

The political business cycle in municipalities in Poland 2001-2019

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Abstract: The aim of the article is to identify the symptom of the political business cycle at the local level in Poland, consisting in increasing budget expenditures during election years in urban, urban-rural and rural municipalities. The article reviews previous empirical studies in foreign and domestic literature. On the basis of data on budgets of local government units in Poland published by the Central Statistical Office for the period 2001-2019, an analysis of the dynamics of total expenditure was carried out and then econometric time series models were estimated using the Cochrane-Orcutte method (autocorrelation correction of the random component). On the basis of calculations of the rate of change of expenditures in the studied period, relatively strong dynamics of expenditures was found in the election years and its significant deceleration in the first years of subsequent terms (with some exceptions). In the models of total, current and property expenditures, apart from the explanatory variable "total income", a zero-one variable was introduced, assuming the value "1" for election years and the value "0" for the remaining years. Thus, the statistical significance of the influence of the election year on the formation of expenditures was measured and weighted independently of the level of total income in municipalities in the cross-section under study. The research hypothesis that there is a significant impulse to increase expenditures in election years in Polish communes and that it is stronger in rural than in urban communes was positively verified. The variable "election year" in the models of total expenditures of rural and urban-rural municipalities turned out to be statistically significant at the level of significance lower than 0.01, while in urban municipalities at the level of significance from 0.01 to 0.05. This means that the impulse to increase expenditures in rural municipalities during the election period is more significant than in urban municipalities. Furthermore, the study found that this symptom relates to property expenditure and not to current expenditure. Thus, this paper has partially filled the research gap regarding the identification of the political business cycle in the cross-section of municipalities into urban, urban-rural and rural.

Key words: political business cycle, local governments budgets, fiscal policy

JEL: H7

Introduction

The political business cycle in the fiscal policy of public finance sector entities has been the subject of scientific research for many years. There have been studies on its various aspects, which focus on the expansive fiscal policy in pre-election periods, sometimes detached from the economic business cycle. This phenomenon is the result of the rulers' determination to win political elections. This research concerns both the central and local levels (local government units) with the predominance of the former. The identification of this phenomenon is important due to the growing risk of over-indebtedness and shifting the burden of its repayment to political successors. The existence of a political business cycle manifests itself primarily in an increase in budget expenditure in the pre-election period and

its decline at the beginning of the next electoral term. This area of research has been the subject of a number of studies in foreign literature, while in Poland, and particularly at the local level, it is less well known. As the distance between the rulers and the voters is different in urban and rural areas, this article attempts to identify the political business cycle in the cross-section of municipalities into urban, urban-rural and rural. The study of the cycle in such a cross-section may be important, because it seems that the smaller the municipality, the greater the risk and scale (about 80% of municipalities in Poland are rural) of this phenomenon. Therefore, the article assumes the hypothesis that in election years there is a political impulse to increase budget expenditures in communes and it is stronger in rural than in urban communes. Thus, this is another manifestation of the occurrence of a political business cycle in municipalities in Poland. The aim of this paper is to identify the political business cycle in the cross-section of urban, urban-rural and rural municipalities in Poland. This identification will be done on the basis of determining the impact of the electoral period on the formation of total expenditure and broken down into current and property expenditure. The source of data are CSO studies on financial management of local government units in Poland in 2001-2019.

Literature review

M. Kalecki (1940s) is regarded as the forerunner of the study of the political business cycle. The work of the Polish economist triggered a discussion on the possibility of economic fluctuations determined by political factors. According to this theory, this social group, as opposed to the working class, exerts pressure on the decisions of politicians, causing cyclical economic fluctuations [Kalecki, 1943].

The heyday of research on the sources of expansionary fiscal policy in pre-election periods and the resulting potential disruptions to the course of the "natural" business cycle in the world economic literature was in the late 1960s and early 1970s. The author considers W. Nordhaus [Dubois, 2016] to be the creator of a formalised theory of the political business cycle at the macroeconomic scale. This theory is based on the public choice model and the Philips curve. It assumes adaptive inflation expectations and naive retrospective voting [Swianiewicz & Kurniewicz, 2018, pp. 56]. Nordhaus assumed that voters have a "short memory", little knowledge of processes in the economy and make electoral decisions based

on the current economic situation, in this model specifically on the current unemployment rate and inflation [Pacześ, 2011, pp. 217]. As a result, those in power whose goal is to win re-election pursue an expansionary fiscal policy in the election year, which leads to a reduction in unemployment immediately before the election and results in an increase in inflation after the election. This, in turn, forces a restrictive monetary policy in the first years of the new term causing economic fluctuations conditioned by political decisions.

Nordhaus's theory was modified in subsequent decades to account for the occurrence of, inter alia, the phenomenon of asymmetric information regarding politicians' competences. Since voters do not sufficiently know the competences of politicians seeking re-election, politicians send impulses about their competences and credibility by pursuing an expansive fiscal policy during the election period, and after the election they pursue a restrictive policy to prevent excessive debt, which results in cyclical fluctuations in the economy [Rogoff, 1990]. More recent work has described models that import the phenomenon of the so-called "fiscal illusion", which has been described extensively earlier in the literature. In the area of political business cycle research, it consists in increasing budget expenditures while masking the increase in the tax burden under the conditions of a complicated tax system, so that voters are not aware of it during the election campaign [Mourao, 2008]. The phenomenon of making budgets less transparent by politicians, leading to an increase in the transaction costs of monitoring fiscal policy was pointed out, among others, by A. Alesina and R. Perrotti [1996, pp. 401-407].

Over time, the study of political cycles has descended from the national to the local level. E. R. Tufte [1978, pp. 143] found that the tendency to pursue policies of immediate benefit while deferring hidden costs may be more pronounced at the local government level than at the central level and referred to it as "short-sighted politics for short-sighted voters". P. E. Mouritzen [1989, pp. 37], identifying local political cycles in Scandinavian countries, Italy and France, pointed out that although local politicians have fewer policy instruments, they still seek to maximise voter support by appropriately timing the benefits and costs of fiscal policy (spending rises faster the closer to an election and taxes increase in the middle of the next term). L. G. Veiga and F. J. Veiga [2004] conducted an analysis of local government budget expenditures in Portugal between 1979 and 2000, in which they showed that local government bodies systematically increased spending, especially investment spending, during election years. Similar conclusions were also reached by R. N. Baleiras and J. d. S Costa [2004,

pp. 655] indicating that the electoral calendar, re-election decisions and political cohesion are determinants of local government investment spending in Portugal. A study of the political cycle at the local government level in Spain for the period 1993-2003 positively verified the hypothesis that larger subsidies during the pre-election period are given to those local governments that belong to the same party as the governing higher level of the country's administrative division in order to increase the chances of a specific political party winning the local elections [Sole-Ole & Soribas-Navarro, 2008]. Since local politicians have fewer economic instruments than central authorities to win electoral votes, they primarily use public investments and projects, as evidenced by the increasing level of investment spending in the pre-election period. This research highlights the fact that local politicians schedule the delivery of projects for public use for the years in which elections are held. Moreover, the local cycle phenomenon in the Czech Republic is more pronounced in urban municipalities due to the fact that these municipalities have better bargaining power than rural municipalities in reaching for debt instruments [Placek, Pucek, Ochrana, Krapek & Matejova, 2015].

The topic of the political business cycle at the local government level in Poland has not been yet sufficiently recognised, although local government officials in Poland confirm in anonymous surveys that the shape of local government budgets in the election period is also determined by determinants of a political nature [Swianiewicz, 2016]. The political cycle is more visible on the expenditure side than on the revenue side of the budgets of local government units in Poland. Since autonomous (in the sense of setting rates) local taxes are a small part of both municipal budgets (about 20%) and the household budgets of most voters, no significant symptoms of the political cycle are observed in terms of tax policy at the local level [Swianiewicz & Łukomska, 2015, pp. 275]. The progressive decentralisation of powers and the entrustment of additional tasks to local governments mean that some signs of a cycle are present in the setting of local tariffs: water and sewage tariffs, rents in municipal housing, tickets for local public transport, parking fees, or rubbish collection rates [Swianiewicz & Kurniewicz, 2018]. In turn, the increase in budget spending in election years was identified as an important factor increasing the chance of winning elections [Kukułowicz & Górecki, 2018]. An increase in spending on local government employees' salaries in pre-election periods as a symptom of the occurrence of a local political business cycle in Polish districts and provinces was identified in a study conducted by Ł. W. Olejnik. There, it was pointed out that expenditure on salaries is higher in districts with a dominant grouping with high coalition strength

[Olejnik, 2019]. The author of the research took into account an important factor in creating the political business cycle, which is the fact that the final shape of the budget is determined by the relations between the executive and the legislative bodies of local government.

The phenomenon of the political business cycle at the local level in Poland has not yet been thoroughly recognised, especially in the cross-section of municipalities into urban and urban-rural gminas. On the basis of Nordhaus's theory, which assumes that voters have a "short memory", and due to the fact that the population living in rural areas may be less familiar with the meanders of public finance and the relationship between municipal authorities and voters is more direct than in urban municipalities, it is worth making an attempt to identify and measure the positive impulse on the formation of budget expenditures in election years as a symptom of the existence of a political cycle in urban, urban-rural and rural municipalities. This article is an attempt to partially fill this research gap in Poland.

Methodology

In order to identify and measure the impact of the electoral period on the total expenditure of municipalities in Poland, the GRETL software was used to estimate econometric models of time series using the Generalised Least Squares Method, specifically the Cochrane-Orcutte procedure which corrects for the presence of autocorrelation of the random component [Maddala, 2006, pp. 279-281]. This method has an advantage over the Classical Least Squares Method, because in the case of autocorrelation of the random component, which often happens in time series, it does not "artificially" inflate the values of Student's t statistics [Borkowski, Dudek & Szczęśny, 2004, pp. 114], on the basis of which the statistical significance of the explanatory variables of the model is determined. And this, from the point of view of the aims of this article, is of key importance.

On the basis of the CSO data on the implementation of expenditures and revenues of municipalities by urban, urban-rural, the following models were estimated:

$$(1) \quad TE_t = \beta_0 + \beta_1 TR_t + \beta_2 E_t + \eta_t$$

where: TE_t - total budget expenditure in municipalities in millions of PLN in subsequent years; TR_t - total budget revenue in municipalities in millions of PLN in

subsequent years; E_t - election year - a zero-one variable specifying the occurrence of the year in which local government elections are held (1 - election year; 0 - other years) n_t - random component of the model; $\beta_0, \beta_1; \beta_2$ - model parameters.

In the set of explanatory variables, there is a variable representing the level of realised total budget revenues in communes in Poland. In the light of many studies, this is the strongest determinant of budget expenditure in local government units, as the level of expenditure in the budget is planned on the basis of projected income, taking into account the debt limits of local government units in Poland. Until 2013, a debt limit of 60% of total revenue in subsequent years was in force. Since 2014, a debt service limit in the form of an individual debt ratio (from 2018 calculated according to a modified algorithm), calculated by each municipality separately, and the need to obtain an appropriate operating surplus (surplus of current income over current expenditure) have been in force [Dworakowska, 2018, pp. 138-141]. This is the surplus of current revenue over current expenditure plus the budget surplus from previous years and free funds, and from 2018, the operating surplus plus revenues. The preparation of the budget based on projected revenue and the need to meet statutory debt limits make expenditure and revenue highly correlated. Moreover, the income variable also indirectly reflects the impact of the local (own income of municipalities) and national economic situation.

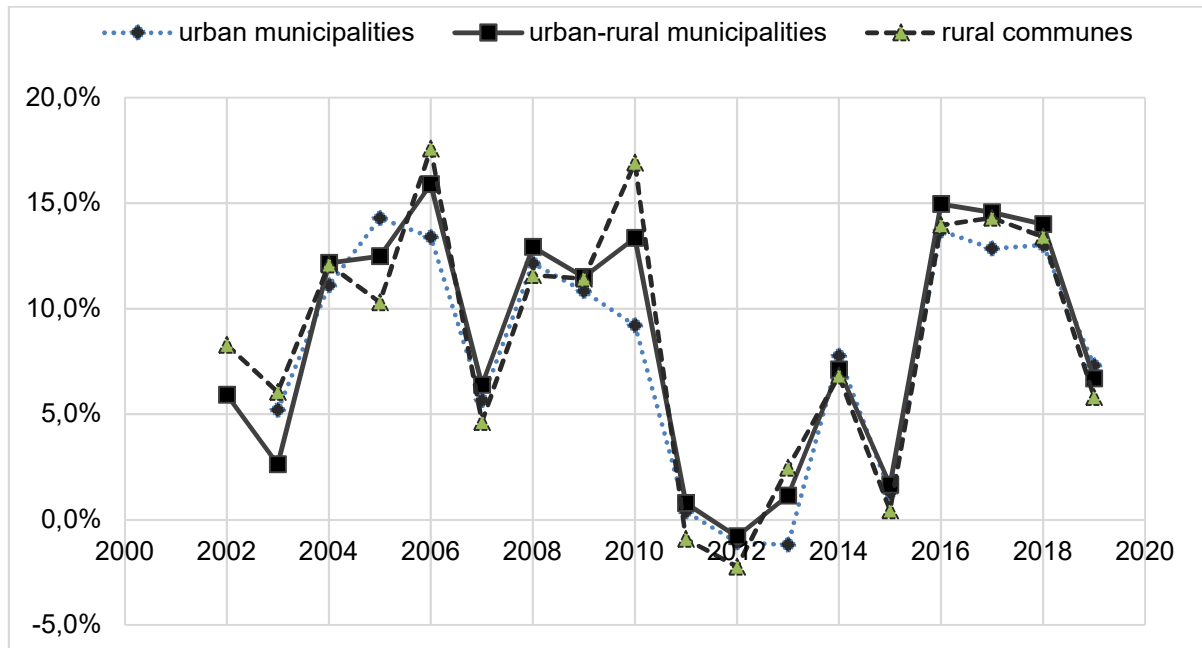
The introduction of a zero-one variable into the model, which takes the value "1" for the years in which local government elections were held and the value "0" for the remaining years, is crucial from the point of view of verifying the hypothesis adopted in the article. The estimated parameter β_2 will make it possible to determine by how much the municipal budget expenditures are on average higher in the election years compared to the remaining years, regardless of what the level of budget revenues in the municipalities is. If the "500 plus" social programme were abolished in Poland in 2023, i.e. in the year of the next local elections, which in itself is perhaps politically unfeasible, then municipal expenditures would decrease not because there is no cycle in municipal budget policy, but because of a decrease in the revenue received from the central budget for the implementation of this social task. Identifying a political cycle on the basis of expenditure dynamics alone is insufficient, as the level of expenditure is primarily determined by budget revenues. Although these revenues are, to a certain extent, also determined by the electoral cycle, when, for example, higher subsidies and grants go to municipalities just before elections.

Statistical significance of the impact of election years on the level of expenditures will be determined by Student's t-test. Since the model of local government expenditures defined by formula (1) will be estimated separately for urban, urban-rural and rural municipalities, the significance hierarchy of the impact of election years on the level of expenditures in this cross-section of municipalities was made on the basis of the "p" value corresponding to the "election year" variables in the estimated models, i.e. the lowest possible significance level for which this variable remains statistically significant [Kufel, 2007, pp. 125-126]. The "p" value is a measure of the probability of an error in inference (the so-called "type I error") and the lower it is, the stronger the statistical significance of the effect of the explanatory variable on the explained variable. In economic research it is assumed that if the "p" value is less than 0.01, then the result of the experiment is highly significant [Aczel, 2004, pp. 308]. On this basis, it will be possible to determine whether the manifestation of the political cycle in budgetary policy studied in the article is more pronounced in rural or urban municipalities.

Results

Based on CSO data on the budgets of local government units in Poland, the dynamics of the level of municipal expenditure in 2001-2019 was examined (Fig.1). Figure 1 confirms the theses of many authors about the occurrence of a politically conditioned expenditure cycle. It can be noted that the rate of change of expenditures in election years, i.e. 2006, 2010 and 2018, is significantly higher compared to other years and amounts to several percent. The exception may be the slightly lower dynamics in 2002 and 2014, which was caused by the weak economic situation in the Polish economy in 2001-2002 and 2012-2013. In 2018, on the other hand, the dynamics of expenditure slowed down a bit after a jump in 2016.

Fig. 1. Total expenditure dynamics of municipalities in Poland in 2002-2019



Source: own calculations based on CSO data.

The strong increase in the level of expenditure in 2016 was due to the start of the "500 plus" social programme in Poland. Municipalities received a large cash injection from the central budget for the implementation of this programme. Thus, the significant increase in expenditure in 2016 was mainly due to an increase in municipalities' income. Moreover, after periods of jumping growth, there was a significant slowdown in expenditure dynamics in the first years of the term.

It seems crucial, however, to determine whether the increase in expenditure in election years is the result of political determination of local authorities to be re-elected or whether it results only from an increase in the level of municipal income recorded in the period under study. For this purpose, econometric time series models of expenditures in municipalities were estimated, which in the set of explanatory variables, include variables representing economic (income) and political (election year) factors. The estimated models of total expenditure in the cross-section of urban, urban-rural municipalities (Table 1) are characterized by very high coefficients of determination of over 99%. This means that they explain in almost 100% the general variability of total expenditure in the studied cross-sections of municipalities. Thanks to the application of the Cochrane-Orcutte procedure, no autocorrelation and hetreskedasticity of the random components of the models were

found. Both explanatory variables in the models are statistically significant at the significance level of 0.05 ("p" values below 0.05).

Table 1. Estimated regression models of total expenditure of municipalities in Poland for the period 2001-2019

Type of municipality	Estimated model and coefficient of determination	Value of 'p' for the variable 'Election year'.
municipal	$TE_t = -339,650 + 1,015TR_t + 559,472E_t$ $R^2 = 0,995$	0,025
urban-rural	$TE_t = 34,664 + 1,004TR_t + 895,145E_t$ $R^2 = 0,996$	0,007
rural	$TE_t = -389,822 + 1,009TR_t + 1392,64E_t$ $R^2 = 0,995$	0,006

Source: own calculation on based GUS data.

The estimation of the parameter next to the "total income" variable shows that an increase in total income by PLN 1 million results in an increase in expenditures by about PLN 1.015 million on average in urban gminas, by about PLN 1.004 million in urban-rural gminas and by about PLN 1.009 million in rural gminas. This means that municipal budgets are relatively balanced in the long term. On this basis, it can also be concluded that the statutory debt limits in force in the period 2001-2019 are effective, although there are cases of failure to meet them in Poland on the scale of individual municipalities.

The statistical significance of the variable "election year" and the positive value of the estimated parameter next to it confirm that in election years there is an impulse in the municipalities' budgetary policy to increase expenditures, which is independent of the level of total revenue. In election years total expenditures are on average higher by about PLN 559.472 million in urban municipalities, by about PLN 895.145 million in urban-rural municipalities and by about PLN 1,392.64 million in rural municipalities compared to expenditures in other years and regardless of the level of total revenue. It can be stated that this impulse is stronger in the case of rural than urban gminas, however it is due to the effect of scale, as rural gminas in Poland constitute approx. 80% of the total number of gminas in Poland. A confirmation of a more significant impulse to increase total expenditures in election years in rural gminas in relation to urban and urban-rural gminas is the lowest in the examined cross-section "p" value of the variable "election year" in the model for rural

gminas (the third column of Table 1). It amounts to only 0.006, which means that the examined symptom of the political cycle in rural municipalities is highly significant. The situation is similar in urban-rural municipalities, where the "p" value of the zero-one variable is equal to 0.07. On the other hand, in the expenditure model of urban municipalities, the value is 0.025. This means that in the case of testing the significance of the variable "election year" at the significance level equal to 0.01, this variable would turn out to be a non-significant variable. On this basis, it can be concluded that the studied impulse of the political business cycle on the development of total expenditure is stronger and more significant in rural than in urban municipalities.

As far as the study of the formation of current expenditure is concerned, in the light of the estimates presented in Table 2, it should be unequivocally stated that the variable "election year" in each cross-section of municipalities is statistically insignificant (the third column of Table 2). The "p" values are very high for this variable and amount to more than 0.5. Therefore, in conclusion, the examined symptom of the political cycle in terms of the formation of current expenditure in municipalities in Poland in the period 2001-2019 did not occur. The very high level of determination coefficients of these models and the statistical significance of the variable "total income" allow us to conclude that current expenditure is very much determined by municipal income. This was also confirmed by additional estimations of the models after removing the variable "election year" from them. And although the results of Ł. W. Olejnik's research confirm the phenomenon of the political cycle in terms of expenditure on remuneration, an additional, because "non-revenue", impulse to increase current expenditure was not recorded in this study.

Table 2. estimated regression models of current expenditure of municipalities in Poland for the period 2001-2019

Type of municipality	Estimated model and coefficient of determination	Value of 'p' for the variable 'Election year'.
municipal	$TE_t = -21,371 + 0,835I_t + 51,733E_t$ $R^2 = 0,993$	0,658
urban-rural	$TE_t = -385,577 + 0,849I_t + 141,795E_t$ $R^2 = 0,998$	0,518
rural	$TE_t = -759,926 + 0,839I_t + 43,222E_t$ $R^2 = 0,996$	0,904

Source: own calculation on based GUS data.

On the other hand, in terms of property expenditures, the impulse to increase them was noted in each cross-section of municipalities. However, the variable "election year" is statistically significant at the level of significance slightly above 0.07 in models estimated for urban and urban-rural gminas. In rural municipalities, the phenomenon is significant at a lower significance level of 0.045, which also confirms the regularity observed in the total expenditure models that the "more rural" the municipality, the more pronounced the symptom of the political cycle in budgetary policy (column three of Table 3).

Table 3. estimated regression models of property expenditure of municipalities in Poland for the period 2001-2019

Type of municipality	Estimated model and coefficient of determination	Value of 'p' for the variable 'YEAR OF ELECTION'.
municipal	$TE_t = -421,477 + 0,185I_t + 453,686E_t$ $R^2 = 0,784$	0,070
urban-rural	$TE_t = 494,211 + 0,153I_t + 748,483E_t$ $R^2 = 0,811$	0,060
rural	$TE_t = 449,690 + 0,168I_t + 1290,450E_t$ $R^2 = 0,774$	0,045

Source: own calculation based on GUS data.

Approximately 77-81% of the total variability of property expenditures was explained by the estimated models, which indicates good adaptation of the model to the empirical data. The estimated parameters of the variable "total income" mean that with an increase in total income by PLN 1 million, the property expenditures increase on average by about PLN 185 thousand in urban gminas, by about PLN 153 thousand in urban-rural gminas, and by about PLN 168 thousand in rural gminas. Relatively lower growth of property expenditures as a result of the increase of total revenue results from the fact that property expenditures constitute a small percentage of total expenditures of municipalities in Poland (approx. 16-18%). The impulse for the increase of property expenditures in election years in urban gminas amounts to about PLN 453,686 million, in urban-rural gminas about PLN 748,483 million, and in rural gminas about PLN 1,290.45 million, irrespective of the level of total revenue and in comparison with other years.

As part of additional calculations, the models specified in formula 1 were also estimated with the addition of a third explanatory variable, a zero-one variable taking the

value of 1 for years preceding election years (the value 0 for the others). These variables turned out to be statistically insignificant, indicating that the political impulse to increase spending in municipalities occurs only in years in which elections are held. This observation is consistent with the assumption of Nordhaus' theory that voters have a short memory and adaptive expectations, i.e. they extrapolate the performance of candidates in elections based on their achievements observed in the election year.

Summary

On the basis of the analysis carried out, the validity of the research hypothesis can be confirmed. At the local level in Poland, namely in communes, there are symptoms of political business cycle which consist in increasing the level of expenditures in the election year and then slowing down its growth dynamics in the first year of the next term. As a result of the research carried out, it was found that in election years there is an impulse to increase spending by local governments regardless of the level of budget revenues. This impulse is stronger and more significant in rural municipalities than in urban and urban-rural ones. Explaining this on the basis of Nordhaus's political cycle theory, it may be assumed that voters in rural areas have a "shorter memory" and judge politicians on the basis of the current situation in their municipalities rather than the entire term of office. In turn, politicians seeking re-election try to make effective use of this by increasing spending, mainly investment spending, in the last year of their term. The political effectiveness of such fiscal policies in rural municipalities may also result from the fact that relations between local authorities and voters are more direct and less anonymous in rural areas than in urban municipalities. In addition, this phenomenon may also result from less economic knowledge of the rural population and less interest in the shape and details of fiscal policy in municipalities.

The separation of the political cycle from the course of the economic cycle in the economy forces questions about the economic rationality (not political) of such and not such fiscal policy in municipalities in Poland. The rational counter-cyclicity of fiscal policy, which means, among other things, that it is reasonable to create budget surpluses in periods of economic prosperity, which could constitute a budget reserve in case of a decline in revenues during the crisis [Owsiak, 2011, pp. 182-183], may not be feasible due to the existence of the electoral cycle. Nevertheless, a positive development is the fact noted in the

study that the political business cycle concerns investment spending and not current spending, as investment is the engine of the economy. However, the question of their effectiveness requires deeper study, so it is also important to examine the structure of these expenditures. Are these investments which generate additional income for the budget in the future or are they rather of a nature to "beautify" local infrastructure? Are these investments responding to the needs of the local community or are they rather conditioned by the possibility of obtaining co-financing from the EU funds (municipalities may decide not necessarily to undertake investments that are needed by the local community, but rather investments that can be co-financed in a given perspective from the EU budget).

The progressing decentralisation of public finance in Poland and changes in the principles of fiscal policy at the local level, the ongoing pandemic, the extension of the electoral cycle from four to five years and the introduction of a limit of two consecutive terms of office in local government elections justify the need for further research into the local political business cycle. Moreover, this research requires an interdisciplinary approach, as confirmed, among others, by the observation of C. E. Walsh [2000, p. 134] that while econometric time series analysis is an excellent tool for hypothesis testing, it is sometimes the tools of historians rather than econometricians that are more effective in fully understanding the political and electoral aspects of economic policy.

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