median voter) in the municipality 'i' is defined by a maximisation 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.

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

As mentioned earlier, unlike analyses on the demand for private goods, this analysis does not deal with prices but with production costs, and therefore, it is important to assess the costs that affects the amount of expenditure (E) (Heinesen 2004). The important modification of classical median voter model is also the observation that in practice, politicians decide on the size of local spending and, consequently, we need to reflect their preferences. The general form of the simplified expenditure demand function (for municipality 'i') is

$$E_i = f(soc_i, fin_i, cost_i, pol_i),$$

where

$E_i$  is the spending per capita on the analysed good of municipality 'i'

$soc_i$  is the vector of a characteristics of a local society in municipality 'i'

$fin_i$  is revenues, more generally financial condition of municipality 'i'

$cost_i$  is the vector of characteristics of municipality 'i' that explains the variation of costs of local production

$pol_i$  is the vector of characteristics of the local political scene that determines what preferences are decisive.

The large literature used demand framework in studies on spending for education (Ahlin and Mörk 2008; 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 in which demand system framework is used to analyse municipal spending on culture (Benito, Bastida, and Vicente 2013; Depalo and Fedeli 2011;

Håkonsen and Løyland 2016; Nogare and Galizzi 2011), but considering the small size of spending for culture in local budgets, such analysis are rare. According to my knowledge, there are no econometric studies on that theme for Poland and other East European countries.

In the following, the results of the studies on determinants of local spending on culture are presented. That literature review is the base for formulation of detailed hypotheses on the determinants of variation of local spending on culture.

## 2.1 Socio-economic characteristic of local society, as a determinant of local spending on culture

Many researchers found that the age structure of society is an important determinant of people demand 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. But parents have less time to take part in cultural activities, and there are other spending related to kids that 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 analysed in cultural studies is the old people group. They have time to take part in cultural events, and studies show 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 shows that women pay more attention to cultural heritage and they are also more interested in the wealth of future generations. Women consume more cultural goods and services than men. (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 earlier, studies on demand for publicly provided goods ignore private income as a budget constraint. But we could use knowledge of citizens' income as information needed to understand their preferences. According to Wagner's law, increases in private income causes an increase in public spending (even higher than that in private spending). Some researchers suggest that culture is a luxury good; they found positive income elasticity of demand for private cultural goods. However, in the case of low-income people,

consumption of basic goods crowds out culture and they do not purchase it below a certain level of income. We could expect similar relation in demand for publicly provided culture. At the same time, in the case of high-income citizens, consumption of private cultural goods crowds out publicly sponsored culture. Taking those opposite arguments into account, the influence of citizens' income on their preferences on public spending on culture is unclear, but most studies found positive income elasticity (Benito, Bastida, and Vicente 2013; Getzner 2004a; Bille 2006). Bartkowski (2005) analysed the statistical correlation between Polish municipalities spending on the culture and socio-economic structure of local societies. He found a positive relationship between the citizens' incomes and local expenditures on culture. But Werck et al. (2008) in their study for Finland found no significant correlation, whereas Schulze and Rose (1998) showed that the increase in private income results in the decrease in the 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. We need to remember that higher education makes culture more accessible. Educated people enjoy culture more because, first, they understand it better and, second, 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 the study by Getzner (2004a), and a positive correlation was presented by Bartkowski (2005). But in other studies, the level of citizens' education was found as not a significant explanatory of their support of public spending for culture (Benito, Bastida, and Vicente 2013; Werck, Heyndels, and Geys 2008).

The social capital is the last characteristic of the local society that can determine the citizens' demand on culture. Culture is a 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).

## 2.2 Local government's financial statement and its influence on local spending

The studies on local governments spending policy show that the 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 we need to consider not only the size of local incomes but also the real autonomy of local budget policy. As mentioned earlier, Oates' and Tiebout's models assumed complete fiscal autonomy of local governments. In those models, local governments are the only decider on the size and structure of local spending and finance these spending by own local taxes levied on local citizens. But such a totally decentralised system does not exist.

Limits in decentralisation affect the autonomy of the policy of local governments, which, therefore, affects the results of decentralisation. For example, studies show that grants influence the public spending stronger than own local taxes: this is a fly-paper effect (Inman 2008). Hakonsen and Loyland (2016) presented the fly-paper effect in spending on culture in Norway.

Grants express fiscal inequalities, and they are associated with two basic fiscal decentralization's problems: vertical fiscal imbalance (VFI) and horizontal fiscal imbalance (HFI). The VFI occurs because local governments have smaller possibilities to create their income than the central government but carry out many public tasks. HFI results from unequal income base and differences in expenditure needs of individual local governments (Richard M. Bird and Tarasov 2004; R.M. Bird 1986; Sharma 2012). The aim of the local governments' finance system and in a particular system of transfers is to ensure stable local incomes and adequate income to local tasks. It needs to consider the diversity of the characteristic of production in local units (Schroeder and Smoke 2003). This goal is difficult to implement because of, first, technical aspects and, second, the need to take difficult social and political decisions. A full assessment of adequacy requires a detailed analysis of the expenditure needs of various local governments in each of their tasks. Also, such an analysis must be often updated to consider changes in technology and production costs. Another problem is the social consensus on the acceptable level of inequalities between local units. In many countries, in case of important welfare services, such as education, social protection and healthcare, there are detailed regulations of the minimum level of quality and quantity of locally provided goods. Thanks to these regulations, it is easier to analyse if there is enough money to finance these services. The other local tasks, as the culture, in most countries are less regulated. The problem is that as 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'. That is why the analysis of fiscal imbalance seems to be important in the case of culture.

### 2.3 Characteristic of the local cultural sector

To understand variation in local spending on the culture, we need to consider differences in local costs of cultural services. Many studies show that the size of the population is an important 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 population size also correlates to costs of culture. If there are more people who use cultural services, the cultural infrastructure (e.g. 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 increases with the number of citizens. But we could also expect 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 costs of cultural services also depend on the number of infrastructure facilities. The studies on the economy of education present that number and size of schools is an important factor of spending on education (Ahlin and Mörk 2008; Borge and Rattsø 1995; Falch, Ronning, and Strom 2007; Poterba 1996; Salinas and Solé-Ollé 2009). Previous studies on spending on culture did not analyse the number of libraries or houses of culture as cost factors. But considering the economic validity, I added variables representing the number of cultural objects in my empirical analysis.

The other important factor that influences the organisation and costs of the local cultural sector is localisation. Municipalities that are closer to big cities could spend less on culture because their citizens have access to the cultural sector (public and private) that is located in economic centres. Werck et al. (2008) presented such

free-riding behaviours of municipalities close to 'central places' in their study for Finland.

### 2.4 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 behaviours. One example of these behaviours is a political business cycle when the governors change spending in years close to the election to increase chances to win. In the case of spending on culture, considering its small size in local budgets and low importance as a 'political pork barrel', it is not obvious if and how this spending change. For example, Benito et al. (2013) presented that in Spain, in election year, spending for culture are higher compared to others years, whilst in study for Italy, Nogare and Galizzi (2011) showed that in election year, expenditure for culture decreases.

The ideology of the governors' political party and their private opinion and interests could be also important (Benito, Bastida, and Vicente 2013; Getzner 2004a). As in case of analysis of citizens' preferences, the local governors' age, gender and their level of education could be important.

### 2.5 The determinants of local spending on culture- summary of literature review

Summarising the above literature reviews, amongst variables that 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. The financial condition of local unit
  - a. The size of local revenues
  - b. The level of fiscal imbalance
3. The characteristics of local cultural sector
  - a. Number of citizens
  - b. Population density
  - c. Number of communal cultural institutions
  - d. The neighbourhood 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 article, I will check if these variables determine Polish rural municipalities spending on culture. But first, I present the basic information about the revenues and expenditures of local governments in Poland.

### 3 Local government in Poland

The decentralisation reforms were part of transformation and decommunisation process in Poland. The municipalities (gminas) as independent local units were established in 1990, and it was one of the first reforms undertaken by new, Solidarity governments. In 1999, because of the second phase of decentralisation reform, the upper levels of sub-sovereign governments (powiaty and voivodships) were set up.

Sub-central governments in Poland manage an important part of public tasks. Municipalities (gminas) are the lowest level of local governments. They are responsible for local tasks related to social (such as education, culture and healthcare) and communal services (such as water supply, roads and transport) and also local development. We can distinguish three types of gminas: rural, urban and mixed municipalities. In my study, I focus on rural municipalities (1,566 units).

Local governments in Poland have four basic categories of revenues: own revenues, shared-taxes, conditional grants and non-conditional fiscal transfers (subwencja). Own revenues include own taxes (real estate, agricultural, forestry and small businesses), income from user fees and charges from the sale or rental of municipal property. Gminas may impose own taxes; however, the Ministry of Finance determines both the base and maximum rates of these taxes. These own revenues decide, on an average, about 25% of municipal budgets. The municipalities also receive the shares of personal income tax (PIT) and commercial income tax (CIT). Polish law defines these shares as own local taxes (the tax base is local), but local units have no 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. With rural municipalities where farmers are the important part of citizens, the PIT is a small part of their budgets: the farmers do not pay PIT

in Poland. PIT, on an average, decides about 9% of rural municipalities' revenues and CIT about 0.3%.

Conditional grants decide about (on an average) 17% of local revenues. Most of these grants relate 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 (on an average, 70% of general grant), which is calculated according to the number of the so-called 'calculated' pupils and teachers in schools. This is general grant, and local governments could use it for any local purposes. In practice, educational subvention covers only part of local spending on education than they receive from educational subvention (on an average, about 73%).

Taking together, transfers from the central budget decide, on an average, about 61% of municipal revenues, and the fiscal imbalance measured by the share of transfers in local revenues is quite high. But there is a very important differentiation in that imbalance. There are municipalities where the fiscal imbalance is almost 90% and also where it is less than 10% (the basic statistics of fiscal imbalance is presented in Tab. 3). It needs to be noticed that the Polish system of transfers only moderately equalises the financial situation of municipalities differently endowed by own local revenues. Differences in local revenues between municipalities after transfer are smaller but similar to those before (Swianiewicz 2011, 132).

As presented above, local governments manage an important part of public tasks. Amongst them are welfare services: education and social help. They decide about 50% of local budgets. As in other countries, the central law highly regulates these two services.

Culture is only a small part of municipal expenditures. Spending on culture is a small but growing part of local budgets (on an average, about 2.6% of budgets of rural municipalities), but there is an important variation in this spending. There are municipalities where this spending decides about less than 0.005% of their operational budgets and those that spend on culture more than 16%. These differences are also dramatic in monetary terms; Tab. 1 presents the information about municipal spending per capita on culture.

In contrast to tasks related to education and social welfare, the spending on culture could be defined as autonomic local tasks. Municipalities set up and fund cultural institutions such as libraries, the house of culture, museums, theatres, cinemas or orchestras and choirs. They are also responsible for protecting historical monuments. Municipalities also co-fund non-pub-

**Tab. 1.** Differentiation of per capita operational spending\* on culture 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 the European Union.

\*\* Every year, 2–6 municipalities report zero in cultural expenditure.

Source: own calculation based on budgetary data.

lic cultural institutions. Law generally defines the local obligations in the cultural sector. The only exception is libraries: according to the law, every municipality need to have at least one library. There are also rules that define the legal form of public cultural institutions and rules related to their financial planning but (except the rule of the obligatory library) with no detailed specification to the quantity or quality of cultural offer or rules related to employment. Private institutions receive the grants according to general rules related to public finance. It should be stressed that public and private cultural institutions can also receive money from other public and private units; they also can establish charges for the access and so could cover part of the costs of their activity. In my analysis, I look only at municipal budgets, so part of the above-mentioned financial flows related to cultural institutions is not visible in my study. But those other than sub-sovereign grants sources decide only about 17% of cultural institutions' revenues. Also, most of these sources relate to cultural institutions in towns and cities and not in rural municipalities (Kukołowicz, Modzelewska, Siechowicz, & Wiśniewska, 2016; Malinowska-Misiąg, 2016).

## 4 An empirical analysis

To find the determinants of municipalities spending policy for the culture, I made econometric panel analysis for 1,566 rural units (I analysed municipalities reported as rural in the whole period of analysis) in years 2002–2014. To consider the dynamic character of local spending, I used two types of econometric models (Zhu 2013; Darby, Muscatelli, and Roy 2005). I used dynamic panel estimator, system GMM, (Generalized Method of Moments) and static model when the disturbance term is first-order autoregressive. The GMM model best suits to the budgetary policy problems. It considers the dynamic issue and uses the past realisations of the dependent variable as explanatory variables. What's more, it is well designed for situations with short time and a large number of observations (what is the case in our sample) and it deals with independent variables that are not strictly exogenous (Roodman 2006). I used the static models for comparison. In the case of the static models, I used both fixed-effects and random-effects estimations. The Hausman test suggested that fixed-effects model is more effective. But because of 'within transformation', it is not possible to analyse the effect of time-invariant variables. Also, the fixed-effect analysis focuses on changes and presents the determinants of changes in studied spending, whilst the goal of this article is to find the determinants of variations between municipalities (Clark and Linzer 2015; Bell and Jones 2015). The basic equation estimated in our models is

$$E_{it} = \sum_k \beta_k X_{it} + \vartheta_t + \mu_i + \varepsilon_{it}$$

$E_{it}$  is the 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 (Tab. 1).  $X_{it}$  represents the vector of  $k$  determinants. Considering the literature review, I grouped these determinants into four groups, representing social, financial, costs and political characteristics of municipality  $i$  in year  $t$ . The basic information and summary statistics about these variables is given in Tab. 2.  $\beta_k$  is the coefficients that we look for.  $\vartheta_t$  is the time effect, and  $\mu_i$  is the municipality field effect. In additional, in case of GMM model, I added spending for culture in previous years ( $E_i(t-1)$  and  $E_i(t-2)$ ) as explanatory variables.  $\varepsilon_{it}$  is an error term which is independent and identically distributed (i.i.d.) in case of GMM model, and in case of static model, the  $\varepsilon_{it} = \rho\varepsilon_{it-1} + \xi_{it}$ ;  $\xi_{it} - \text{i.i.d.}$



Tab. 2. List of explanatory variables and summary statistics (average for years 2002–2014)

Variables	Description of the variable	Statistics*			
		Mean	Max	Min	cv
pop5_19_all	Share of population 5-19	0.20	0.31	0.10	0.15
pop60more_all	Share of population older than 59	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 municipality in 20021	0.03	0.20	0.01	0.48
lncit_pc	Logarithm of local revenues from commercial income tax	9.46	1,032.58	-116.81	3.60
house_size_pc	Living area per capita	25.54	64.70	15.16	0.16
i.villfund	Information on the Village Found in data from 2014 (dummy variable)	754 units (48.2%) had village found in 2014			
i.part_1	A dummy variable representing part of Poland occupied in 19th century by Prussia (Austrian part is a comparison)	524 units (33.4%) are on part of Poland controlled in 19th century by Prussia (west part of Poland)			
i.part_2	A dummy variable representing part of Poland occupied in 19th century by Russia (Austrian part is comparison)	802 units (51,2%) are on part of Poland controlled in 19th century by Russia (east part of Poland)			
grantcult_pc	Specific grants for culture from central budget per capita	0.25	129.16	0.00	8.43
lnrev_pc	Logarithm of municipality revenues per capita (without grants from the European Union)	2,613.71	22,719.75	1,185.65	0.28
FI	Indicator of fiscal imbalance, which represents the share of grants from central budget in local revenues	0.61	0.90	0.06	0.23
lnpop	Logarithm of number of citizens	6,830.46	27,531.00	1,615.00	0.53
Popkm2	Population density: number of citizens per square kilometre	69.19	585.21	4.40	0.87
i.rent	A dummy variable, equal 1 if there is a 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	A dummy variable, equal 1 if there is election year (2002, 2006, 2010, 2014)				
female_counc	The share of women councillors in council	0.22	0.80	0.00	0.60
edu_counc	The share of councillors 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.

The data based on census made in 2002; there are no newer data about citizens' education presented at municipal level.

Most of the explanatory variables refer to the variables analysed in other studies on culture expenditures. But in case of some determinants, I use an approximation. In Polish public statistics, there are no data on citizens' income on the level of municipalities. The other

studies used municipal revenues from the PIT as an approximation of citizens' income. Unfortunately, Polish farmers do not pay PIT. So to analyse differences in citizens' financial condition amongst municipalities, I used information on the size of the living area and rev-

Tab. 3. Results

variables	1-	2-	3-	4-	5-	6-
	GMM-1	GMM-2	FE-1	FE-2	RE-1	RE-2
L.E	0.569 (28.79)***	0.566 (31.21)***				
L2.E	0.181 (13.51)***	0.172 (12.48)***				
pop5_19_all	0.155 -0.65		0.082 -0.18		-0.413 -1.15	
pop60more_all	0.485 (3.11)***	0.536 (4.39)***	0.888 (1.98)**	1.169 (2.56)**	0.949 (2.99)***	1.059 (3.59)***
female_all	0.733 (1.70)*		-0.171 -0.21		1.31 (1.87)*	1.443 (2.09)**
high_educ_all	1.144 (3.76)***	0.991 (3.85)***			7.512 (8.32)***	7.747 (8.74)***
lncit_pc	0.004 (2.52)**	0.004 (2.39)**	0.002 -0.87		0.003 -1.53	
house_size_pc	0 -0.24				0.004 (1.77)*	0.004 (1.73)*
i.villfund	0.123 (4.76)***	0.123 (5.47)***			0.055 (2.40)**	0.055 (2.37)**
i.part_1	0.041 (3.56)***	0.043 (4.00)***			0.159 (4.09)***	0.163 (4.23)***
i.part_2	-0.039 (2.81)***	-0.047 (3.61)***			-0.315 (8.42)***	-0.313 (8.37)***
grantcult_pc	0.003 (5.22)***	0.004 (6.57)***	0.011 (15.21)***	0.011 (16.17)***	0.011 (14.69)***	0.011 (15.68)***
lnrev_pc	0.203 (9.24)***	0.206 (9.12)***	0.093 (4.58)***	0.093 (4.68)***	0.152 (7.68)***	0.148 (7.65)***
FI	-0.09 (2.93)***	-0.095 (3.25)***	-0.096 (2.89)***	-0.085 (2.63)***	-0.116 (3.58)***	-0.116 (3.68)***
lnpop	-0.069 (3.83)***	-0.041 (4.59)***	-0.278 (2.53)**		-0.157 (5.27)***	-0.154 (5.24)***
popkm2	0 -0.23		-0.002 (2.01)**	-0.004 (4.69)***	-0.001 (2.15)**	-0.001 (2.26)**
i.rent	-0.016 (2.22)**	-0.017 (2.37)**			-0.06 (2.38)**	-0.06 (2.36)**
library	0.011 (1.96)**		0.01 (2.88)***	0.008 (2.56)**	0.023 (8.13)***	0.022 (7.95)***
house_of_cult	0.018 (5.91)***	0.019 (6.35)***	0.012 (4.81)***	0.012 (4.97)***	0.023 (10.64)***	0.023 (10.78)***
cinemas	0.111 (4.34)***	0.135 (6.32)***	0.095 (2.47)**	0.09 (2.37)**	0.13 (3.75)***	0.129 (3.77)***
i.election	0.063 (3.75)***		5.815 (5.69)***	2.156 (5.11)***	0.503 (21.09)***	0.523 (32.86)***
female_counc	-0.013 -0.63		-0.026 -0.95		-0.013 -0.51	
edu_counc	-0.012 -0.6		-0.008 -0.29		-0.002 -0.07	

Tab. 3. Results (continue)

variables	1-	2-	3-	4-	5-	6-
	GMM-1	GMM-2	FE-1	FE-2	RE-1	RE-2
_cons	-0.548 (1.77)*	-0.339 (1.74)*	0.088 (3.56)***	1.347 (9.00)***	2.829 (5.99)***	2.658 (5.79)***
Hansen test, chi2	0.09	0.23				
AR(2)-z	0.1	0.17				
Number of instruments	153	126				
Number of groups	1,561	1,562	1,562	1,565	1,561	1,562
Number of obs	16,644	16,658	17,996	18,731	19,546	20,270
R2_within			0.32	0.19	0.52	0.52
R2_between			0	0	0.29	0.29
R2_overall			0.09	0.09	0.35	0.35
rho_ar			0.61	0.6	0.61	0.6

z-Stats (in models 1, 2, 5 and 6) and t-stats (in models 3 and 4) are in parentheses.

Significance: \*  $p < 0.1$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$ .

venues from CIT paid by firms that operate in a municipality. The higher revenues from CIT and bigger houses are information on better citizens' financial situation. To find differences in the level of social capital, I used information on the village fund in the municipalities in the year 2014. Village fund is not obligatory; a municipality can separate this fund from the municipal budget and allocate to individual villages according to the decisions of its citizens. The empirical studies presented that the regions with high bridging-type social capital establish the village fund more likely (Swianiewicz 2018). The second variable related to social capital which I use is the information on the historical borders of partitions of Poland. In 19th century, 3 neighbouring countries occupied Poland, 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 and Jałowiecki (2001) or Herbst (2008).

The results of the econometric analysis are presented in Tab. 3. All analyses were made in STATA 14SE, using `xtabond2` and `xtregar` commands. The year effects are not presented in the table for the clarity of presentation. The information on the model's type is in the top row of the table. The models 1, 3 and 5 contain all the analysed data, whilst 2, 4 and 6 contain only those that were significant. The results of all analysed models are similar.

The differentiation of local citizens' age structure, level of education, private income and social and cul-

tural capital explain the differentiation of municipal expenses on culture.

In all models, the influence of the share of old people in the municipality was significant. As in previous studies, I found that in municipalities where there are more old people, the spending on culture is higher. Also, the results from a static model with fixed effects suggest that if the share of old people in a municipality increases, the spending on culture also increases.

The share of young people does not explain spending on culture only in one model. The level of citizens' education influences the local spending on culture: if there are more educated citizens in the municipality, it spends more on culture. Also, income of citizens positively influences public spending on culture.

To understand the differences in local spending on culture, it is important to also look at social capital. In my study, I found that municipalities where is the Village Fund, spend more on culture. The openness between different local groups or organisations (bridging social capital) matters in creating the demand for culture. My study also shows 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, whilst eastern parts spend less.

The financial condition of local government explains local spending on culture. About 1% more revenues per capita causes 0.093–0.206% more spending on culture. Also, the level of specific grants enhances the spend-

ing on culture. These positive effects are visible not only between municipalities but also when we analyse changes in time within the municipality.

The fiscal imbalance negatively influences local spending on culture. Municipalities that receive more grants spend less on culture. As was presented in case of Poland, equalisation is only partial and municipalities which have more transfers have fewer total revenues. As discussed above, the income effect is repeated in case of analysis of transfers. One percent point more transfers in municipal budget causes 0.09-0.12% less spending on culture.

All the costs' variables are significant in most models. The scale effects are visible, if there are more people in municipality and the population density is higher, the spending per capita on culture is smaller. But if there are more cultural institutions, the spending on culture is higher. My analysis also shows that municipalities that are close to big cities spend less on culture. This is the effect of spill over of services offered by central places. The cultural spending is influenced by the political cycle. In election year, municipalities spend more on culture.

## 5 Conclusion

The aim of this study was to find determinants of differences in local spending on culture. I presented that expenditure demand model well suit to that analysis. In the study, I analysed four groups of variables: socio-economic characteristics of society, the financial condition of the municipality, the costs of cultural services and decisions of local politicians. My analysis proved that these groups of variables influence local spending on culture. In case of the first group, I presented that when there are more old people in a municipality, citizens are better educated, richer and the level of social capital is higher: the spending on culture is higher. These results represent the allocative efficiency of decentralised spending.

I also found that the financial condition of local government is an important determinant of differences in local spending on culture. First important thing is the size of local revenues and also the level of fiscal imbalance. Municipalities that have lower revenues and are more dependent on transfers from central budget spend less on culture. Considering that most of these transfers relate to obligatory spending on education

and social protection, it could mean that local obligatory spending crowd out spending on culture. It raises the question of adequacy of money in local budgets. The size of differences in local spending on culture could suggest that transfers cover vertical imbalances but not horizontal inequalities.

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

The results of my study suggest that central support for cultural services need to take the special focus on poorer, less populated and peripheral municipalities. But that support would be more effective if it is in the form of general grants that cover horizontal inequalities. Thanks to that, the public spending would be closer to citizens' needs. The other interesting result of my study is that Polish local politicians use culture as an instrument of electoral struggle: the spending on culture in the election year is higher compared to other years.

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