Municipal investment expenditures by pork-barrel mayors: evidence from a transition economy

Abstract

The focus of this study is electoral accounting practices employed by mayors in municipalities in a selected, exemplary region in a post-socialist country – the Lodz region in Central Poland. The goal is to identify characteristics of pork-barrel mayors responsible for municipal investment expenditures: their terms of office, partisan affiliation, and gender. The generalised method of moments was applied to estimate the impact that the electoral accounting practices of mayors had on municipal investment expenditures. All 177 municipalities in the Lodz region were investigated, from 2003 until 2019. Contrary to expectations, it was found that electoral accounting was practised by next-term and independent mayors rather than first-term or party-affiliated ones.

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Introduction

During the economic transition in Central-Eastern Europe, much wider autonomy (including financial autonomy) of municipal authorities emerged (Gendźwiłł 2020; Woon Nam & Parsche 2001). As local democracy was developing, it had to mature as quickly as possible. Thus, investigating the phenomenon of electoral accounting practices employed by local authorities might be relevant in assessing the development of civil society, the increase in information symmetry, voter awareness, and the maturation of democracy in transition countries (Akhmedov & Zhuravskaya 2004). The goal of this study is to identify mayors' characteristics determining their practices of electoral accounting in the municipalities of the Lodz region after the eastwards enlargement of the EU in 2004 and the first direct mayoral elections in 2002.

The originality of this research is based on the following elements: (1) the geographic context of the transition economy, (2) the local scale of investigated elections, and (3) complex research questions on characteristics of pork-barrel mayors, including term of office, partisan affiliation, and gender. Firstly, the geographical novelty relates to the consideration of the research area and its municipalities. The region of Lodz was selected as a research area due to the outstanding challenges it faced in the transition process as compared to other regions of Central and Eastern Europe. Secondly, electoral accounting practices were suggested in previous studies as being both more relevant and less recognised at the municipal level than at the national level. Finally, it must be emphasised that, since 2002, mayors in Poland have been elected directly. Thus, both their legal power and mandate to rule in municipalities have been substantial.

Theoretical background and hypotheses

A political budget cycle (PBC) is understood as a political failure when an incumbent, in the period preceding the elections, tries to manipulate short-term economic policy to affect voters and attain re-election regardless of the real social and economic situation (Bartnicki 2017; Fukumoto et al. 2020; Garmann 2017; Gregor 2016; Mink & de Haan 2006; Potrafke 2020; Rogoff 1990; Shmuel 2020).

It should be assumed that various variables have been used by other researchers to investigate the phenomenon of PBC. Those usually discussed were characteristics of financial policy, such as revenues and expenditures, as well as budget deficit (Mink & de Haan 2006), fiscal transfers (Veiga & Veiga 2013), taxes (Foremny & Riedel 2012), public administration decisions (Garmann 2017), and employment policy (Bee & Moulton 2015). However, Napierała (2017) identified PBC based on an analysis of municipal investment expenditures in the metropolitan area of Lodz. Moreover, this variable has been discussed in other studies as a significant descriptor of PBC (Limosani & Navarra 2001; Rodríguez-Pose et al. 2016).

One limitation of employing municipal investment expenditures as a variable depicting PBC in the Polish context should be emphasised. The total value of investment expenditures is not reflected in the municipal budget plan, since some investment projects are implemented directly by municipal companies – entities that are legally separate, though fully dependent on local policy. Moreover, it must be stressed that municipal investment expenditures are not only influenced by local authorities. The calendar of absorption of EU funds (a significant portion of the financial resources available for investments in Polish municipalities) depends on grant announcements by regional authorities or the national government. Thus, electoral accounting at a local level might be strengthened by the practices of regional or national authorities. Nevertheless, Banaszewska & Bischoff (2016) emphasised that EU funds are mostly used to support those municipal projects that are visible to voters; at the same time, however, they found that EU funds spent on a local level do not increase an incumbent's chance for re-

election. Notwithstanding, relations between supralocal and local networks of power seem to be an interesting factor potentially shaping electoral accounting practices at the municipal level and should be considered in future research.

In Poland, mayors are the key players in municipal governments (Banaszewska & Bischoff 2016), so an investigation of their practices is crucial for understanding local democracy. When investigating the behaviours of politicians, Lindbeck (1976) and Cunha, da Conceição Santos Ferreira, & José Fernandes (2016) suggested a realistic approach combining two different approaches: idealistic (or normative) and popularity. The first suggests that politicians are oriented towards securing the public good and put maximum effort into being well informed when making decisions. The second assumes that politicians are oriented towards their own interests and motivated to obtain and maintain power. However, political success is determined by the individual self-interest of voters (Cunha et al. 2016). When the election comes closer, the popularity approach becomes more significant (Lindbeck 1976). Persson & Tabellini (1990) verified that, for many incumbents, re-election is much more important than idealistic policy. As a result, an incumbent can employ policies that are popular with voters but inappropriate to objective conditions (Ashworth 2012). Ferris & Dash (2016) confirmed that national-level politicians are much more resistant to electoral accounting practices than regional politicians. Similarly, Drazen & Eslava (2010) argued that electoral accounting practices seem to be much more relevant at the municipal level than at the national level. Thus, when discussing PBC, a local or regional context is preferred to a national one. This study is an attempt to fill the research gap in regional works on electoral geography devoted to local elections.

Klein & Sakurai (2015) confirmed that first-term mayors behave more opportunistically compared to more tenured ones. Thus, it is hypothesised that: **the practice of increasing municipal investment expenditures during electoral years is much more prevalent among first-term mayors than re-elected mayors (H1)**. Brollo & Nannicini (2012) evidenced above-average increases in governmental infrastructural transfers for municipalities where the mayor was affiliated with the national ruling party. Thus, partisan affiliation might be considered a determinant of the practice of employing electoral accounting practices. In contrast, Avellaneda (2009) did not confirm partisan support to be a factor influencing municipal performance. However, it is hypothesised in this research that electoral accounting practices are influenced by incumbents having a partisan affiliation: **electoral accounting practices are characteristic of partisan mayors rather than non-partisan ones (H2)**. There were no gender studies considering the problem of political budget studies. However, the impact of gender on municipal policy has been the focus of a few enquiries. Ferreira & Gyourko (2014) found no evidence of any impact of gender of mayor on the structure of municipal expenditures. On the other hand, Brollo & Troiano (2016) concluded that female mayors behave more idealistically compared to their male counterparts. Their political decisions are not strategically oriented regarding the probability of them being re-elected. Thus, they are more focused on public good than on their own self-interest. Based on all above arguments, it should be hypothesised that: **male mayors as less idealistic, less public-good-oriented and more likely to employ electoral accounting practices (H3)**. Age, gender and education are the most common variables describing political elites employed in political studies. However, as Gendźwiłł (2020) noted, of those variables, education is the only variable to be of limited usefulness because most mayoral candidates in Poland have a higher education.

Aidt & Mooney (2014) found that the re-election of an incumbent is influenced by voter perception of the utility of their fiscal and investment policy. Thus, the electoral calendar has a significant impact on fiscal expansion in the pre-electoral period and on the budget plan deficit (Alt & Lassen 2006; Doležalová 2011; Ferraresi et al. 2015). Aidt & Mooney (2014) argued that local authorities balance the deficit in electoral years by decreasing public expenditures on administration. On the other hand, voters might be attracted by increased expenditures recognised as significantly related to public goods. Interestingly, the more mature a democracy is, the more voters focus on education, culture, and sports-related municipal investment expenditures, rather than on transportation, waste management, or water supply (Drazen & Eslava 2005; Drazen & Eslava 2010; Eslava 2005). Thus, all hypotheses mentioned above **(H1–H3)** were tested for total value of municipal investment expenditures, as well as for values of particular categories of expenditures like transportation, education, and public administration.

Research area

The Lodz region was selected as a research area due to its outstanding challenges in the transition process as compared to other regions of Central and Eastern Europe. The region is an interesting example of a monofunctional industrial area facing up to the problems of historical over-specialisation. In the 19th century and during the communist period, the regional economy was dominated by a textile industry oriented towards exporting to Russia and the Soviet Union. At the beginning of the 1990s, the regional textile industry lost its eastern markets and collapsed. Unemployment and depopulation increased sharply (Cudny 2012; Young & Kaczmarek 2008). In 1999, the structure of the administrative division of Poland was changed from regions and municipalities into regions, counties and municipalities. More importantly, self-government structures were established at all these levels. After this reform, the first direct mayoral election took place in 2002 (Radzik-Maruszak 2016). Another important date for Poland was 2004, when Poland joined the EU, and the absorption of new funds for municipal investments began (Banaszewska & Bischoff 2016; Lewandowska 2016).

As a result of the decentralisation process in Poland, since 1st January 1999 the administrative division of Poland has been based on three levels of subdivision: 16 regions [Pol. *województwo*], 380 counties [Pol. *powiat*], and 2,477 municipalities [Pol. *gmina*]. In this article, the analysis included the area of Lodz region in Central Poland, which is divided into 24 counties, subdivided into 177 municipalities. The municipalities in Poland are self-government units governed by the municipal council elected in common, secret and direct elections every four years. Since 2002, the mayors have been directly elected by adult inhabitants of their municipalities (Drzonek 2015; Drzonek 2016). They represent their municipalities and are responsible mainly for current affairs, drafting municipal resolutions, communal property management, employment of municipal officials, financial management, and drafting and realising the municipal budget. The substantive scope of a mayor's decision-making is far greater than that of a municipal council (Radzik-Maruszak 2016; Sidor et al. 2016).

Methods and data sources

Various quantitative methods have been used in previous studies of PBC at the sub-national level: ordinary least squares regression including semi-log models (Alesina & Paradisi 2017; Bee & Moulton 2015; Brollo & Nannicini 2012; Khemani 2004), Diff-in-Diff estimator (Bonfatti & Forni 2017; Brollo & Nannicini 2012; Klein 2010), and logistic regression (Aidt & Mooney 2014; Klein 2010), but the predominant method has been panel data estimation including the generalised method of moments and Arellano-Bond regression (Akhmedov et al. 2002; Akhmedov & Zhuravskaya 2004; Baskaran et al. 2016; Drazen & Eslava 2005; Drazen & Eslava 2010; Eslava 2005; Foremny & Riedel 2012; Garmann 2017; Klein & Sakurai 2015; Pereira et al. 2009; Reid 1998; Rose 2006; Sáez 2016; Sakurai & Menezes-Filho 2011; Veiga & Veiga 2014).
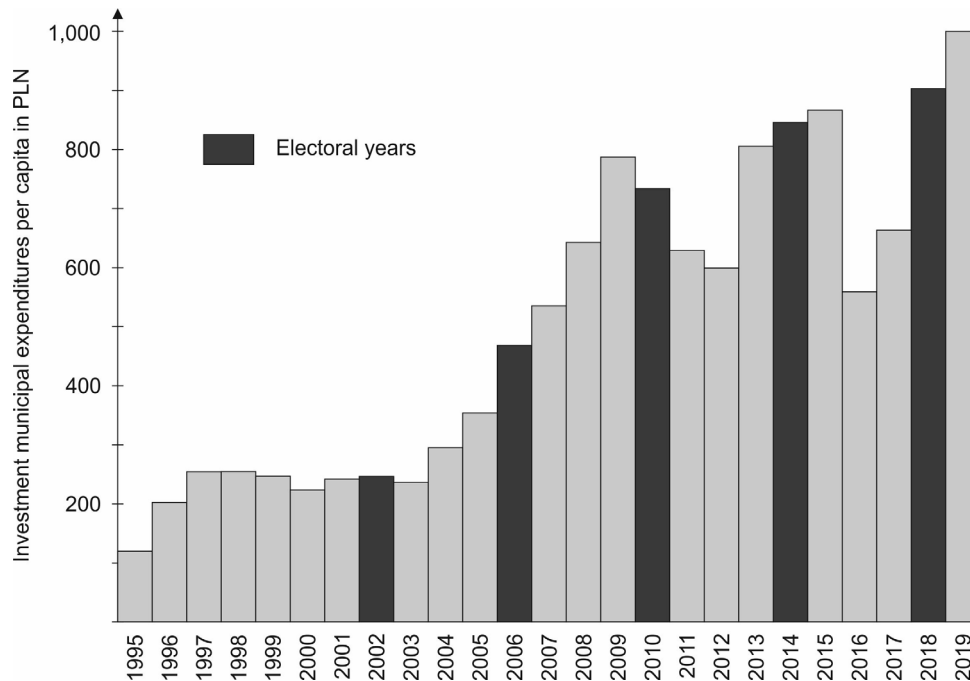
Figure 1. Per capita municipal investment expenditures (in PLN) in the region of Lodz (Central Poland)
Source: own elaboration based on data from Statistics Poland (2021)

Based on methodological argumentation from the abovementioned studies, the Generalised Method of Moments (GMM) was applied to investigate the impact of characteristics of pork-barrel mayors on municipal investment expenditures. It is confirmed that GMM is robust in terms of both heteroscedasticity and autocorrelation issues (Veiga & Veiga 2013). The following attributes of mayors were investigated: term of office, partisan affiliation, and gender. To identify electoral accounting practices, multiplied effects of all considered characteristics and a dummy variable describing the electoral cycle were estimated. The population of investigated municipalities was applied as a control variable.

The total value of municipal investment expenditures *per capita* was considered as a dependent variable. Moreover, separate models were estimated for the following categories of municipal investment expenditures: transportation, education, and public administration. Log transformation of all considered dependent variables was applied. To deal with zero values while performing log transformation, all values were increased by one (Hu 1972).

The following linear dynamic panel model describing the impact of a parallelly considered calendar of local elections and mayoral characteristics on municipal investment policy in the region of Lodz is estimated by GMM method:

$$\ln INEXPC_{it} = \beta_0 + \beta_1 \cdot \ln INEXPC_{it-1} + \beta_2 \cdot ELEC_t +$$

$$+ \beta_3 \cdot FIRST_{it} + \beta_4 \cdot PARTY_{it} + \beta_5 \cdot MALE_{it} + \beta_6 \cdot (ELEC_t \cdot FIRST_{it}) +$$

$$+ \beta_7 \cdot (ELEC_t \cdot PARTY_{it}) + \beta_8 \cdot (ELEC_t \cdot MALE_{it}) + \beta_9 \cdot POPUL_{it} + \varepsilon_{it}$$

The following abbreviations were used in the equations above: $INEXPC_{it}$ represents municipal investment expenditures identified for municipality *i* in year *t*; *ELEC* equals 1 for electoral years, and 0 for non-electoral ones; *FIRST* equals 1 for first-term mayors, and 0 for non-first term ones; *MALE* equals 1 for male mayors, and 0 for female ones; *POPUL* describes the number

of municipal residents in thousands; and finally, β refers to estimated parameters, and ε to idiosyncratic errors. According to all three hypotheses stated in this research, it is expected that β_6 (according to H1), β_7 (according to H2), and β_8 (according to H3) will be significant and positive. To solve the problem of endogeneity, lags of the dependent variables described as $INEXPC_{it-1}$ were applied as the predictor (Klein & Sakurai 2015). The results were obtained by calculations in R, 'plm' package (Croissant & Millo 2008).

All data were received from two sources. The State Electoral Commission in Poland (2021): (1) statistical data on the official results of the municipal mayoral elections in 2002, 2006, 2010, 2014, and 2018, (2) information on the gender of mayors and their political party affiliation. The following statistical data were obtained from Statistics Poland (2021): (1) municipal investment expenditures *per capita*, (2) types of municipal expenditure (such as: transportation, education, and public administration), and (3) total population of the municipalities.

Results

After the EU's eastwards expansion, we observed a significant and permanent increase in municipal investment expenditures in the region of Lodz (see Figure 1). It was the result of combined processes of EU fund absorption, increases in municipal competencies, and local development. On the other hand, the negative impact that the global financial crisis that started at the end of 2008 had on the investment policies of municipalities in the investigated region during the years 2010–12 was diagnosed. Thus, the discussion about the phenomenon of PBC related to municipal investments in the Lodz region proves challenging.

Results of the GMM estimation of municipal investment expenditures in the region of Lodz are presented in Table 1. Generally, significant manipulations of municipal investment expenditures related to the electoral calendar were identified for both total value of considered expenses and municipal

Table 1. Estimation of impact of pork-barrel mayors' characteristics on municipal investment expenditures per capita in the region of Lodz (Central Poland)

Abbreviation of independent variable	Dependent variable: natural logarithm of municipal investment expenditures			
	Total	Transportation	Education	Public administration
Intercept	**** 2.8058 (0.1051)	**** 2.4381 (0.1104)	**** 1.7940 (0.1230)	**** 1.0821 (0.0880)
ln $INEXPC_{it-1}$	**** 0.5502 (0.0148)	**** 0.4982 (0.0150)	**** 0.4154 (0.0168)	**** 0.3558 (0.0176)
$ELEC_t$	**** 0.3702 (0.0932)	*** 0.5497 (0.1696)	−0.0458 (0.2319)	−0.2760 (0.1695)
$FIRST_{it}$	** −0.0719 (0.0287)	−0.0631 (0.0519)	* 0.1336 (0.0694)	0.0241 (0.0508)
$PARTY_{it}$	−0.0223 (0.0308)	* −0.1014 (0.0560)	** −0.1771 (0.0769)	0.0085 (0.0560)
$MALE_{it}$	* −0.0730 (0.0440)	−0.1023 (0.0799)	−0.1736 (0.1092)	−0.0656 (0.0799)
$ELEC_t \cdot FIRST_{it}$	** −0.1367 (0.0574)	−0.1415 (0.1047)	−0.2144 (0.1428)	0.0333 (0.1044)
$ELEC_t \cdot PARTY_{it}$	−0.0402 (0.0633)	0.0337 (0.1152)	* −0.2673 (0.1574)	0.0613 (0.1151)
$ELEC_t \cdot MALE_{it}$	0.0300 (0.0907)	−0.1390 (0.1650)	0.2240 (0.2256)	0.1655 (0.1650)
$POPUL_{it}$	0.0002 (0.0002)	0.0006 (0.0004)	0.0005 (0.0005)	**** 0.0024 (0.0004)
R^2	0.3701	0.3013	0.1811	0.1442

*Significance codes: 0 '****' 0.001 '***' 0.01 '**' 0.05 '*' 0.1. Standard errors are reported in parentheses.*
Source: own elaboration based on data from the State Electoral Commission in Poland (2021) and Statistics Poland (2021)

expenditures on transportation investments. Total value of municipal investment expenditures was 37.0% higher in electoral years compared to non-electoral years. Interestingly, municipal expenditures on transportation investments were as much as 55.0% higher in electoral years compared to non-electoral periods. The population of the municipalities considered as a control variable was identified as a significant determinant of municipal investment expenditures *per capita* on public administration only.

The present research mainly focuses on three dependent variables describing the multiplied effect of electoral accounting practices and mayors' characteristics: term of office ($ELEC_t \cdot FIRST_{it}$), partisan affiliation ($ELEC_t \cdot PARTY_{it}$), and gender ($ELEC_t \cdot MALE_{it}$). Only two of these characteristics of pork-barrel mayors were found to be significant determinants of municipal investment expenditures: tenure of office for total value of investigated expenses, and partisan affiliation for expenses on education. Interestingly, the parameters of both considered variables were negative. First-term mayors spent 13.7% less in total in electoral years compared to other annual municipal investment expenditures. Thus, electoral accounting was practised by next-term rather than first-term mayors. As mentioned above, partisan affiliation was found to be the second significant characteristic of pork-barrel mayors. However, the parameter of identified determinant of educational municipal investment expenditures was negative. Regarding educational investments, party-affiliated

mayors spent 26.7% less in electoral years compared to other annual municipal expenses. Thus, independent incumbents were more inclined to use electoral manipulations of investments on education than were party-affiliated ones.

Regarding all considered categories of municipal investment expenses (total, transportation, education, and public administration), all three hypotheses were rejected (see Table 2). Nevertheless, investment policy of first-term mayors in electoral years was found to be a significant determinant of municipal investment expenditures in total, though the direction of the impact was opposite to that hypothesised. A similar result emerges from the analysis of educational investments managed by mayors with partisan affiliations. Regarding municipal investment expenditures on education, the investment policy of party-affiliated mayors in electoral years was found to be a significant determinant, but opposite to that expected. Finally, gender was not found to be a significant characteristic of the investigated pork-barrel mayors. However, female mayors were generally more oriented towards investments and were spending 7.3% more compared to male mayors.

Discussion and conclusions

All the results put into question the maturity of democracy in the transition economy, and the Lodz region in Poland as an example. In transition economies, both citizens and institutions are seen as inexperienced with democracy. Thus, information

Table 2. Level of significance at which the null hypothesis should be rejected and the alternative accepted

Alternative hypothesis	Dependent variable: natural logarithm of municipal investment expenditures			
	Total	Transportation	Education	Public administration
H1 – $ELEC_t{\cdot}FIRST_{it}$ is a significant determinant of municipal investment expenditures	(−) 0.0173	(−) 0.1766	(−) 0.1332	0.7495
H2 – $ELEC_t{\cdot}PARTY_{it}$ is a significant determinant of municipal investment expenditures	(−) 0.5250	0.7698	(−) 0.0895	0.5941
H3 – $ELEC_t{\cdot}MALE_{it}$ is a significant determinant of municipal investment expenditures	0.7404	(−) 0.3996	0.3208	0.3157

Explanation: '−' in parentheses refers to the direction of the impact being opposite to that hypothesised
Source: own elaboration based on data from the State Electoral Commission in Poland (2021) and Statistics Poland (2021)

asymmetry between voters and government occurs. Citizens cannot use the information needed to make rational electoral decisions. As a result, at the beginning of the transition process, voters are more vulnerable to electoral manipulation (Roberts 2008). This research confirmed the existence of PBC in Poland, which is an example of a country after an economic transformation. As Górecki and Kukołowicz (2017) show, the electoral performance of incumbents is affected by their municipal expenditure policy, both throughout their entire term of office and during the year before elections. However, Sakurai and Menezes-Filho (2011) made the opposite conclusion – that municipal investments are not significantly affected by PBC, but that, if such relation occurs, its negative character must be emphasised. In an election year or the preceding year, local authorities tend to spend less on investments. This allows them to increase current expenditures, making it much easier for incumbents at the local level to manipulate voters.

The conclusions refer to the hypotheses stated in the theoretical part of the paper. Interestingly, all hypotheses were rejected. It was found that PBC was characteristic for municipalities governed by next-term mayors rather than first-term ones. Moreover, independent mayors practised electoral manipulations of investments (mainly on education) more frequently than did mayors with partisan affiliation. Finally, there is no evidence of an incumbent's gender influencing the occurrence of the investigated practices. Brollo & Troiano (2016) emphasised that male mayors attract more campaign contributions when they run for re-election. However, such a finding was not confirmed for municipalities in the region of Lodz.

Klein & Sakurai (2015) confirmed that first-term mayors behave more opportunistically and practise electoral accounting more often compared to next-term mayors. They noticed that when elections are close, first-term mayors reduce local taxes and change their budget composition by reducing current expenditures and increasing capital investments. However, these authors considered the phenomenon of PBC in the context of Brazil, where second-term mayors are not allowed to run for re-election. It must be emphasised that the Polish system of local elections does not employ term limits. It was confirmed for the transition economy, and for the electoral system where re-election is not limited term limits, that first-term mayors appear less opportunistic and less eager to practise electoral accounting.

Gendźwiłł (2012) found that politically independent mayors (an alternative to politicians affiliated with nation-wide parties) were seen as being more focused on local issues and not burdened with the negative image that voters have of national politics. Thus, non-partisan incumbents were perceived as more credible. It was hypothesised that a mayor belonging to any political party has a higher probability of employing electoral accounting practices than do non-affiliated incumbents. Therefore, independent incumbents were expected to have a lower probability of using electoral accounting practices. This was not confirmed in this study. Generally, partisan affiliation was not confirmed as a significant characteristic of pork-barrel mayors. This result is in line with the research by Avellaneda (2009), who did not confirm partisan support as a factor influencing municipal performance. However, in the investigated municipalities, independent incumbents were oriented towards electoral manipulations of investments related to education only.

Voters in developed countries are both harder to attract by increasing expenditures in electoral years and more aware of budget deficits. Thus, electoral accounting practices are much more difficult to implement in mature democracies. Consequently, politicians prefer to manipulate voters by using the structure, not the volume of public expenditures. It was confirmed by our investigation and the results from other researchers (Drazen & Eslava 2005; Drazen & Eslava 2010; Eslava 2005) that voters might be easily attracted not only by general municipal investment spending, but also by infrastructural investment expenditures, like expenses on transportation in the region of Lodz.

Further research should work on in-depth studies on the partisan affiliation of pork-barrel mayors, including the relation between partisan affiliation of mayors and regional or national authorities (Brollo & Nannicini 2012), or type of partisan affiliation (Flis 2011; Hill & Jones 2017). Moreover, it was found that the population of a municipality was identified only as a significant determinant of municipal investment expenditures *per capita* on public administration. A discussion of this fact seems to be beyond the scope of this paper. However, this finding might suggest that the more populated a municipality is, the wider the range and the higher the quality of its public administration or, conversely, the less effective the public administration is. This finding might stimulate questions for further research.

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