sciendo

Financial Internet Quarterly „e-Finanse" 2018, vol. 14/ no. 3, s. 21-31

DOI: 10.2478/fiqf-2018-0017

PARTIAL FISCAL DECENTRALIZATION AND LOCAL GOVERNMENT SPENDING POLICY

Agnieszka Kopańska[1]

Abstract

The aim of this paper is to analyze how limits in revenue and spending autonomy of sub-sovereign governments influence their decisions. Revenue and spending autonomy indicators for Polish towns were established and used in analysis on school education expenditures during 2003–2016. The influence of limits on revenue autonomy on municipal spending has been extensively addressed in both theoretical and empirical literature. However, studies related to spending autonomy are rare. The analysis presented in this paper suggests that when limits exist in spending autonomy, more decentralized tasks are crowded out by regulated obligations. That is why the spending autonomy analysis is important to evaluate the equity between local units and the adequacy of local revenues to decentralized expenditures.The basic principle of local finance is that there should be an adequate relationship between the financial resources available to a local authority and the tasks it performs. However, in practice, the assessment of whether this has been achieved is very difficult. Often, only problems with the solvency of local governments indicate that we are dealing with a poorly constructed system of local finances. The expenditure autonomy indicator proposed in this article is a tool that provides a way to indicate problems with the adequacy of revenues before such anextreme situation occurs.

JEL classification: H72, H75, H77
Keywords: partial decentralization, spending and revenue autonomy, local government spending policy

Received: 09.03.2018 Accepted: 30.09.2018

1 Faculty of Economic Science, University of Warsaw, e-mail: kopanska@wne.uw.edu.pl, ORCID: 0000-0002-5587-2530.
This research was funded by the National Science Centre of Poland (project 2014/13/B/HS4/03204).

The previous version of this analysis was presented in (Kopańska, 2016a).

Introduction

In classical models of fiscal federalism, decentralization- when autonomous local governments offer to citizens local public goods financed by local taxes and charges - is presented as a method to improve efficiency of the public sector (Oates, 1972; Tiebout, 1956). But in the real world such independent local units do not exist. Their fiscal autonomy is limited on the revenue and expenditure side and decentralization is only partial. The aim of this paper is to find how limits in revenue and spending autonomy affect local government spending decisions. The influence of limits on revenue autonomy of municipal spending has been addressed in theoretical and empirical literature. But studies related to spending autonomy are rare and this autonomy is usually defined only through the existence of specific grants in local budgets or as a discrete variable, when the analysed country has undertaken complex decentralization reforms. This study is novel compared to existing works because spending autonomy indicators for every Polish town were establishedand indicated how the level of spending autonomy influences town policy.

Through empirical research Polish town spending policies were studied with regard to schools at the primary and lower secondary levels. Panel data for 239 Polish urban municipalities for the period 2003-2016 were used. Education accounts for the largest part of local budgets. School sectors exist in all municipalities, but they differ from one another, which permits empirical examination of the economic determinants of the variation. Many studies use these characteristics to analyse spending for schools in order to understand public sector decisions. (Barankay & Lockwood, 2007; Borge & Rattsø, 2014; Solé-Ollé, 2009)

In this study a standard assumption that the level of spending by a particular local government is influenced by local revenues and socio-economic characteristic of local voters was used. The standard methodology was improved by adding indicators of revenue and spending autonomy of local units. The other novel aspect of this study is that spending for schools was divided into two categories - spending for teachers' salaries and other non-wage spending. This disaggregation was used to separate expenditures with different degrees of local autonomy. This spending is defined by Polish law as own local responsibilities, but teachers' salaries are defined by central regulations while other tasks are not.

The structure of this paper is as follows. In section two is the review of literature related to reasons and effects of partial decentralization. In section 3 are proposed the measures of municipal spending and revenue autonomy in Poland. The fourth section presents the panel data analysis of effects of limits in local autonomy on Polish town level spending on schools Conclusions are in the final section.

Partial decentralization

According to the model solutions proposed by the first generation of fiscal federalism (FGFF) theory, a local government's expenditures should be financed with local taxes, which binds the costs and benefits arising from the delivery of public goods by local governments. This structuring of local government places welfare-maximizing politicians in the position of delivering public goods in response to the preferences of the citizens (and thus improves the allocative efficiency of public spending), while the mechanisms of competition between local governments improve production efficiency (Oates, 1972; Tiebout, 1956).

However, full decentralization, defined as complete autonomy of local governments in determining the size and structure of their spending and revenues, does not exist in practice. The limits in local autonomy are necessary because of, for example, the external effects of different local services, territorial diversity of the local tax base, and the need for stabilization policy tools to be held in the hands of the central government (Swianiewicz, 2011). The existence of the above problems requires the State's intervention – and, therefore, limiting the decentralization, inter alia, by the following means. First, local revenue autonomy is limited through the State's financing of local budgets by general and specific grants and by its restrictions on the freedom of local governments to shape local taxes. Second, local expenditure autonomy is restricted by the introduction of limits on the quantity and quality of the goods supplied by local governments and by the creation of targeted grants that can only be used for specifically defined local tasks. According to analyses in FGFF theory limits in autonomy spoil the automatic mechanism described in Tiebout' and Oates' models (Oates, 1972; 2005).

In contrast to FGFF theories, second generation (SGFF) theories posit that politicians do not act to

maximize social welfare, but rather their own interest. This perspective explains why studies based on SGFF theories focus on determinants of politicians' decisions (Oates, 2005; Weingast, 2009). Local autonomy gives local politicians electoral accountability, but the limits on autonomy hamper the relations between citizens and local governors and also influence relations between central and local governors (Devarajan, Khemani & Shah, 2009). In empirical and theoretical studies conducted under both generations of fiscal federalism theory, the degree of autonomy is shown to have important implications for the structure and efficiency – allocative and cost – of spending at the local level

Most studies focus on revenue autonomy, and grants and their size, scope and changes are the subject of numerous scientific papers. As shown by Gramlich (1969), the income elasticity of general grants is higher than that of local revenues. The general grant will, therefore, affect all expenses of local governments, leading to greater outlays than if revenues were based on local taxes only. This situation means that 'public money sticks to public spending' (Inman, 2008). Specific grants are the source of financing (or additional financing) of tasks indicated by the donor, but these grants also strongly influence the other tasks. Empirical analyses show that a crowd-out effect occurs, and therefore spending on other local tasks, which are not subject to grants, is cut. This finding may mean that the substitution effect is stronger than the revenue effect. However, public spending is characterized by low price elasticity. Thus in practice, grants often raise 'other' expenses of local governments that are not supported by a grant (i.e., the income effect prevails) (Dahlberg, Mork, Rattsø &Argen, 2008; Knight & Coate, 2002; Otim, 1996) As a result, when local budgets are more transfer dependent (and especially depend on specific grants) and so-called vertical imbalance is high, local public spending increases and could cause inefficient growth of the local deficit and debt (e.g., (Asatryan, Feld, & Geys, 2015; Baskaran, 2010).

Some studies show that a reduction in transfer will result in a decline in public spending; however, the absolute size of the effect will be much smaller than in the case of growth. (fiscal replacement). However, other studies indicate that the decrease in expenditure is stronger than in the case of an analogic increase (i.e., super-flypaper effect). (Gramkhar & Oates, 1996; Stine, 1994) The fiscal replacement is linked to budget elasticity, only those municipalities which have the possibility to use its own revenues or debt to finance less granted tasks can do this. In the case of an inelastic budget we could expect the super-flypaper effect (Deller & Maher, 2006; Levaggi & Zanola, 2003).

The presence of grants in local budgets is an expression of limits in revenue autonomy. When the specific grants are replaced by general grants, we could understand it as increasing the degree of spending autonomy. Analyzing the effects of such reforms was the theme of some studies. The authors of those studies showed that decentralization reforms improved adjustment of services to local needs (allocative efficiency) and also improved production efficiency (Borge & Rattsø, 2014; Solé-Ollé, 2009). The authors also noticed that 'decentralization has the potential for better matching of regional preferences, but this potential would not be realized in practice if the revenues at the disposal of some regions are severely constrained' (Solé-Ollé, 2009). This constraint is the crux of the problem of de facto vs de jure revenue and spending autonomy, which differ in local units in a particular country. Only units that have de facto or real spending and revenue autonomy can use them according to the needs of the residents.

The problem of diversity of local public spending policy due to degree of autonomy could be analyzed by comparing different local spending. Falch & Rattso (1999) found that school spending is income inelastic- but mostly due to the inelastic structure of teacher employment. Other spending related to schools is much more influenced by local government incomes, especially in the short term. Such distinction of different categories of spending on schools is applied in my empirical study.

As presented the problem of correlation between local government autonomy and local policy is quite well described in literature. However, most of the studies focus on revenue autonomy, grants or general (de)centralization reforms and not on spending autonomy. My study fills this gap by using indicators of spending autonomy for Polish municipalities. The autonomy in terms of expenditure is more difficult than revenue autonomy to quantify. It requires an analysis of legal provisions affecting different spheres of local autonomy. Taking into account different aspects of local autonomy- policy, budget, output, input and control Bach, S. et al., (2009) proposed a method to differentiate various goods in term of local spending power. In this study I propose indicators of spending autonomy for Polish municipalities using their established

idea and I calculate indicators similar to those which are used as revenue autonomy indicators.

The Polish municipalities' indicators of fiscal autonomy

Sub-sovereign government in Poland consists of three levels – municipalities, counties and regions. In this paper, I focus on urban municipalities for a total of 239 towns . For established indicators of spending autonomy, we need to look more deeply at the rules defining local autonomy for these different responsibilities (Oulasvirta & Turala, 2009). I focused on five areas of public expenditure, which represent more than 80% of local operational expenditures: education, social protection, administration, communal services and transport. I analysed them according to the five aspects of autonomy proposed in the OECD study by Bach et al. (2009): policy autonomy, monitoring and evaluation, budget autonomy, input autonomy, and output autonomy. I then established an indicator of spending autonomy (ISA):

ISA=(OE-N&LA)/OE, (1)

where

OE = operational expenditure,

N&LA = no- and low-autonomous expenditure,

I define non-autonomous expenditure as spending for which budget autonomy is strictly limited; that is, the spending is financed by specific grants or obligatory payments to a central budget are required. I define low-autonomous expenditure as local tasks for which both input and output autonomy are strongly restricted. It is worth noting that the above-mentioned legal regulations are the same for every municipality. Consequently, de jure spending autonomy of towns is the same for all units, but de facto spending autonomy is differential and depends on the real costs of local public services and the size and flexibility of local revenues.

According to Polish law there are 3 main categories of local revenues - own revenues, general grants, and specific grants. The most important part of revenues defined by law as own are shares in personal and commercial income taxes. But those taxes are defined centrally, and any direct local policy related to these taxes is not possible. The other part of own revenues consists of: own taxes (with limited fiscal autonomy), charges, revenues from properties, grants received from other municipalities. The indicator of revenue autonomy (IRA) is

IRA=OR/R;

where

OR = own local revenues (without shares in PIT & CIT) and the loses of revenues due to local fiscal policy

R = all budget revenues (and the loses of revenues due to local fiscal policy)

IRA= OR/R, (2)

where

OR = own local revenues (without shares in PIT & CIT) and the loses of revenues due to local fiscal policy,

R = all budget revenues (and the loses of revenues due to local fiscal policy),

Table 1 presents the variation of spending and revenue autonomy of Polish towns in the years 2003-2016.

Table 1: The variation of spending (ISA %) and revenue autonomy (IRA %) of Polish towns in the years 2003-2016

	mean	p50	min	max	cv
ISA	49,5	48,8	23,6	79,0	0,15
IRA	42,4	41,1	15,3	94,2	0,23

Source: Own calculation based on budgetary data

Table 2: Correlation of revenue and expenditure autonomy and local revenues per capita in the years 2003-2016

	IRA	ISA	All revenues pc	Own local revenues pc
IRA	1			
ISA	0,63	1		
All revenues pc	0,38	0,19	1	
Own local revenues pc	0,61	0,34	0,89	1

Source: Own calculation based on budgetary data

Table 2 presents the correlation between ISA and IRA and wealth of towns measured by total revenues per capita and also by own local revenues (without shares in PIT and CIT). Revenue and expenditure autonomy are positively correlated. The level of own local revenues correlates strongly to the revenue autonomy indicator. But the relation of levels of autonomy to wealth of the municipality is positive but not strong, especially for spending autonomy. This relation means that even rich municipalities which are burdened by obligatory expenditure have less elastic budgets than poorer municipalities with less obligatory spending. This situation is related to the vertical imbalance problem and the question of the adequacy of revenues (own and granted) to tasks devoted to local units.

The impact of fiscal autonomy on local government spending policy- quantitative study

In my empirical study I focus on spending related to schools. Polish municipalities in the years 2003-2016 were responsible for school education at 6-years primary schools and 3 years gymnasiums. Local governments' educational tasks are related to management of the physical assets, - the school buildings and the approval and financing of public school work plans; its mean numbers and type of lessons; the number of teachers and other school workers and their salaries; the type and costs of school maintenance work; and the quantity and costs of supplies needed by students and teachers. School programs also need to fulfil national curriculum requirements for the particular level and type of school

Different categories can be distinguished in operational school spending. The most important distinction is spending for teachers and other resources needed for running the school. These two types of spending represent different cost functions, which is why such disaggregation is used in studies in which the problem of cost factors is the most important (Nose, 2015). Falch & Rattso (1999) report that not only do the cost factors differ, but the political factors related to spending may also be different. Teachers unions bargain over working rules with both national and local governments. This factor explains why the spending for teachers is the most inelastic and steadily increasing part of expenditure for education in many countries. In my analysis, the distinction of spending on teachers and other resources is related to differences in the level of spending autonomy. Salaries represent low decentralized tasks while supplies needed for education are highly decentralized.

The salaries decided about 90% of all operational spending for schools (excluded spending for energy and small renovations) (Table 3). This is also the less autonomous part of local spending in education. The work of teachers is regulated by a special law. The Teachers Card defines teachers' base salary, among other factors. This base is the minimum salary that should be paid to teachers with the lowest professional degree. Teachers with more education earn more; for example, teachers with the highest professional degree need to receive on average at least 184% of the base. Owing to an agreement between the teachers union and the central government, the base salary was valorized several times in recent years, and in 2016, it was 22% higher in real terms than in 2003. Trends in teachers' professional improvement, which local authorities have no influence on, is also important. In 2002, teachers with the highest professional degree constituted less than 20% of all teachers, but in 2013, this proportion was more than 50% (Kopańska & Sztanderska, 2015). Teachers' salaries could be defined as a low-autonomous expenditure, and they were excluded from ISA, but we need to note that according to the law, local decisions are potentially related to this spending. Direct salary decisions are made by the managers of the schools, but the school budget is subject to the approval of the local authority. Local governments make also their own wage regulations, which specify, inter alia, the terms and amount of salary amendments (other than those that are centrally defined). Local government are also free to raise wages above the minimum rate. Local government may decide on the establishment and the closing of schools – and thus indirectly also determine the number of teachers

A second factor analysed in our study was the part of school-related expenditure for stationery, office supplies and cleaners, teaching aids, and so forth. This spending accounts for only about 5%–6% of all operational spending. It is less important in the budget, but it affects the quality and comfort of schools and the teaching services. Woessmann (2001) reported that "providing schools with the proper instructional materials and supplies seems to have a positive effect on performance". In contrast to teachers' salaries there are no detailed regulation for tasks

Table 3: Town spending for primary and lower secondary schools, zł*per student in the years 2003-2016

	mean	p50	min	max	cv
All operational spending for schools **	6569,2	6421,5	3287,1	32034,0	0,29
Sallaries***	5868,1	5883,3	2630,1	30818,4	0,26
Non-wage spending**	701,8	422,3	30,4	10912,0	1,15

*zł- Polish zloty - price fixed for 2014; ** without spending for energy and small renovations, which determines about 6% of operational spending for schools, and are related to the age, size and type of school buildings and cannot be explained by socio-economic variables***the budgetary qualification does not separate teachers and other school employees' salaries, but teacher salaries is the main part of salaries at schools (more than 80%)

Source: own calculation based on budgetary data

related to this spending. The variation in this spending is more substantial than with salaries (Table 3). It may represent the differences of local autonomy in these two categories of spending. As Borge and Brueckner, (2014) noticed, disparities among units increase in the case of a more decentralized regime.

To analyze spending policy of towns I use the assumption that local spending is a linear function of the characteristics of local government and its society. The origin of this assumption is the median voter's demand for public policy (Bergstrom & Goodman, 1973; Borcherding & Deacon, 1972). The simplified median voter demand model is commonly used in studies on education. The function of i-th local government's spending on education is:

$$Eki=fk(revi ;soci, costi; poli, IAi) \quad (3)$$

where

Ek = spending of town i for different categories of education's goods: salaries per student (salaries_ps) and non-wage spending per student (non_wage_ps),

rev = denotes revenues of i-th local government,

soci = is the vector of characteristics of the local population that determines the local society in town i preferences for public education

costi = the vector of school sector characteristics, which influence the costs of education in town i

poli = the vector of characteristics of local politicians in town i

IAi = indicator of autonomy- revenue (IRA) or expenditure (ISA) in town i

As revenue variables, I use own local revenues (except shares in PIT and CIT) and educational subvention, both calculated per capita. Own local revenues show the wealth of local government. I expect that richer municipalities spend more on all categories of tasks. I would like also to compare the effect of those revenues for which local governments have the fiscal autonomy (even limited), to the effect of the general grant- to find if there is a fly-paper effect. Educational subvention was established to co-finance municipal obligations related to schools, but that subvention is a general grant. It is calculated according to the number of pupils and teachers at schools, but there is no financial standard which defines what part of local spending for schools is covered by educational subvention (Herbst, Herczyński & Levitas, 2009).

The information about the number of students in average municipal school represents the costs' variables. Many studies reported that with the increase in the number of students in the school, the costs per-pupil fall.

In recent years the question of whether older people support public education became important. A large literature exists on this theme, but the results are mixed. In my study I use the variable old_all, which represents the share of people above 70 years in a town. The second characteristic of the local society added in my analysis is the share of women in the town's population (women_all). Some studies have reported that women prefer higher spending on education than men (Duncombe et al., 2003; Sørensen & Rattsø, 2010)

The problem of political influence on public spending in my study is presented using the information about the level of education of local councilors. I expect that more educated councilors vote for higher spending on education.

Table 4 summarizes the basic statistics of the variables which were used in this analysis.

With the characteristic of budget planning taken into account, the important explanation of expenditure in year t is spending in the previous year. I decided to use a dynamic panel estimator- system GMM (generalized

Table 4: List of variables and descriptive statistics: variation over towns (average for the years 2003-2016)

Name of variable	description	mean	p50	min	max	cv
Ownrev_pc	Own local revenues per capita in zł	1117,9	951,0	319,3	27927,3	0,88
subv_pc	Educational general grant per capita in zł*	555,1	522,3	203,6	1708,8	0,29
schoolsize	Schools' size (number of students in average school provided by town)	372,8	361,0	43,0	951,0	0,37
women_all	Share of women in population (in %)	52,2	52,2	48,6	55,4	0,02
old_all	Share of people 70 years old and older in population (in %)	9,2	9,1	3, 5	16, 4	0,20
Counc_edu	Share of councilors who have higher education in council (in %)	60,1	61,9	0,0	100,0	0,28
ISA	Indicator of spending autonomy (in %)	49,5	48,8	23,6	79,0	0,15
IRA	Indicator of revenue autonomy (in %)	42,4	41,1	15,3	94,2	0,23

*Source: Own calculation based on GUS data *zł- Polish zloty - price fixed for 2014*

method of moments). In the GMM model the problem of endogeneity of part of explanatory variables is also taken into account (Heinesen, 2004; Roodman, 2006; Zhu, 2013). In my analysis I added a year effect. As level instruments were used the lagged spending (first and second lags). As strictly exogenous variables were analyzed population and political data and educational subvention. The school size, own local revenues and indicators of autonomy were analyzed as endogenous variables (Roodman, 2006).

The results of econometric analyses are presented in Tables 5-7. In Table 5 are presented information from the basic model where all socioeconomic and political variables are present, but there are no fiscal autonomy indicators. The most interesting for this study results are presented in Tables 6 and 7. There are presented models where the indicators of fiscal autonomy are added. Due to the problem of high correlation of own revenues and IRA (60%) the models with and without own revenues are presented. That distinction helps to identify the importance of the effect of wealth of the local unit and of its fiscal autonomy. For clarity of presentation in all tables, the years' effects are not presented and in Tables 6 and 7 are presented results for indicators of autonomy and own revenues but without results for other variables which were included in these models.

The towns own revenues and the educational subvention positively influence both categories of spending (table 5). However,the impact of own revenues is stronger in the case of salaries than non-wage spending. There are no such differences in the case of educational subvention. The fly-paper effect, when the grant influences spending more than own revenues, is visible only in the case of non-wage spending. The school size affected both kinds of analyzed spending. But bigger schools are cheaper (per student) in the case of salaries but more expensive in the case of non-wage spending. The variables representing the characteristic of local society differently influenced the analyzed spending. The growing share of old people positively influenced non-wage spending but negatively salaries in schools. The share of women in a municipality is important and a positive explanation only of non-wage spending. The variable which describes councilors is significant in both kinds of spending. As I expected the politicians with higher education choose higher local spending on education. These results correspond to the results of other studies related to spending on education and confirm that the demand model is proper to understand the variations in decentralized spending.

The most interesting result from my study is the influence of spending and revenue autonomy on analyzed expenditure (Tables 6, 7). The spending autonomy has the stable and positive effect on non-wage spending. And that

Table 5: Estimations results – basic model

	non_wage_ps		salaries_ps	
L1	0.66**	(381,1)	0.34**	(160,0)
L2	0.21**	(141,7)	0.34**	(158,9)
Ownrev_pc	0.06**	(95.0)	0.19**	(103,6)
subv_pc	0.17**	(14,4)	0.14**	(3,9)
schoolsize	0.11**	(7,4)	-1.48**	(24,7)
old_all	15.23**	(11,8)	-19.43**	(4,0)
women_all	16.30**	(6,6)	5.05	-0,53
Counc_edu	0.82**	(7,4)	2.43**	(7,6)
_cons	-2460.00**	(19,7)	1616.82**	(3,3)
Hansen test, chi2	0.08		0,14	
number of instruments	187		186	
Number of groups	238		238	
Number of obs	2827		2828	

* p<0.05; ** p<0.01; z statistic in brackets, the years effects are not presented for clarity of presentation

Source: Own calculation, for all analyses STATA SE/14 were used

Table 6: Estimations results – for non-wage spending

	1		2		3		4	
ISA	1,57**	(8,5)	5,17**	(17,4)				
IRA					-5,87**	(37,5)	3,34**	(16,4)
Ownrev_pc	0,06**	(102,3)	NO		0,08**	(129,9)	NO	
Hansen test, chi2	0,15		0,29		0,15		0,24	
number of instruments	206		228		206		228	
Number of groups	238		238		238		238	
Number of obs	2827		2827		2827		2827	

* p<0.05; ** p<0.01; z statistic in brackets;

Source: Own calculation, for all analyses STATA SE/14 were used

Table 7: Estimations results – for salaries

	1		2		3		4	
ISA	3,40**	(7,25)	-2,35**	(4,52)				
IRA					12,71**	(22,2)	22,95**	(30,7)
Ownrev_pc	0,20**	(121,4)	NO		0,16**	(114,5)	NO	
Hansen test, chi2	0,31		0,26		0,23		0,51	
number of instruments	205		227		205		227	
Number of groups	238		238		238		238	
Number of obs	2828		2828		2828		2828	

* p<0.05; ** p<0.01; z statistic in brackets

Source: Own calculation, for all analyses STATA SE/14 were used

effect is stronger in the model without own revenues. One percentage point higher spending autonomy caused 1,6zl-5,2zł higher non-wage spending. In the case of salaries, the influence of spending autonomy is not stable. It is positive in the model-3 with own revenues and negative in the model-4 without own revenues. So, we could say that the indicator of spending autonomy isweakly explanatory of spending for salaries but strong in the case of non-wage spending. The opposite is the conclusion from the analysis of revenue autonomy indicators. In the case of non-wage spending, the effect is not stable (negative in the column-3 and positive in column-4 in Table 6). Non-wage spending is influenced rather by the wealth of local government than by its revenue autonomy. In the case of salaries, the positive effect of revenue autonomy is stable.

Conclusions

The aim of this paper was to study the problem of partial decentralization and its influence on local governments' spending decisions. Revenue and spending autonomy indicators for Polish municipalities were establishedand used as explanatory variables of local spending decisions. The paper focused on spending for schools but segregated this into expenditure for salaries and other spending. The first category in Poland, as in many other countries, is quite strongly defined by central regulations. It represents low autonomous spending. The second category, non-wage spending, represents a small part of school spending, but it is important for the comfort and the quality of education. There are no special regulations defining the quality and quantity of this spending. So non-wage spending represents a highly decentralized expenditure.

I found that more decentralized spending varies among towns, while less decentralized spending is more homogenous. This effect is usually presented in the literature as an example of allocative efficiency which is when decentralized spending is closer to citizens' preferences. However, my analysis presents that in both kinds of spending - less and more decentralized- we could find characteristics of society which are a significant explanation of the size of spending and could be understood as an expression of the demand for education. Despite the classical theoretical assumption, centralization does not mean standardization. (Oates, 1972, p. 35) So the differentiation of spending could represent the problem of equity. The analysis of fiscal autonomy indicators helps to present that issue.

This study suggests that teachers' salaries depend on the revenues of local government and its revenue autonomy. Richer municipalities that are better endowed with local revenuesand where revenue autonomy is higher spend more on salaries, but still the differences among municipalities are not strong. Spending autonomy does not influence salaries. On the other hand, non-wage spending is not influenced by revenue autonomy but strongly depends on spending autonomy. Towns that need to spend more on tasks defined by central regulations must cut spending on stationery, office supplies and cleaners, teaching aids and so forth.

As was presented by Falch and Rattsø (1999) wages for teachers seem to substitute non-wage spending for schools. My analysis suggests that when limits exist in spending autonomy, more decentralized tasks are crowded out by regulated obligations (e.g., non-wage spending is crowded out by wage spending). This result is similar to findings as presented in the literature for specific grants, which sometimes crowd out tasks other than those covered by the grant. This outcome is also similar to the super-flypaper effect, in which a decrease of central specific grants causes a substantial decrease in public spending, especially for items that are less supported by local citizens or politicians. This study focused on budget autonomy- on both spending and revenue sides. The spending autonomy is undermined not only by grants but also by central regulations related to local spending. Budget elasticity represents the problem of equity between local units and the adequacy of local revenues to decentralized expenditures. Only towns that have elastic budgets can truly decide the direction and size of decentralized spending.

The analysis of spending autonomy indicates that for a proper understanding of local budget policy, we need to take into account the interdependence of different tasks and remember that central regulation of even one task influences all local spending. The spending autonomy indicators better than revenue autonomy indicators help to explain differences in the level of decentralized spending.When the variation of decentralized spending is very high and there are municipalities where spendingis very low it could mean that its revenues are not adequate. It should be an important signal for policymakers to rethink the system of local finance before the lack of adequacy leads to the insolvency of local units.

References

Asatryan, Z., Feld, L.P., Geys, B. (2015). Partial Fiscal Decentralization and Sub-National Government Fiscal Discipline: Empirical Evidence from OECD Countries. *Public Choice, 163*(3–4), 307–320. Received from: https://doi.org/10.1007/s11127-015-0250-2.

Bach, S., Blöchliger, H., Wallau, D. (2009). The Spending Power of Sub-central Governments: a Pilot Study (OECD Network on Fiscal Relations Across Levels of Government). Retrieved from http://www.oecd.org/ctp/federalism/42783063.pdf.

Barankay, I., Lockwood, B. (2007). Decentralization and the Productive Efficiency of Government : Evidence from Swiss Cantons. *Journal of Public Economics, 91*, 1197–1218. Retrieved from: https://doi.org/10.1016/j.jpubeco.2006.11.006.

Baskaran, T. (2010). *On the Link Between Fiscal Decentralization and Public Debt in OECD Countries*. MPRA, (21599).

Bergstrom, T.C., Goodman, R.P. (1973). Private Demands for Public Goods. *American Economic Review, 63*(3), 280–296.

Borcherding, T.E., Deacon, R.T. (1972). The Demand for the Services of Non-Federal Governments. *American Economic Review, 62*(5), 891–901. Retrieved from http://search.ebscohost.com/login.aspx?direct=truedb=bthAN=4503967site=ehost-livescope=site.

Borge, L.E., Brueckner, J.K. (2014). Partial Fiscal Decentralization and Demand Responsiveness of the Local Public Sector: Theory and Evidence from Norway. *Journal of Urban Economics*, 80, 153–163. Retrieved from: http://www.socsci.uci.edu/~jkbrueck/course readings/Econ 272B readings/norway.pdf.

Borge, L.E., Rattso, J. (2002). Spending Growth with Vertical Fiscal Imbalance: Decentralized Government Spending in Norway 1880-1990. *Economics and Politics, 14*, 351–373.

Dahlberg, M., Mork, E., Rattsø, J., Argen, H. (2008). Using a Discontinuous Grant Rule to Identify the Effect of Grants on Local Taxes and Spending. *Journal of Public Economics, 92*(12), 2320–2335.

Deller, S.C., Maher, C.S. (2006). A Model of Asymmetries in the Flypaper Effect. *Publius: The Journal of Federalism, 36*(2), 213–229. Retrieved from: https://doi.org/10.1093/publius/pjj005.

Devarajan, S., Khemani, S., Shah, S. (2009). *The Politics of Partial Decentralization*. In: E. Ahmad G. Brosio (Eds.), Does Decentralization Enhance Service Delivery and Poverty Reduction? (pp. 102–124). Edward Elgar.

Duncombe, W., Robbins, M., Stonecash, J. (2003). *Measuring Citizen Preferences for Public Services Using Surveys : Does a "' Gray Peril '" Threaten Funding for Public Education ?* Public Budgeting Finance, Spring.

Falch, T., Rattsø, J. (1999). Local Public Choice of School Spending : Disaggregating the Demand Function for Educational Services. *Economics of Education Review, 18*(3), 361–373.

Gramkhar, S., Oates, W.E. (1996). Asymmetries in the Response to Increases and Decreases in Inter-governmental Grants: Some Empirical Findings. *National Tax Journal, 4*(49), 501–512.

Gramlich, E.M. (1969). State and Local Governments and Their Budget Constraint. *International Economic Review, 10*(2, June), 163–182.

Heinesen, E. (2004). Determinants of Local Public School Expenditure: A Dynamic Panel Data Model. *Regional Science and Urban Economics, 34*, 429–453. Retrieved from: https://doi.org/10.1016/S0166-0462(03)00069-3.

Herbst, M., Herczyński, J., Levitas, A. (2009). *Finansowanie oświaty w Polsce – diagnoza, dylematy, możliwości*. Scholar.

Knight, B., Coate, S. (2002). Endogenous Federal Grants and Crowd-Out of State Government Spending: Theory and Evidence from the Federal Highway Aid Program. *American Economic Review, 92*(1), 71–92.

Kopańska, A. (2016a). Partial Decentralization and its Influence on Local Governments' Spending Policy. An Analysis of Spending for Teachers and Other Resources Needed for Schools. *WNE Working Papers WP, 38*(229).

Kopańska, A. (2016b). *The Expenditure Decentralization- Measurement and Effects on Spending Behaviours of Local Governments - Analysis for Poland.* In The 24th NISPAcee Annual Conference.

Kopańska, A., Sztanderska, U. (Eds.). (2015). *Prywatne i publiczne wydatki na oświatę*. Instytut Badań Edukacyjnych.

Levaggi, R., Zanola, R. (2003). Flypaper Effect and Sluggishness : Evidence from Regional Health Expenditure in Italy. *International Tax and Public Finance, 10*(5), 535–547.

Nose, M. (2015). Estimation of Drivers of Public Education Expenditure: Baumol's Effect Revisited. *IMF Working Paper, 15*(178), 1–36.

Oates, W.E. (1972). *Fiscal Federalism*. Harcourt Brace Jovanovich Icc.

Oates, W.E. (2005). Toward a Second-generation Theory of Fiscal Federalism. *International Tax and Public Finance, 12*, 349–373.

Roodman, B.D. (2006). How to Do xtabond2 : An Introduction to "Difference" and "System" GMM in Stata. *Working Paper, Center for Global Development,* (103).

Solé-Ollé, A. (2009). *Evaluating the Effects of Decentralization on Public Service Delivery: the Spanish Experience*. In: E.

Ahmad, G. Brosio (Eds.), Does Decentralization Enhance Service Delivery and Poverty Reduction? (pp. 257–286). Edward Elgar Publishing.

Sørensen, R.J., Rattsø, J. (2010). Grey Power and Public Budgets: Family Altruism Helps Children, but not the Elderly. *European Journal of Political Economy, 26*(2), 222–234. Retrieved from: https://doi.org/10.1016/j.ejpoleco.2009.11.010.

Stine, W.F. (1994). Is Local Government Revenue Response to Federal Aid Symmetrical? Evidence from Pennsylvania County Governments in an Era of Retrenchment. *National Tax Journal, 47*(4, December), 799–816.

Swianiewicz, P. (2011). *Finanse samorządowe; koncepcje, realizacja; polityki lokalne*. Warsaw: Municipium.

Tiebout, C.M. (1956). A Pure Theory of Local Expenditures. *The Journal of Political Economy, 53*(9), 416–424. Retrieved from: https://doi.org/10.1017/CBO9781107415324.004.

Weingast, B. (2009). Second Generation Fiscal Federalism: The Implications of Fiscal Incentives. *Journal of Urban Economics,* (8). Retrieved from http://www.ifigr.org/workshop/IFIR-CESifo/papers/weingast.pdf.

Woessmann, L. (2001). Why Students in Some Countries Do Better. *Education Matters*, 67–74.

Zhu, L. (2013). Panel Data Analysis in Public Administration: Substantive and Statistical Considerations. *Journal of Public Administration Research and Theory, 23*(2), 395–428. Retrieved from: https://doi.org/10.1093/jopart/mus064.