Fiscal and political determinants of local government involvement in public-private partnership (PPP)

Agnieszka Kopańska & Roman Asinski

In this article, we estimate the main determinants of local government’s engagement in public-private partnership (PPP) projects using logistic panel regression. We use data from 2478 municipalities and cities in Poland from 2009 to 2016. The results show that municipalities with higher levels of indebtedness have a higher probability of opening PPP tenders while local units that are more dependent on central grants or receive more European grants are less engaged in PPP. We also found that the mayors of municipalities and cities with stronger electoral competition, engage in PPP with a higher probability. These results are important for discussions on the efficient use of PPP. They show that local government decisions made in conditions of fiscal constraint and political struggle can blur the PPP’s value-for-money aim.

Keywords: public-private partnership; determinants of PPP; local governments, fiscal constraints, political competition

Subject classification codes: H3, H7,

Introduction

The private sector’s supply of public services, such as roads, water and sewage systems, public buildings and others, has expanded significantly over the last 20 years (Iossa and Martimort 2015), as the answer to the growing gap between infrastructural needs and government’s financial possibilities.

In this context, countries consider the public-private partnership (PPP) as the mechanism to decrease infrastructure gaps and to use private investors’ resources to implement complex and costly projects. There are important differences in the level of development of PPP markets among countries and the type and size of PPP contracts; moreover, the sectors in which PPP is used are diversified (Kappeler and Nemoz 2010). Compared with other countries, PPP in Poland is in the early stage. In 2008 in Poland the law on PPP and concessions was passed. By the end of 2016, 382 PPP or concession tenders were announced, but only 117 contracts were signed. Polish PPP market is characterised by the very small size of PPP projects (50% of the announced proceedings concerned projects with a value below 5 million EUR) and domination

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of local governments among public partners (73% of the announced proceedings).

The purpose of this article is to uncover the number determinants of local government’s participation in PPP projects in Poland. The rationale for risk management in PPP projects is widely discussed in the literature, but the problem of public sector motivations and barriers for involvement in PPP is rarely addressed and the analytical results are ambiguous. Many studies analyse the PPP as one of many methods for contracting out public services; but PPP is more complicated than ‘simple’ privatization and is more related to the investment in public infrastructure than other contracts, which argues for its separate study. To our knowledge, there is no analysis on public sector motivation for PPP in Poland or other Central-East European (CEE) countries. Using econometric panel analysis for Polish municipalities from 2009 to 2016, we look at whether and how the probability of municipality involvement in PPP depends on a municipality’s characteristics. We focus on problems related to fiscal constraints and the local political environment. The novelty of our study is that we analyse the link between time when a local government opened the PPP tender process and its characteristics. Thanks to that we focus on public sector motivation. In previous studies that analysed existing PPP projects, both public and private sector motivation were present and could cancel each other out. Since we analyse the year when the tenders were announced, we are closer to the time when the decisions to pursue a PPP was made. In previous studies that analysed the year of contract signing or types of municipalities entering partnerships, real political motivation for initiating a PPP could be less visible because it was done few years earlier.

In the first part of the paper, we conduct a literature review on public sector motivations to start the PPP. In the second part, we present the municipal PPP market in Poland, including information related to local finance. We undertake the empirical analysis in part three, and then in the final section we present conclusions.

**Literature review**

The term ‘public-private partnership’ is broad, it includes the various contractual forms of cooperation between private and public spheres, which are alternatives for ordinary government procurement (Deloitte and EPEC 2013). PPPs relate to construction or renovation of infrastructure required for delivery of public services. We can see the relations between public and private sides in PPP at the continuum between traditional procurement and privatisation. According to E. S. Savas (2005) the term PPP is particularly malleable as a form of privatization. But in privatisation the whole risk is transferred to the private side, government eliminates direct control and ownership of the function and the delivery of services (Forrer et al. 2010). While in case of PPP, risk sharing and cooperation between public and private partner
is needed (Wang et al. 2018). On the other hand in traditional procurement, the public sector is responsible for the whole service, while in PPP public sector need to be ready for (partial) renunciation of responsibility over the service and infrastructure. This mutual, and long-term obligations makes the PPP agreement much more complicated than privatisation or ordinary government procurement.

Public sector in PPP seeks to acquire modern and effective infrastructure at the lowest possible cost and lowest possible burden of the budget, however the important criterion for government decision making should be the expected change in social welfare. PPP is presented as one of the methods to receive value for money in public spending (Boardman and Vining 2012). According to Burger and Hawkesworth (2011), “in practice the value-for-money objective is very often blurred, and the choice between using a PPP and traditional infrastructure procurement may be skewed by factors other than value for money”. One important question is: why does the public sector decide to open the PPP tender process?

Local governments have a great influence on social welfare because they are responsible for services significant for citizens, which require infrastructure. Around the world, citizens’ expectation is that the quality and quantity of local infrastructure is growing. The phenomenon of increasing citizens needs related to public spending is well explained by Wagner’s Law (Shelton 2007). In recent decades, the pressure on public infrastructure is also the result of environmental suitability and more generally sustainable development (Deloitte. 2006; Fay et al. 2011). Unfortunately, public budgets face fiscal constraints that limit their investment activity.

The literature shows that in the twentieth century, the fiscal crisis was an important determinant of the development of PPP and other forms of outsourcing public services. Moreover, it is suggested that PPP developed faster in the countries where the economic crisis was more difficult to overcome by levying new taxes or issuing debt. It could be the result of a limited tax base, more generally the public sector’s revenue base or fiscal rules imposed on public finance (Hammami, Yehoue, and Ruhashyankiko 2006). In the case of local governments own taxes constitute only the part of local budgets. In many countries, important part of local revenues is covered by grants from the central government. The grants are explained by a vertical and horizontal imbalance in local finance. Grants are necessary but, many studies argue, that they affect local fiscal decisions. Many researchers found that grants could lead to local government’s overspending because of the fiscal illusion and common pool problem: local citizens and governors use grants as free way to finance local public spending (Oates 2005; Kornai, Maskin, and Roland 2003). This phenomenon depends on the regulations governing how
local governments receive those grants. If the regulations are loose and untransparent then local governments can expect to receive grants only if necessary, so their budget constraints are soft. In that case, fiscal problems are bypassed with grants and PPP is not a popular option for municipalities. If the rules are strong and strictly limit the transfers for local governments then PPP could be the more prevalent option. Similarly, access to grants from institutions other than the central government can influence local governments’ interest in PPP. As the theoretical literature suggests, such grants are easier (and cheaper) than PPP to fulfil local governments infrastructure needs, and they crowd out PPP projects (Bel and Fageda 2007; Sharma 2012).

The important fiscal rule often imposed on local budgets is related to local debt. Debt is the most common source of financing investments in public infrastructure. According to a so-called golden rule of local finance, local government investments should be financed by long-term borrowing. Such debt for investment ensures intergeneration equity when future taxpayers pay for access to infrastructure objects and pay off debt (Musgrave and Musgrave 1989, p. 554). However the level of public indebtedness is limited, not only by economic rationality, but also by central regulations. Such regulations and the size of public debt is analysed in most studies as a potentially important determinant of public sector interest in PPP. If local government indebtedness is limited (by rules or by the financial situation of local unit), governors look for sources other than debt to finance infrastructure needs - and PPP is one option (Bel and Fageda 2007; Koen and van den Noord 2005).

Interestingly, despite the theoretical suggestions and logic of the arguments discussed above in relation to PPP and fiscal constraints, the results of empirical studies are unclear. Some studies present the strong and positive influence of fiscal constraints on PPP, especially related to public debt. For example, Russo and Zampino (2010) found that in Italy, local governments with higher debt were more likely to resort to PPPs, the same are results for French municipalities (Buso, Marty, and Tran 2017) or for US states (Albalate, Bel, and Geddes 2015). The study for US, presents also that states which have more own revenues are less interested in PPP. Results of Malaysia’s experience in PPP implementation shows that a critical factor that influences PPP decision is budget restraints (Ismail 2013). The same are conclusions of surveys made among public officials in studies for China and Hong-Kong (Chan et al. 2009). In addition, the Chile experience in PPP is such that long-term contracts can be renegotiated to evade fiscal rules placed on local governments. The authors of that study suggest that in practice, Chilean leaders’ used PPP to soften local budgets (Engel, Fischer, and Galetovic 2009). Hammami et al.’s (2006) international study showed that the size of public debt is also an important determinant of PPP. However, the study does not confirm that existence of grants’ (from international
institutions, which is the measure of the softness of public budgets) influence on the likelihood of public sector involvement in PPP. Sharma’s (2012) study presents also, that soft budget issue has no role in PPP arrangements in developing economies. In this study, the size of public debt was also not significant. Indeed, many studies on the US PPP market for transportation have found that debt is not a significant explanation of public sector interest in PPP (Geddes and Wagner 2013; Chen, Daito, and Gifford 2014). Moreover, Yin Wang and Zhirong Jerry Zhao (2014) found that PPPs in US transportation are negatively correlated with size of debt (but positively with debt limits).

The literature offers some reasons for these ambiguous results. For example, Bel and Fegada (2007) surveyed empirical studies on different forms of privatization of public services in the United States before the economic crisis of 2008. They found that fiscal stress is important in studies that analyse several services and not one service research alone. Regarding the specific service, the local decision to cooperate with the private sector is more related to the characteristic of this service than an overall condition of the local budget. Bel and Fageda’s (2017) review of studies from 2007 to 2017 argue that in Europe, the recession after 2008 had an important, positive impact on privatization and contracting out. It is worth noting that the studies they reviewed analyse PPP as one of many methods of contracting out. As noticed, PPP is more complicated than ‘simple’ privatization or contracting out, but as in that processes, in PPP local governors need to be ready to resign from total control over public services. PPP is more related to investments in public infrastructure than other forms of contracting. That is why the effects of fiscal stress could be stronger in face of important infrastructure needs.

As Zafra-Gomez et al. (2016) noticed, The problem of quantification of fiscal stress and fiscal constraints was another reason for the variation in results of previous studies is. The international studies are questionable in this regard because it is difficult to find comparable measures for this phenomenon (Spahn 2013) and because of the variety and complexity of PPP schemes across nations (Chen, Daito, and Gifford 2014). Perhaps this is why one-country studies are more accurate.

Finally, public and private partners’ motivation influences PPP. Private entities look for stable and safe contracts, thus fiscal stress and bad financial situations of public units discourage them from involvement in PPP (Sharma 2012, Boyer and Scheller 2018). That is why in studies that analyse the probability of PPP projects, the effect of private and public motivation can cancel each other out. To avoid that problem, in our study we analyse open PPP tenders process.

As presented above, when we are discussing avoiding fiscal constraints, we look at the politicians who make the decisions on public budgets. “PPPs are still, by definition, government
projects. Therefore, they are as much driven by political economy considerations as any other government behaviour” (Boardman and Vining 2012). The characteristics of the local political scene and local politicians are presented in the literature as an important determinant of public units’ involvement in PPP. Public choice theory states that politicians seek to win next elections and preserve governmental positions. The governors may increase their chances to be re-elected by increasing spending on infrastructure they try to do so without new taxes levied. Such activity is especially important in periods closer to the election. The correlation between investment spending and election year is well established in empirical studies for many countries including Poland (Bukowska and Siwińska-Gorzelak 2016; Köppl Turyna et al. 2016). Picazo-Tadeo et al. (2012) analysed the relation between electoral cycle and PPP or other contracting-out methods in the case of the Spanish water sector. They assumed that privatization of the water sector was unpopular, thus politicians would undertake the unpopular decisions only in years not close to an election. But they found that the likelihood of privatizing the urban water service is greater over the last half of local governments’ terms. The reason for this result is that ‘even if the decision to privatize is taken in the first half of the legislature, it is highly possible that it will not take effect until the second half’ (Picazo-Tadeo et al. 2012). In our study, we minimize the problem of a time lag between the political decision and final contract signing because we analyse the moment when the PPP tender is opened, so we are closer to when the political decision was made. In the case of PPP, the investment in infrastructure is an important element of the contract and local politicians want to complete the infrastructure investment just before the election. For this reason, we expect that the probability to open PPP tenders is higher in first two years of the election cycle.

The theoretical and empirical investigation of the electoral budget cycle shows that the changes in budget are related to political competition. Some studies suggest that when governors need to strongly compete for their office, the electoral budget cycle is more visible (Pettersson-Lidbom 2001). Similarly, when the fragmentation of parties in the local council is higher, the pressure on politicians’ behaviour is intensified, what increases the cyclicality of the budget (Persson and Tabellini 2002; Geys 2006). Yet, some studies argue that political competition (on office and fragmentation of council) could lead to more effective and transparent local government. Therefore, with the increase of competition - both in the council and among candidates - the pressure on the electoral use of expenses will decrease (Rogoff 1987; Solé-Ollé 2006; Ashworth et al. 2014). What is interesting for PPP is that these opposite arguments related to competition on office could result in a higher probability of opening a PPP tender. As mentioned, PPP could be used as a method to build new infrastructure, which could
be (bad) motivation for governors who compete for office (Boardman and Vining 2012). Simultaneously, PPP is presented as a method that increases efficiency of public services, thus it could be tool of (good) competition (Ismail 2013). More competitive political scene (higher fragmentation of council) means less stability in the local government office, which can make decisions on PPP more difficult and less probable (Picazo-Tadeo et al. 2012).

**Local governments and PPP in Poland**

In the 1990s Poland experienced the decentralization of its public sector. In 1990, municipalities (gminas), and in 1999 counties (poviats) and regional governments were established. The biggest cities have county status and operate as both a municipality and county. Municipalities (2412 units) and the biggest cities (66 units) are the most important sub-sovereign governments. The municipalities are diversified by size (see Table 2). However, according to the law, all municipalities, irrespective of the number of citizens or the size of area, undertake the same obligations and receive the same sources of revenue. Municipalities are responsible for most of the vital social and communal services. The cities with county status are responsible for municipal and county services.

Local governments levy local taxes (the same for municipalities and cities) where the most important are land and estate taxes. Taxes contribute to about 14 percent to municipal and city budgets. Local governments can decide about the tax rates (below centrally imposed maximum) and tax relief. The second source of own revenues are shared taxes on personal and corporate incomes. Municipalities receive the fixed percentage of the total proceeds collected in their respective areas, cities receive municipal and county shares. Local governments have no fiscal autonomy with these taxes. Shared taxes contribute to 14 percent of municipal and 25 percent in the city budgets. Municipalities cannot collect taxes other than those set by central law or impose any surtaxes. Local governments’ own revenues consists also of fees, charges, revenue from property etc. Those revenues contribute to 10 percent of municipal and 17 percent of city budgets. The most important part of local budgets is covered by transfers from the central government (60% for municipalities and 42% for cities). The transfers are allocated according to transparent (although often criticized) criteria set by the legal act. It is not possible to use those transfers to soften local budgets (Swianiewicz 2014). There is an important variation in the proportion of transfers and own local revenues in total revenues (see Table 2). Less affluent localities receive more transfers, and grants are more important for their budgets. But the grant system does not eliminate the horizontal differences, and the total revenues of more granted municipalities are lower than those with more of their own revenues.

The investment in infrastructure is an important local task. In recent decades, the share
of investment in local budgets was on average over 20 percent and sub-sovereign investment spending was more than half of the entire public sector expenditure for investments. This spending relates to an important infrastructure gap. There is social and political pressure on local governments to invest what creates a strong political budget cycle in investment (Köppl Turyna et al. 2016). Unfortunately, in Poland as in other CEE countries, the real economic rationality of some projects is questionable (Dafflon and Beer-Toth 2009).

In the 1990s, investments were financed directly from local revenues. Today local revenues cover approximately 50 percent of local investments. Dafflon and Beer-Toth (2009) suggest that “Despite the numerous arguments in favour of debt finance, most local government officials in CEE continue to consider debt as a complementary source”. However, local governments have started to use debt instruments to a greater extent. In 2016, the share of local public debt in public debt was eight percent, and debt-to-revenues ratio was 30 percent at local level. Fiscal rules define the limits of indebtedness for every sub-sovereign government. Until 2014 there were two numeric limits: The total outstanding debt could not exceed 60 percent of annual revenues and the planned repayment of debt could not exceed 15 percent of those revenues. Starting from 2011, debt has been limited to the investment part of the budget. In 2014, new rules were adopted. For every local unit there is individually calculated debt limit, debt repayments can be no higher than average operational surplus calculated for the previous three years. The new limit corelates to the previous one. Municipalities in which the debt to revenue ratio is higher can borrow less according to individual limits. But the new limit is more restrictive. In theory, legal limits should only be in addition to the economic rationality of indebtedness. Unfortunately, in Poland as in other CEE countries, local governors are much more focused on legal obligations and budget discipline than real financial management and budget responsibility (Dafflon and Beer-Toth 2009). Thus, the debt limits could be an even more important argument for local governors entering into PPP than for politicians in other countries, because according to law, PPP obligations are not the debt.

After the accession to EU (in 2004) grants from EU funds started to be an important source of financing for local investment in Poland. Poland is among the greatest beneficiaries, and 70 percent of these funds are directed to local governments. Considering the infrastructure gap and the social and political pressure to invest, the use of these grants is understood as a duty of local governments. Access to EU funds is the most important determinant of local governors’ decision-making on investment size and direction (Wojtowicz and Kupiec 2015). Those grants covered approximately 30 percent of investment spending in recent years.

The municipal political scene in Poland is dominated by mayors. Elections are held every
four years and the citizens elect both the mayor and the council. Polish local political scene is different than in other countries. About 70% of mayors and councilors represent local nonpartisan committees (Gendźwill 2012; Swianiewicz 2014). In the case of PPP, mayors play a main role in initiating the PPP process and formulating the local law to open a PPP bid. But the municipal council pass that law.

Considering sub-sovereign governments’ important investment needs, the PPP seems to be an interesting solution for the Polish municipal sector. In 2008, new laws were enacted for PPP and concessions. Also, the special government agency dedicated to PPP was established. Thus, we can date the start of the history of PPP in Poland to 2009. From 2009 to 2016, 117 PPP projects were realized (85 by municipalities and cities) and 382 PPP procedures were started (299 tenders were opened by local governments) (see Fig. 1)

**Figure 1.** The number of municipalities/cities which opened at least one PPP tender and number of PPP proceeding made by municipalities/cities in 2009-2016.

Source: own calculation based on data from the Ministry of Infrastructure and Development. We included communal companies owned by municipalities

Polish PPPs are small (74 percent of bids are for projects below 12 million euro) mainly because municipalities implement most PPP projects. The small scale also reflects the market’s early stage. One explanation is that public entities treat PPP as an experimental approach to implementing public tasks. From both the theoretical and practical points of view, interesting is what are the main motivators of pioneer local governments to initiate PPP projects?

Based on the literature review and considering the Polish case, we established seven detailed hypotheses, which we divided into two groups related to fiscal constraints and to political environment.

In the literature, high public debt and hard budget constraints can push local governments toward PPP. In the Polish case, when the debt limits were tight in recent years this argument held. The first detailed hypothesis is:
H1a: Local governments with more indebtedness open PPP tenders with higher probability

The second detailed hypothesis is:

H1b: Local governments with better access to EU grants are less interested in PPP

The literature suggests that the transfers from the central government can create a soft budget environment, but this is not the case in Poland. The rules related to those transfers are transparent, with no ad hoc grants for municipalities in need. But transfers do not cover horizontal imbalance, therefore we expect that less affluent municipalities, those that receive more grants and less own revenues, will be more interested in PPP. Thus, we established the next detailed hypothesis:

H1c: Local governments that are more dependent on grants from the central government/have less own revenues, are more likely to open PPP

The second group of hypotheses relate to political process. There are three detailed hypothesis:

H2a: PPPs are more prevalent in municipalities in which competition during mayoral elections is higher.

H2d: PPP tenders are more likely to be opened in first years after election

H2c: More fragmented councils are impeded from making decisions on PPP

Studies show a relation between PPP and local politicians’ ideology. (Boyer and Scheller 2018; Bel and Fageda 2007; Picazo-Tadeo et al. 2012). But we can not identify the ideology of nonpartisan politicians and such an analysis for Poland is difficult.

In our empirical study we will also use information on the size of local government and its experience in PPP projects. Previous studies suggest that the likelihood of externalizing public services increases in more populated municipalities, first because higher populated regions demand more public infrastructure (Sharma 2012) and second, larger municipalities can better handle the transaction costs associated with external production (Bel and Fageda 2017). The latter argument is relevant in the relation between new PPP projects and experience in PPP. The cost of preparing a PPP tender is smaller in municipalities that have previously prepared one.

Data, Model, Variables

For this study, we constructed a database to answer our research questions. For this purpose, we focused our analysis on 2478 sub-sovereign governments and two main administrative types: municipalities and cities with county status. We constructed the database from 2009 to 2016 because PPP law was adopted in 2009, and we finish the analysis in 2016 for
which we have the full dataset. The main data sources for economic parameters of all Polish territory units are the websites of the Central Statistical Office of Poland and the Ministry of Finance. This dataset includes general financial information on each municipality, such as investments, expenses, revenues as well as deficits and public debt. Data regarding mayors were collected from the National Electoral Commission for elections in 2006, 2010 and 2014. We received the detailed data on open PPP tenders for the whole period of our analysis from the Ministry of Infrastructure and Development’s. The resulting dataset consists of 216 local units which open at least one PPP bid and 299 PPP bids. Figure 1 presents the PPP data by administrative types and observed years. Finally, we obtained a panel dataset covering 2009 to 2016, with all variables are defined for each municipality/city and each year.

Considering the literature review, we express the model of PPP procedures participation as follows:

\[ \text{PPP} = f(\text{GC}, \text{PE}, \text{C}) \]

- GC - Fiscal constraints.
- PE - Political environment.
- C - Control variables.

The dependent variable PPP bids is whether or not a division opens a PPP bid in a given year. This is a binary variable, assuming a value of 1 when a PPP bid was started at least once, 0 otherwise. We determined also the additional variable PPP_bids_num. It is an ordered variable, which represents the number of PPP bids opened by municipality/city or its firms in the analysed year.

The independent variables are time-variant. We use data from the year when PPP procedures were initiated. Table 1 illustrates descriptions of independent and dependent variables. Table 2 provides the descriptive statistics for all independent variables.

Bearing in mind the binary structure of the dependent variable (PPP_bids), we estimate the determinants for PPP implementation with binomial logit regression for panel data. Before estimation of the logit model we checked which model should be used, a fixed or random effect by Hausman test. The test reports that it is the logit regression model with random effects. We used Pearson’s test to avoid collinearity in the dataset between explanatory variables with predicted p value between 0.000 and 0.05. We used an ordered multinomial logistic model to our ordered dependent variable (PPP_bids_num).

In our main estimates we use binary logistic and ordered logistic regression analysis to examine the effect of different variables on our dependent variables. Due to important correlation (-0.7) we present separately models for variables FG and Inown_rev.
Table 1. Name, type, and description of dependent and independent variables used in econometric models

<table>
<thead>
<tr>
<th>Name of variable</th>
<th>TYPE OF VARIABLE</th>
<th>Description of variable</th>
</tr>
</thead>
<tbody>
<tr>
<td>PPP_bids</td>
<td>DEPENDENT VARIABLE</td>
<td>Dummy variable, equal 1 if municipality/city opens at list one PPP bid in analyzed year; 0- if not</td>
</tr>
<tr>
<td>PPP_bids_num</td>
<td>ORDERED VARIABLE</td>
<td>Ordered variable, represents the number of PPP bids opened by municipality/city in analyzed year</td>
</tr>
<tr>
<td>debt_rev</td>
<td>FISCAL CONSTRAINTS</td>
<td>Indicator of local debt. The total debt divided by total revenues</td>
</tr>
<tr>
<td>revUE_all</td>
<td></td>
<td>The share of grants from EU grants in total local revenues - the mean calculated for previous 4 years</td>
</tr>
<tr>
<td>FG</td>
<td></td>
<td>Indicator of fiscal gap, which represents the share of grants from central budget in local revenues</td>
</tr>
<tr>
<td>ownrev_pc</td>
<td></td>
<td>The own revenues per capita (logarithmized in model)</td>
</tr>
<tr>
<td>mayor_compet</td>
<td>POLITICAL ENVIRONMENT</td>
<td>Difference in the share of votes between two candidates on mayor. In case of no other candidates on mayor there is no competition and the indicator of competition is equal 1. In case of strong competition those two candidate receive similar (or even the same) number of votes- so the difference between the shares of votes is close to zero (or equal zero).</td>
</tr>
<tr>
<td>coun_var</td>
<td></td>
<td>The fragmentation of local council. 0- if all councilors are from the same committee, 1 if all councilors are from different parties</td>
</tr>
<tr>
<td>elect</td>
<td></td>
<td>Dummy variable which is equal 0 in two first years after election and 1 in two last years of election cycle</td>
</tr>
<tr>
<td>pop</td>
<td></td>
<td>Number of citizens (logarithmized in model)</td>
</tr>
<tr>
<td>ppp_exp</td>
<td></td>
<td>Information about municipal experience in PPP bids. A dummy variable equal 1 if there were PPP bids open by municipality in future; 0- if there are no experience in PPP bids</td>
</tr>
</tbody>
</table>

Table 2. Basic statistics of independent variables.

<table>
<thead>
<tr>
<th>var</th>
<th>MUNICIPALITIES (2413)</th>
<th>CITIES (66)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mean</td>
<td>min</td>
</tr>
<tr>
<td>debt_rev</td>
<td>0.28</td>
<td>0.00</td>
</tr>
<tr>
<td>revUE_all</td>
<td>0.05</td>
<td>0.00</td>
</tr>
<tr>
<td>FG</td>
<td>0.55</td>
<td>0.02</td>
</tr>
<tr>
<td>ownrev_pc</td>
<td>955.08</td>
<td>1.65</td>
</tr>
<tr>
<td>mayor_compet</td>
<td>0.35</td>
<td>0.00</td>
</tr>
<tr>
<td>coun_var</td>
<td>0.60</td>
<td>0.00</td>
</tr>
<tr>
<td>pop</td>
<td>10688</td>
<td>1323</td>
</tr>
<tr>
<td>ppp_exp</td>
<td>In 2010-11 municipalities, and in next years-33; 42; 60; 72; 81; 93 (in2016)</td>
<td>In 2010-6 cities, and in next years--12; 17, 23, 24, 26, (in2016)</td>
</tr>
</tbody>
</table>

Source: own calculation based on budgetary data (Ministry of Finance), Local Data Bank (Central Statistical Office); local election (National Electoral Commission)

In our sample the rare events problem occurs (King and Zeng 2001) when number and share of positive cases is small. That is why as a robustness check on our primary analyses, we estimate rare event logistic regression models. We used models base on Firth (1993) proposition - penalized maximum likelihood logistic regression, which the best suit to the situation when the whole sample is big. Table 3 presents the results of twelve models – three methods separately
for municipalities and cities and separately for variables FG and known_rev.

**Limitation of the study**

Before we discuss results we need to note the limitations of our study. First, there are rare events problem. But we used different econometric models to avoid potential problems related to that. The second problem is the short period of our analysis and the fact that we analyze the beginning stage of PPP development in Poland. It means that the observed cases of interest in PPP can be not representative for the next stages of PPP development. Finally, we need to remember that our study is about Poland, what’s mean the results can be specific for that country.

**Results**

Variables debt_rev, FG and own_rev were significant for municipalities but not for cities in all models (see Table 3). An indicator of local debt (debt_rev) was positively correlated with existence and the number of PPP bids. It confirms the H1a hypothesis. This outcome ties in well with the results of studies presented in the literature review. Municipalities that are more indebted look for other than debt sources to finance investments. The question is: Why is high debt a driver for PPP? There are different arguments, however, concerning how local society fulfils its needs without any new debt. The positive argument is that in the case of high debt, governors look for other, more efficient ways to build and manage infrastructure whereas the negative argument is the case when PPP is used instrumentally. In practice, then, governors use PPP to hide the debt. (Buso, Marty, and Tran 2017; Siemiatycki 2015). Thus, to answer the question, we need a deeper analysis of political motives.

The H1c hypothesis is rejected, we expected that municipalities in which the fiscal gap is higher needs other sources to finance their investment needs. A negative correlation between PPP and fiscal gap is explained in the literature by the idea of soft budget. But Poland’s local governments do not receive ad hoc grants to meet budget needs. The first explanation of the negative sign could be that only municipalities with enough financial capacity can manage expensive PPP procedures. The significance and the positive sign in the variable, which represent the own revenues of local government, confirm the first explanation. The second explanation could be that governments that are less revenue autonomous are less innovative and less interested in new forms of public service delivery. (Baskaran, Feld, and Schnellenbach 2016). The fact that FG and own_rev were not significant for cities also confirms the two explanations because cities have higher revenue autonomy than municipalities.
Table 3. Results of econometric models. Sources: Own calculation, for all analysis STATA software, version SE/14 was used

<table>
<thead>
<tr>
<th></th>
<th>Logistic panel regression- PPP_bids municipalities</th>
<th>Logistic panel regression- PPP_bids municipalities</th>
<th>Ordered logistic panel regression- PPP_bids_num municipalities</th>
<th>Ordered logistic panel regression- PPP_bids_num municipalities</th>
<th>penalized maximum likelihood logistic regression- PPP_bids municipalities</th>
<th>penalized maximum likelihood logistic regression- PPP_bids municipalities</th>
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<td>debt_rev</td>
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<td></td>
<td>(3.85)***</td>
<td>(3.94)***</td>
<td>-0.34</td>
<td>(3.84)***</td>
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<td>-0.42</td>
<td>-0.47</td>
<td>(1.82)*</td>
<td>-0.46</td>
<td>-0.51</td>
<td>(2.01)**</td>
</tr>
<tr>
<td></td>
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<td>(3.96)***</td>
<td>(4.33)***</td>
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<tr>
<td>lnownrev_pc</td>
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<td>-0.155</td>
<td>0.831</td>
<td>-0.351</td>
<td>0.598</td>
<td>-0.093</td>
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<td>(3.36)***</td>
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<td></td>
<td>(2.18)**</td>
<td>(2.13)**</td>
<td>(1.70)*</td>
<td>(1.64)</td>
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<tr>
<td></td>
<td>(3.76)***</td>
<td>(5.35)***</td>
<td>(2.22)**</td>
<td>(2.82)***</td>
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<td>518</td>
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</table>

* p<0.1; ** p<0.05; *** p<0.01; z statistic in parentheses
The models for cities showed that the share of EU grants in local revenues is negatively associated with PPP bids. This finding confirms H1b hypothesis. The influence of grants on beneficiary governments has a long tradition in the literature. Grant spending is cheaper, but it can cause crowding out of other spending. Some studies found that EU funds for local investments partly crowd-out country public spending. (Lago-Peñas 2006; González Alegre 2010). PPP is often costlier than traditional forms of financing infrastructure (even without grant). But PPP create value for money - thanks to a better quality of infrastructure and services. In our study we cannot analyse if PPP projects are more or less efficient than projects granted by EU funds. But as mentioned, in Poland the EU grants are “trendy” among local governors. Some studies suggest that the allocation of grant funds is ineffective. (Gorzelak 2014) Therefore, the negative relation between size of EU grants in cities and their interest in PPP is suspicious, as that value for money is not the determinant of local investment projects.

Among the political constraints only competition for the mayor’s position influenced PPP bids in municipalities and cities. The negative sign demonstrates that the higher competition during mayoral elections, the more that politicians are interested in PPP. It confirms H2a hypothesis. The drivers for that effect can be different. On one hand, it can demonstrate that a more competitive environment makes mayors more innovative. (Ismail 2013) . On the other, given that the size of debt in municipalities is negatively corelated to probability of PPP bids, the higher competition may provoke mayors to hide the debt. (Boardman and Vining 2012)

Regarding control variables, our result shows that the probability of PPP bids is positively associated with the number of citizens. It can be related to municipality/city capacity to pay for the preparation of PPP projects and it corresponds with the results of positive relation between the size of municipal own revenues and probability of PPP bid. Similarly, we can explain that municipalities with more prior PPP bids were also more likely to adopt PPP in the future. The experience can lower part of the cost of the preparation of next bids

Conclusion

This study contributes to the literature on public finance and PPPs. The findings are unique, shedding light on the fiscal and political determinants of PPP. Our investigation addresses a relevant, current situation in which there is a deficit of high-quality public services. Our study is also part of an international discussion on government motives toward PPP. Unlike other studies in which researchers focus on existing PPP, we used a unique database – our dependent variable was open PPP tenders. We focused entirely on public sector motivation therefore avoiding the problem of the relation between public and private motives and the time
gap between the political decision and signing of the PPP contract.

Examining the fiscal and political determinants of PPP in Poland shows that local governments’ interest in PPP is associated with public debt, fiscal gaps, fiscal stress and political competition. This result provides evidence that the public side seeks to find additional avenues to finance public needs. But, this study does not determine the real motivation of local governors’ decisions. We can explain our results by positive or negative motives. PPP is an innovative way to finance local needs and it can increase the value of public money. For this reason, “good” mayors use PPP in the case of fiscal constraints and political competition helps in making this decision, but “bad” mayors build an infrastructure to compete for votes and use PPP to hide the debt and only as a last resort when they lack access to EU grants. To find the true motives in the Polish case, we should analyse value for money in PPP projects after the completion and compare them with other non-PPP infrastructure projects. Since the Polish market for PPP is at the beginning stage, additional studies will be possible only in the next few years.

Literature


