Empirical Paper

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Determinants of the success of participatory budgets in Poland

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Abstract: The present paper aims to determine what factors affect the success of participatory budgets in Polish cities and what factors affect the size of these budgets. The study covered all 66 cities with powiat rights from 2016 to 2021. A panel data model was used. The first research hypothesis states that the success of participatory budgeting depends on the economic condition of the cities implementing it. The second one states that the success of participatory budgeting depends on the characteristics of the LGUs' residents. The first hypothesis was confirmed, while the second was partially confirmed. Analyzing four different models with different explanatory variables, it was found that the statistically significant explanatory variables were population, material situation, demographic structure measures, and residents' economic situation.

Keywords: finances of local government units, panel method, participatory budgeting
JEL Classification: H72, G4

1 Introduction

There is no universally accepted definition of a participatory budget (PB), but its study is quite important as it strengthens democracy [Cabannes and Lipietz, 2018]. It is an action of democratic innovation that promotes social empowerment and citizens' education. It increases equality and innovation, while enabling transparency of the path that begins with an idea/proposal and progresses to an implemented project through the cooperation among the citizens and the authorities [Milosavljević et al., 2023]. Europe is the first continent to account for about 40% of all applications worldwide, and Poland covers most of them [Dias et al., 2021]. Hence, it is worth studying any of the factors that led Poland to such a level. PB as an idea was first introduced in the city of Porto Alegre, Brazil, in the late 1980s.

There are some aspects supported by most authors with regard to the definition of participatory budgeting being "a process of nonelected citizens participating in establishing the guidelines for achieving the main goals and directions of public finance policy" [Mączka et al., 2021, p. 475], and they decide on the allocation of part of the available municipal budget [Bartocci et al., 2022]. Bartocci et al. [2022] take a more rigorous approach to define a PB by adding that participatory budgeting offers transparency to all citizens by combining direct and representative democracy and not just consultation. They referred to one of the positive elements of participatory budgeting alongside their definition, which other authors agree wtih. For example, according to Wampler [2007, p. 21], "participatory budgeting is a decision-making process

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through which citizens deliberate and negotiate over the distribution of public resources." For a more precise definition of participatory budgeting, Sintomer et al. [2008] added the following criteria: (1) the discussion about its financial dimension, (2) the involvement of the city authorities in its implementation, (3) its repeatability, (4) the existence of a form of public debate at specific meetings before its process, and (5) the accountability for its output.

Participatory budgeting has also been implemented in Poland. The first PB in Poland was conducted in Sopot in 2011. In Polish legislation, PB became mandatory for some local government units (LGUs) beginning in 2018. The Act of January 11, 2018, assumes that the obligation to create PBs in Polish cities applies only to cities with powiat rights. Other city units may or may not implement PBs.

The first question that arises is whether it is worth introducing a PB in towns that are not obliged to do so. The answer requires determining what the success of participatory budgeting depends on. In the literature, there are many arguments in favor of introducing participatory budgeting. PBs have become a relatively common form of citizens' participation in making decisions on the allocation of financial resources at the disposal of LGUs. Although in annual terms, the funds allocated to PBs do not constitute significant amounts in the expenditure of LGUs, in the long term, significant funds are allocated in local investments.

The second question then arises: what determines the success of participatory budgeting? The answer to such a question is not easy, resulting from the fact that the success of participatory budgeting can be measured in many ways. Among the ratios used to measure the success of participatory budgeting are attendance in selecting projects financed from participatory budgeting, the number of submitted projects, the quality of submitted projects, or the value of the PB. Therefore, the paper aims to identify factors determining the success of PBs in Polish cities.

As the authors' motivation is to indicate to local authorities whether the PB's success is possible in any given LGU, the political factors were omitted in the following analyses. The paper proposes a slightly different division of factors into those related to the economic condition of cities introducing participatory budgeting and those resulting from the sociodemographic and economic situation of the population. In the literature, it is also emphasized that sociodemographic factors influence civic participation. Such an approach may be substantial due to the durability of factors favoring (or not) the success of participatory budgeting. It is assumed that it is much easier to change a city's economic condition than to influence its population's sociodemographic structure. Connected with the above, there are the following research hypotheses under examination.

Hypothesis H1—the success of participatory budgeting in Poland depends on the economic condition of the cities introducing it.
Hypothesis H2—the success of participatory budgeting depends on the characteristics of LGU residents introducing this form of civic participation in cities.

The justification for the hypotheses was the fact that not all cities/municipalities that are characterized by a good economic situation apply a PB or do not increase their expenditure on the PB as other communes do. The present paper consists of five sections. After the introduction follows a wide and comprehensive literature review. It enlightens aspects like the advantages and the disadvantages of PB and its success factors. It closes with the Polish experience on the issue. The third section presents the methodological approach followed, since the next one presents and discusses the findings of the research. The paper closes with the section of conclusions, where limitations and future research directions are also presented.

2 Literature review

2.1 The importance and role of the PB in LGUs

The essence of the PB was to conduct public consultations on determining the directions of urban investments and maintaining a constant flow of information between city authorities and residents

regarding the progress of work on the tasks to be implemented. The main goal of implementing participatory budgeting was to counteract corruption and create a mechanism for public control over implemented urban investments. Only in Brazil, participatory budgeting was introduced in approximately 200 cities by 2008. In 2014, PBs were used in 2,500 South American cities, the most of them in Peru in 2,000 cities. In the Dominican Republic, it was used in 157 cities. After 2000, there was an expansion of this participatory budgeting to Europe, North America, as well as Africa and Asia. The literature on the subject emphasizes that the implementation of PBs affects the management of each commune, in terms of shaping democratic attitudes, increasing transparency, and improving the situation of citizens in LGUs or cities.

The first two advantages refer to democracy and transparency. Most scholars and participants of PBs agree that one of their most important benefits is the deepening of the exercise of democracy through the dialog of public authorities with their citizenry. This focus on democracy is referred to by Bartocci et al. [2022] and Manes-Rossi et al. [2023] as the combination of direct and representative democracy offered by the addition of a PB process rather than a simple consultation process.

Furthermore, the elements of transparency that benefit citizens are supported by Bartocci et al. [2022], which emphasize that the features of transparency and accountability stemming from a PB also contribute to the reduction of corruption. The following advantages of a PB are related to improving citizens, the local government, and the city. Krivorotko and Sokol [2022] reported that participatory budgeting leads to more efficient spending of budget funds to solve problems critical to citizens. Therefore, one of the main advantages is that citizens change status from receivers of decisions to transmitters, contributors, and main protagonists of decisions in their city. They are therefore transformed into active citizens.

Another role and at the same time positive aspect of a PB that also falls into the improvement of citizens is social justice, which is also mentioned by Bartocci et al. [2022] as one of the advantages of the PB process. Urban budgeting has a clear advantage over other means of public participation in that it promotes collective decision-making that includes different social groups of citizens. According to Szczepańska et al. [2022], participatory budgeting prevails as a means of public participation because decision-making is implemented collectively. Local authorities guarantee and commit to implementing the voting process results, enabling citizens to decide their city's affairs.

As already mentioned, participatory budgeting is used in many cities in Latin America to align social priorities and promote social justice. Participatory budgeting gives citizens better opportunities to access projects and services such as basic sanitation, road paving, transportation improvements, and health and education centers. By actively participating in participatory budgeting processes, citizens determine their priorities; in this way, they have the opportunity to improve their quality of life significantly. It should also be noted that such unambiguously positive aspects of civic attitudes in the PB process are not always found in the literature. For example, Kozłowski and Bernaciak [2022] in a case study of Poland found that the participatory budgeting process has limited the needs and the will in some parts of society to act for the common good, and they also concluded that many projects implemented by PBs arise from the needs of residents and lead to improving their quality of life and their neighborhood. The benefits of participatory budgeting in terms of increased local budget efficiency can be significant, with long-term effects on poverty reduction. It was shown by Sintomer et al. [2008], who noticed that in 2004, a PB in the UK city of Bradford of over €875,000 was earmarked exclusively for groups from disadvantaged areas.

Another positive element of participatory budgeting is the highlighting of the real needs of each neighborhood since the citizens are the ones who know them best. According to Manes-Rossi et al. [2023], implementing participatory budgeting worldwide has contributed to creating greater public value, for example, projects to improve public spaces and provide local services. In addition, in some municipalities, it was found that the PB initiative contributed to better tax collection and increased additional budget revenues, which is undoubtedly beneficial for local development.

Participatory budgeting processes change citizens, the city, and the local government. All the improvements in the life of the city and citizens go hand in hand with the improvements at the level of LGUs, some of which are the improvement of the organization of municipal services, the improvement of the approach to needs, and the improvement of the quality of citizen–municipality relations. The improvement of the quality of relations and, more specifically, the increased trust between the government and citizens

is supported by Krivorotko and Sokol [2022] in the case of Belarus. They argued that participatory budgeting promotes constructive interaction between citizens and local authorities, making local problems more visible and understandable. At this point, we can conclude that improving the local government and city citizens helps also strengthen the concept of the smart city.

However, as it results from the analysis of the experience of many cities, it can be seen that not everywhere has the PB been successfully introduced. Among the frequently mentioned problems of PBs, there can be disadvantages as argued by most authors in the literature that the implementation of interests by a specific group of individuals can lead to the undermining of the strengthening of an essential factor for PB, which is democracy. Some politicians can use such a process to their advantage. Another negative element is the time spent on such procedures by citizens and the administration. Finally, when projects voted on by citizens are not implemented, citizens' cynicism may be reinforced.

According to Irvin and Stansbury [2004], there is a risk of validating decisions that favor only specific members (not the wider public) who will participate in usually strong or persuasive processes. Therefore, in the case of participatory budgeting, where citizens make decisions, government representatives are bound to implement them. Thus, they will be led to execute decisions that will serve the common interest of a specific group of individuals. Such interest groups can undermine the democratic nature of participatory budgeting processes, giving the impression of broader participation and inclusive governance when public resources are used to advance the interests of the elite. This is evidenced by the conclusions of a research, which stated that in Poland, participatory budgeting treaded as a political tool to improve the image of local politicians [Polko, 2015].

Lawrence and Deagen [2001] noted the heavy time commitments that citizen participation processes require. These time commitments exist for the citizens and the administration that handles the procedures. The specific disadvantage of the time commitment of PBs is also supported by other authors, who additionally add the effort factor that should be present for such processes. If participatory budgeting programs fail to deliver on their stated goals, there is a risk of increased cynicism about democracy, decentralization, and participation as participants become disenchanted with a dysfunctional institution [Wampler, 2007].

2.2 Success factors for PBs

As mentioned, the advantage of PBs is not only to carry out important projects for local communities but also to achieve intangible effects, such as strengthening the inhabitants' identity and identification with the region, improving civic attitudes, civic education, etc. Because PBs pursue many one-off goals, determining whether they have succeeded is quite difficult. Several measures of the success of participatory budgeting are proposed in the literature. Factors influencing the amount of financial resources allocated to creating a PB are difficult to determine, except for the amounts imposed on municipalities by law. In this study, it was assumed that the measure of the success of participatory budgeting is the amount of expenditure allocated by LGUs for this purpose. On the one hand, the amount of expenditure on the civic budget depends on the ability of the LGU to finance this form of civic participation.

On the other hand, it is an expression of the local authorities' assessment of this idea's functioning in the area of a given LGU. In other words, even if the LGU can afford to finance the PB, it will not be interested in implementing civic participation if citizens do not join this initiative or if the quality of the submitted projects is low. The measure adopted here is imperfect because it does not consider all dimensions of the success of PBs, such as the percentage or duration of implementation of selected projects. However, it can be assumed that even these aspects are indirectly considered by the measure we have adopted. Based on the literature, it can be argued that the success of participatory budgeting consists of many factors.

However, the determinants of civic budget success may not be the same in all cases. For example, some articles raise the issue of the relationship between creation and participation in voting on participatory budgeting and voting in democratic elections. Studies conducted in the United States show that participatory budgeting positively affects the number of voters by more than eight percentage points [Johnson et al., 2023].

Global Initiative on Fiscal Transparency (GIFT),[1] through the 10 principles of accessibility, openness, inclusiveness, respect for self-expression, timeliness, depth, proportionality, sustainability, complementarity, and reciprocity, guides any public authority or interested party that wants to introduce effective participatory mechanisms in budget processes. These principles can be the general prerequisites of success for those who want to implement participatory budgeting. In more detail concerning the principle, GIFT states that the transmission of fiscal information to citizens should be done with mechanisms that will be easy to use so that all groups of citizens can participate. Therefore, not only will they be able to access the data, but they will also be able to understand and use open data.

With the term openness, GIFT maintains that the information provided to citizens should be complete (total). It also emphasizes that every commitment should meet its purpose and respect the process, timelines, and intended results. GIFT then notes that to adopt the principle of inclusiveness, multiple mechanisms should be proactively used to approach all groups of citizens, including traditionally excluded and vulnerable groups and individuals, without any discrimination. The following principles relate to respect for self-expression and timeliness. More specifically, both groups and individuals should be allowed to participate and express themselves freely, but they should also be given the necessary time to participate in each policy cycle.

The principle of depth relates to every public engagement that should include all relevant and detailed information without any abstraction. Additionally, all possible social, economic, and environmental impacts are included, thus incorporating a variety of perspectives. The following principle, called proportionality, advocates using a mix of mechanisms proportionate to the scale and impact of the relevant issue or policy. Concerning the principle of sustainability in general, all state and nonstate entities are bound to increase knowledge sharing and mutual trust over time (e.g., through the institutionalization of public participation), which can lead to the revision of fiscal policy decisions. Thus, through the review of experiences, future commitment is also improved. The principle of complementarity is related to complementary mechanisms for public and citizen participation and increasing the effectiveness of existing governance and accountability systems.

The final principle is reciprocity, in which all governmental and nongovernmental entities involved in public engagement should participate openly in their mission and the interests they seek to advance. Additionally, they commit to comply with all agreed rules of engagement and are bound to cooperate to achieve the engagement's objectives. Regarding the prerequisite success factors of participatory budgeting, these will be as follows: The political will is one of the factors supported by most authors, including Touchton and Wampler [2014]. The second is adequate resources. The third one is political decentralization: Bland [2011] argues that mayors (and councilors) should be elected locally so that they have the autonomy to make decisions for participatory budgeting. The next one is the existence of civic culture. Most authors argue that increasing citizen participation is one of the most critical factors for the success of such processes.

In the promotion stage, according to Sobis [2022], there could be an organization that promotes the processes of participatory budgeting. In the planning stage, it is proposed to establish a monitoring and evaluation plan for PB processes that will capture the positive and negative elements of the previous experiences and lead to the improvement of the following future cycles. Avritzer and Vaz [2014], studying 201 cases of PB in Brazil, concluded that some large cities such as Porto Alegre and Recife, which are pioneers in implementing PB, have such mechanisms. At the voting stage, combined voting methods (online and offline) with complementary basic steps are generally recommended [Sampaio and Peixoto, 2014].

The literature divides success factors into economic, political, and sociodemographic factors. For example, in Slovenia, possible determinants influencing the implementation of participatory budgeting were analyzed. Klun and Benčina [2021] investigated the impact of political factors, sociodemographic factors, economic factors, and the ability of municipalities to predict a dichotomous dependent variable from a set of predictor variables using binary logistic regression. They used 36 indicators, showing that 6

1 The GIFT Network includes the International Monetary Fund (IMF), the World Bank Group, the International Budget Partnership (IBP), the International Federation of Accountants (IFAF), and the Public Expenditure and Financial Accountability Programme (PEFA).

affect the PB. One of the factors of a political nature was expressed through holding office. Mayors holding office for several terms were more likely to initiate or support participatory budgeting initiatives. In the case of sociodemographic factors, the immigration surplus, the children's body fitness indicator, and the share of older people receiving home help turned out to be significant.

In Slovakia, determinants of the sustainability of participatory budgeting were analyzed. It has been proven that there is a weak inverse correlation between debt level and the continuous existence of PBs in municipalities. Moreover, there is a moderate direct correlation between the duration of the PB in a municipality and the integration of the PB in its program budgeting. The political experience of the person holding power in a given LGU was also taken into account, and it was found that there is a moderate direct correlation between the duration of the PB in a municipality and the political experience of the mayor [Murray Svidroňová et al., 2024]. The study's results showed the impact of mayors' social and personal backgrounds on PB resiliency.

2.3 Research on participatory budgeting in Poland

There have been at least 20 critical publications on the PBs in Poland since 2014. Most of them followed qualitative approaches as researchers focused on specific cases. Sześciło [2015] described the results of an analysis of the Polish PB model applied in nine municipalities. The researcher concludes that the Polish model is based on a quasi-referendum, limited only to a minor part of local budgets, and not accompanied by public deliberation over strategic issues. Kłucińska and Sześciło [2017] examined the procedures of 15 PBs in Polish communes. The authors emphasize that PBs are one of the best-received innovations in management at the local level. From the negative experiences in the surveyed communes, they note the lack of social consultations in the participatory budgeting process.

Meyer [2018] stated, in the example of Szczecin, that citizens use participatory budgeting to implement projects to create a specific space, especially a modern recreational space. In another qualitative approach, Turska-Kawa and Wojtasik [2018] compared the application level of direct democracy mechanisms at Poland's local and national levels. They concluded that using direct democracy mechanisms is more intensive locally. According to Bernaciak and Bernaciak [2019, p. 92], "participatory budgeting can be regarded as an effective mechanism for implementing the postulates of the UN Agenda for Sustainable Development in terms of transport systems." Kempa and Kozłowski [2020] have shown that participatory budgeting can be a tool that activates the local community to implement various joint projects.

In another recent study by Mączka et al. [2021], an attempt was made to analyze participatory budgeting procedures. Their study covered 49 cases of participatory budgeting in Poland. Their results showed no communes with a pure participatory budgeting model, and procedures in the analyzed communes could be characterized as a "patchwork model" of participatory budgeting. This observation seems to align with the observations of Sintomer et al. [2012], who stated that participatory budgeting procedures are varied and influenced by, among others, existing political traditions. Zawadzka-Pąk [2021] noted that the PB primarily involves the authors of the submitted projects, which is indicated by the relatively small share of voters, and thus concludes that the PB in Poland has no built-in mechanisms for protecting public values.

An innovative work based on a fuzzy Technique for Order of Preference by Similarity to Ideal Solution (TOPSIS) method was proposed by Walczak and Rutkowska [2017]. Researchers focused on decision-support tools to select the best project submitted in the civic budget, considering many quantitative criteria. In this way, they want to improve project-assessment methods in participatory budgeting processes. Bernaciak and Kopczyński [2019] presented a study in 51 communes of three metropolitan areas, Bialystok, Lodz, and Poznan, excluding central cities. They found quite significant differences between the eastern and western parts of Poland. Madej [2019], similar to the previous, recommends increasing the exchange of experience between local governments to implement PBs. Interestingly, researchers do not see the need to promote PBs.

An analysis of the implementation of PBs in Poland, also in rural communes, was conducted by Bednarska-Olejniczak et al. [2020]. The researchers noted a growing interest in participatory budgeting in 2010–2018 and a large diversity of individual budgets, proving their flexibility. Leśniewska-Napierała

and Napierała [2020] used a combination of quantitative methods to determine the real reasons why local authorities use participatory budgeting. The results of their research were consistent with the results of another research [Weber and Salinas, 2015] that participatory budgeting is an effect of development processes rather than a tool for achieving development goals.

Szczepańska et al. [2022] studied the largest Polish cities. They followed quantitative approaches and comparative analytical methods. The analyzed cities were ranked according to their civic engagement, and the resulting classification was compared with voter turnout during polls on the proposals adopted as part of the participatory budgeting process. The study results showed vastly different scores in ranking civic-oriented cities and the ranking of PBs' voters. The authors associated this diversity mainly with the diversity of Polish society and the effectiveness of marketing activities undertaken by city councils to promote participation in PBs. Kołat et al. [2022] tried to assess the structure of the inhabitants' needs expressed in the PB procedures in Czestochowa, Poland, and their relation to the social and demographic characteristics of the city districts. They concluded that a PB could be essential in determining the local needs for developing public spaces and that a PB rewards the needs of the most-active social groups.

Finally, it is worth mentioning two published works that aimed to compare the Polish experience with other countries' experience in the participatory budgeting field. First, Džinić et al. [2016], through a qualitative approach, presented a comparative analysis of the use and role of participatory budgeting in Croatia, Poland, and Slovakia. They tried to identify the participatory budgeting models used in these countries. They found that PBs enable better allocation of public sources according to citizens' needs. However, the main problem was the low amount assigned for PBs and citizens' relatively low interest in participating. The second paper of Wetoszka [2022] examined the convergence potential of PB quality by comparing the state and changes in the quality of PBs with fixed funds between Poland and Germany. They inspected two ratios: the amount of planned PB funds per capita and the participation rate. PBs in Poland performed better on the two indicators mentioned above.

3 Data and research method

The study used data on the volume of spending on PBs in 66 cities with powiat rights that are obliged to implement civic participation. Data on PBs were collected manually from resolutions of city councils, orders of mayors, and press releases. The study used 38 variables. In the four proposed models, the following explanatory variables were used: the relation of PB expenditure to the amount of income of the LGU, the value of PB expenditure concerning the total expenditure of the LGU, and the value of PB expenditure per inhabitant. In the last model, the explanatory variable was the absolute value of PB expenditure. This variable was used in two model variations with and without the explanatory variable total income of the LGU in PLN. The explanatory variables were divided into three categories: financial, sociodemographic, and financial ratios.

Independent financial and sociodemographic variables came from the Local Data Bank (BDL) of the Polish Central Statistical Office. In contrast, the other variables concerning indicators for assessing the financial situation of LGUs came from the Ministry of Finance of the Republic of Poland (MF) data. The research period covered the years 2016–2021. A panel data model (longitudinal or cross-sectional time-series data) with fixed effects was used to identify the factors determining expenditures on PBs. The type of model was selected using the Hausman test. The equation of the panel data is as follows:

$$y_{it} = \alpha_i + \beta_k X_{k,it} + \varepsilon_{it}$$

Where i is entity and t is time, α_i ($i = 1,\ldots,$ n) is the unknown intercept for each entity, Y_{it} is the dependent variable, $X_{k,it}$ represents the i-th independent and control variables, β_k is the coefficient for respective independent and control variables, and ε_{it} is the error term. The use of the panel data method resulted from the fact that owing to this method, it was possible to increase the number of observations, which enabled the simultaneous analysis of a larger number of variables in the model. The use of a fixed effects model made it possible to take into account the specific characteristics of individual LGUs.

4 Findings

In the study, four model specifications were used that differed in the dependent variable. In the first variant of the model, as an endogenous variable, the relation of expenditure on the PB to the amount of income of the LGUs was assumed. The dependent variable constructed in this way allows to present the extent to which expenditure on the PB burdens the income of cities. This variable does not fully consider cities' ability to finance PBs because it does not consider cities' ability to incur liabilities and the burdening of revenues with other expenses. For example, the value of this indicator may be higher in the case of cities that can quickly obtain external financing (e.g., in the form of low-interest loans), as well as those that do not have other mandatory expenses.

The second variant of the dependent variable was the value of expenditure on the PB concerning the total expenditure of the LGUs. Such construction of the dependent variable means it is relatively lower in cities with high expenditures concerning the obtained income (e.g., in those that invest based on debt). The third model makes it possible to explain the value of outlays on the PB per capita. The explained variable selected in this way is, to a greater extent, independent of the financial situation of LGUs while eliminating the impact of the size of the city. The fourth model specification used the absolute value of PB expenditure as the dependent variable. In this variant of the model, it is expected that the exogenous variables quantifying the size of the city will be significant. Only those statistically significant in at least one model specification were selected from the variables selected for the study. The estimated models are presented in Table 1.

The conducted research shows that the success of the PB depended to the greatest extent on the size of the city measured by its population (alternatively, variables characterizing the size of the city, such as the amount of income or expenditure, were tested). The analysis of the model coefficient for this variable allows to conclude that more populated cities allocate more to the PB than less populated cities, not only in absolute terms but also per capita or concerning generated income or expenses. Among the variables characterizing the financial condition of cities, the only variable significant in all model specifications was the WZ1 index, presenting the share of total liabilities of a LGU in total income.

This result is somewhat surprising, as it shows that expenditure on the PB is higher in cities with a higher level of debt and, thus, a potentially worse financial situation. On the other hand, the obtained result can be interpreted in such a way that cities with better development prospects are often characterized by higher debt, which, despite a relatively higher level of debt, do not expect difficulties in repaying it due to their high developmental potential. Another explanation may also be greater awareness of exercising one's rights among the inhabitants of the largest cities. The average values of this indicator for the largest cities in Poland, i.e., cities with powiat rights and metropolises and all communes, are presented in Table 2.

Based on the data presented in Table 2, it can be concluded that the average values of the ratio of the share of total liabilities in total income for the largest cities in Poland were more than twice as high as the average value of this ratio for all communes in Poland. The largest cities (metropolises) also have a higher share of general debt in total income than medium-sized cities (other cities with powiat rights). Another indicator that may be important for selecting cities with a relatively higher level of PBs is WB1, i.e., the share of current income in total income. It should be emphasized that this indicator is significant only in the model specification in which the dependent variables are the relative values of outlays on the PB in relation to the amount of total income or the total expenditure of the surveyed cities.

The value of this indicator shows the quality of the income structure of LGUs. The higher its value is, the greater the part of the city's income comes from stable sources of income. Therefore, the obtained result means that cities with more stable income sources have relatively higher expenditures on civic budgets. The last indicator of the financial situation of LGUs, which may affect the tendency of LGUs to make higher expenditures on the PB, is the WB6 index, which expresses the share of the operating surplus and income from the sale of assets in total income. It should be emphasized, however, that this indicator turned out to be significant only in the model specification, in which the dependent variable is the value of outlays on the PB concerning total expenditures. Based on the WB6 indicator, it is possible to obtain information on the extent to which current expenses are covered by current income increased by proceeds from the sale of assets; thus, it measures the ability of LGUs to cover current expenses.

Table 1. Descriptive statistics of individual models

	(1)	(2)	(3)	(4)	(5)
Variables	**The PB up to the amount of LGUs' income**	**The value of PB concerning the total expenditure of LGUs**	**The value of the PB per capita**	**The absolute value of participatory budgeting (1)**	**The absolute value of participatory budgeting (2)**
The number of residents in persons	4.69e–08** (1.99e–08)	4.58e–08** (1.94e–08)	0.000285*** (0.000105)	287.5*** (20.95)	230.3*** (26.60)
Share of current income in total income (WB1)	7.81e–05** (3.30e–05)	6.57e–05** (3.22e–05)	0.132 (0.174)	32,788 (34,746)	53,312 (34,719)
Share of operating surplus and income from the sale of assets in total income (WB6)	7.22e–05 (4.41e–05)	0.000128*** (4.29e–05)	0.404* (0.233)	91,058* (46,351)	80,102* (45,724)
Share of total liabilities in total income (WZ1)	6.58e–05*** (2.23e–05)	6.07e–05*** (2.17e–05)	0.362*** (0.118)	68,511*** (23,495)	68,661*** (23,120)
Average earnings in PLN	–7.73e–07** (3.77e–07)	–7.44e–07** (3.67e–07)	0.00237 (0.00199)	1,399** (396.6)	267.3 (512.7)
Share of post-working-age people in the population	0.0524** (0.0215)	0.0482** (0.0210)	302.8*** (113.6)	1.065e + 07 (2.265e + 07)	2.960e + 07 (2.297e + 07)
Share of women in the population	0.0802 (0.141)	0.0865 (0.137)	1,259* (741.9)	2.501e + 08* (1.479e + 08)	3.295e + 08** (1.474e + 08)
Total income of LGU in PLN					0.00214*** (0.000629)
Constant	–0.0656 (0.0744)	–0.0670 (0.0724)	–798.7** (392.6)	–1.955e + 08** (7.824e + 07)	–2.303e + 08*** (7.767e + 07)
Observations	396	396	396	396	396
R-squared within	0.056	0.062	0.190	0.483	0.501
R-squared between	0.0065	0.0296	0.0296	0.9477	0.9481
R-squared overall	0.0040	0.0233	0.0233	0.8795	0.8816
Number of iis	66	66	66	66	66

*Where: *** statistical significance at 0,01; ** statistical significance at 0,05; * statistical significance at 0,1.*

Source: Own calculations in the Stata program.

LGUs, local government units.

Table 2. Average values of the ratio of total liabilities to total income (WZ1)

Average in:	**WZ1_2016**	**WZ1_2017**	**WZ1_2018**	**WZ1_2019**	**WZ1_2020**	**WZ1_2021**
Metropolises	50.7	47.3	45.2	47.4	50.9	48.6
Cities with powiat rights without metropolises	37.5	36.7	37.5	37.4	37.1	34.8
All LGUs	22.6	21.8	24	23	21.5	19.2

Source: Own calculations based on Ministry of Finance data.

LGUs, local government units.

Our analyses, therefore, show that the greater the cities' ability to cover their current expenditures, the more resources concerning their total expenditures they will allocate to PBs. The results thus allow to confirm the first of the hypotheses that the success of PBs, as measured by measures based on the amount of funds allocated to them, depends on the financial condition of the cities. Among the variables representing society's characteristics, the share of post-working-age people in the population was statistically significant

in the three analyzed models. The positive relationship between the share of the elderly and the size of PBs may result from at least several reasons. First, the share of expenditure on PBs may be higher in towns with a larger population because such towns incur relatively lower costs related to one of the most significant expenditures of LGUs, i.e., expenditure on education.

Therefore, they may incur higher expenses for other purposes. The second possible explanation is related to the fact that the increase in the percentage of older people may indicate a negative migration rate of young people. It can therefore be assumed that local authorities may treat PBs in such towns as an incentive for younger people to stay in the city. In some of the analyzed models, the share of women in the population turned out to be a statistically significant variable. The positive relationship between the participation of women and the amount of expenditure on civic participation may be associated with their greater social activity.

A measure characterizing the economic situation of residents that can be related to the size of PBs is the average income of residents. The estimated models show that when the explanatory variable is expressed as the ratio of PB expenditure to income, or city expenditure, then the effect of the level of residents' income is negative. This may indicate there is less interest in PBs in cities with relatively more affluent populations. In a model where the explanatory variable is the level of PBs per capita, average wages are insignificant. In contrast, the relationship is positive when the absolute level of PB expenditure is taken as the explanatory variable. The change in the direction of the relationship in the last model may be because the average level of residents' salaries is correlated with the size of the city's income.

In model 4, the city's income is not controlled; hence, the citizens' salaries can be a proxy for these quantities to some extent. If model 4 was supplemented with an explanatory variable considering the amount of city income, the level of citizens' salaries would cease to be statistically significant (model 5). The sociodemographic variable that proved statistically significant in only one model specification was the share of women in the population. The higher the share of women in the population, the higher the expenditure on the PB. Thus, the second hypothesis was partially confirmed, according to which the success of PBs depends on the characteristics of the inhabitants of the LGUs introducing this form of civic participation in the cities. The model's noneconomic characteristics of the cities analyzed, such as city area and population density, were statistically significant only at the 0.1 significance level.

5 Conclusions

Participatory budgeting is being implemented in many countries and also in Polish cities, although only cities with powiat rights are obliged to implement it. Moreover, these cities are increasing funds on PBs above the required minimum. The main goal of the study was to identify factors determining the success of PBs in Polish cities. This goal, taking into account the limited scope of the study, was achieved. Two research hypotheses were proposed in the study. The first states that the success of participatory budgeting depends on the economic condition of the cities implementing it. The second one states that the success of participatory budgeting depends on the characteristics of LGU residents introducing this form of civic participation in cities. The first hypothesis was confirmed, while the second was partially confirmed. When analyzing four different models with different explanatory variables, it was found that the statistically significant explanatory variables were population, material situation, demographic structure measures, and residents' economic situation.

To the greatest extent, the success of the PB depended on the size of the city measured by its population, as well as the ratio of the share of total liabilities of the LGU in total income. Other statistically significant variables, depending on the analyzed model, turned out to be the ratio of the share of current income in total income, the ratio of the share of operating surplus and income from the sale of assets in total income, as well as the average salary and the ratio of the share of post-working-age people in the total number of inhabitants. An interesting observation was also that when the explanatory variable was expressed as the ratio of civic budget expenses to income, i.e., city expenses, the impact of the residents' income level turned out to be negative.

It should be emphasized that the conducted research does not fully exhaust the examined problem, but only one of its aspects, the financial aspect. It is worth adding, however, that the problem can also be considered from the point of view of other measures, such as communication between local government authorities and residents or from the point of view of citizen satisfaction. However, this requires collecting other data for analysis, mainly from surveys, which are not widely available. The lack of such surveys described above was the main limitation for this study. In order to investigate more the success of PBs in Poland we propose two steps for future research. On the one hand, there is a need to register the local authorities' opinion about the success or the failure of PBs in their cities. A qualitative approach based on interviews should enlighten more this issue. On the other hand, the citizens' opinion has to be evaluated in the same cities either using qualitative or quantitative approach.

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Conflict of interest

None.

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