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The allocation of participatory budgeting funds within the context of population ageing and social inequalities[2]

INTRODUCTION

Participatory budgeting (PB), an instrument of involving citizens in the process of allocation of public resources (Sintomer et al., 2008, p. 168) started in the early 90s in Brazil. In Porto Alegre, the very first widely recognised example of participatory democracy, the cooperation of citizens and local authorities enabled the enhancement of life quality across neighbourhoods. The way financial resources were allocated was linked to diversified criteria, with the situation of the worst-off, deprived neighbourhoods in mind (Marquetti et al., 2012; Friant, 2019). Originally an empowering tool against intra-urban inequalities in a developing country, participatory budgeting has soon spread across the globe, reaching developed countries in Europe and losing some of its reformative and equalising potential underway (Ganuza, Baiocchi, 2012).

Throughout the 30 years of the history of participatory budgeting, the nature of problems cities face has changed, too. Urban areas expand and while they do, they become internally more differentiated with respect to e.g. wealth concentration and the ethnic and age structure of population across city parts (OECD, 2018). Some pressing urban policy challenges arise as a result, including the accommodation of urban space to the needs of the growing elderly population concentrated in the oldest, old-town neighbourhoods, as well as tackling environmental issues. Poor air quality and a lack of green spaces may substantially affect health and well-being of residents, especially the elderly feeling emotionally attached to their surroundings (Rosel, 2003; Masotti et al., 2006).

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Local governments are urged to reformulate their policy agendas to withstand these trends. Is modern participatory budgeting, mostly devoid of its empowering function, not becoming a threat to tackling these issues rather than a solution as it originally was? As a step towards answering such a complex, political question, it is worth to examine what kind of city parts tend to accumulate more of PB funds or votes cast on winning projects. Do neighbourhoods with more elderly, typically less politically active residents tend to receive less votes and thus less funding?

The literature on elite capture suggests that organised groups of interest, such as local authorities or certain social groups, may steer and extensively benefit from decision making processes that they are part of (Sheely, 2015). The intra-urban allocation of participatory budgeting funds has been studied in international literature (e.g. Grillos, 2017; Shybalkina, Bifulco, 2019) and the problem of elite capture was addressed there, yet not in relation to age-related intra-urban differences. Furthermore, the specificity of Polish PBs has rarely been considered in this context.

The present paper should contribute to filling the existing research gap with a case study of Wrocław, a city with a long tradition of participatory budgeting by Polish standards and one that provides access to extensive micro open data. The overall goal of the study is to investigate the connection between the age composition of neighbourhoods and their PB performance, measured for example by the share of funds they obtain. The main methods used are critical review of theoretical and empirical literature on participatory budgeting, as well as exploratory statistical methods: hierarchical clustering and multiple correspondence analysis. The state of art in research, the choice of methods and the analytical procedure will be discussed in the following sections of the paper.

PARTICIPATORY BUDGETING: LITERATURE REVIEW

The participatory budget in Porto Alegre was an attempt to bring democracy into the city (Ganuza, Baiocchi, 2012). Citizens and city officials collaboratively decided on the projects to be financed, and before that, discussions within smaller communities and at the city level with neighbourhood leaders were conducted. One of the cornerstones of this worldwide first PB experiment was a special formula for the allocation of funds that combined objective criteria (availability of infrastructure, population size) with subjective rankings of investment priorities provided by each neighbourhood involved (Friant, 2019). Participatory budgeting succeeded in enhancing the access to basic public goods, such as water sanitation systems and walkable pedestrian streets, and in empowering groups at risk of social exclusion in the country, including women and Afro-Americans (Baiocchi, 2005, p. 15; Fedozzi et al., 2013, p. 29, cited by Friant, 2019, p. 85).

Participatory budgeting that has appeared in Europe favours more often direct rather than representative democracy by guaranteeing each and every citizen the

voting right. Yet in these new, diversified policy devices citizens have limited or no legal possibilities to enforce their own ideas (Dias, 2014; Allegretti, Herzberg, 2004). What is more, some modern PBs appear to be "politically malleable" (Ganuza, Baiocchi, 2012, p. 1), since local governments may exploit the non-binding character of voting. This can be done e.g. by *ex post* limiting the funds allocated to the winning projects (Sheely, 2015) or defining vague criteria, such as *rationality*, *social value* or *feasibility* for projects, which in fact allow to legally reject any kind of project (Kębłowski, 2014, pp. 17–18).

These are examples of *elite capture*, a consequence of a group disproportionately influencing the decision-making process to achieve their own goals (Beard, Phakphian, 2009, p. 11). In some participatory budgeting models, including the one dominant in Poland, the voting process may turn into a "quasi-referendum" (Sześciło, 2015). Citizens are tempted to choose projects benefiting their own neighbourhoods, without seeing a broader context of disparities within the city. Hence, neighbourhoods with better connected and more knowledgeable citizens may enter the voting phase with enough well-prepared project proposals to ensure themselves a satisfying voters' base. Since a typical PB voter is a middle-aged, well-qualified citizen (e.g. Messer, 2013), the changing demographic structure of cities, the development of suburbs attracting wealthier people while leaving the elderly in the oldest, central city parts may lead to another, age structure-related *elite capture.* Possibly, neighbourhoods with above-average shares of the youngest (16–18) and the oldest (80+) could be among the "losers" of the vote.

So far, though, this problem has not been comprehensively addressed by scientists from this perspective. Researches link PB outcomes mostly to various geographical and infrastructural features. For example, Kociuba and Rabczewska (2019, p. 98) demonstrate in their case study of Lublin that investments realised as part of PB are concentrated in old, multi- and single-family neighbourhoods and e.g. in the vicinity of schools and stadiums. The authors of the Functional Analysis of Wrocław's neighbourhoods point at the growing popularity of PB among neighbourhoods of different types from 2013 to 2015, including post-rural areas (Mironowicz, 2016, pp. 66–75).

Such observations are part of what is described in urban studies as *neighbourhood effects*, drivers of urban change that represent the notion of intra-city differences resulting from place-specific features (Lupton, Power, 2004). In the present study, the focus is on the age composition across city parts as a place-specific feature and a potential driver of urban change related to the allocation of PB funds.

PARTICIPATORY BUDGETING IN WROCŁAW

With over 700,000 inhabitants, Wrocław represents one of the most-populated cities in Poland. Since 1990 there have been 48 auxiliary units called *osiedla* (neighbourhoods) in Wrocław. They are presented in Figure 1.
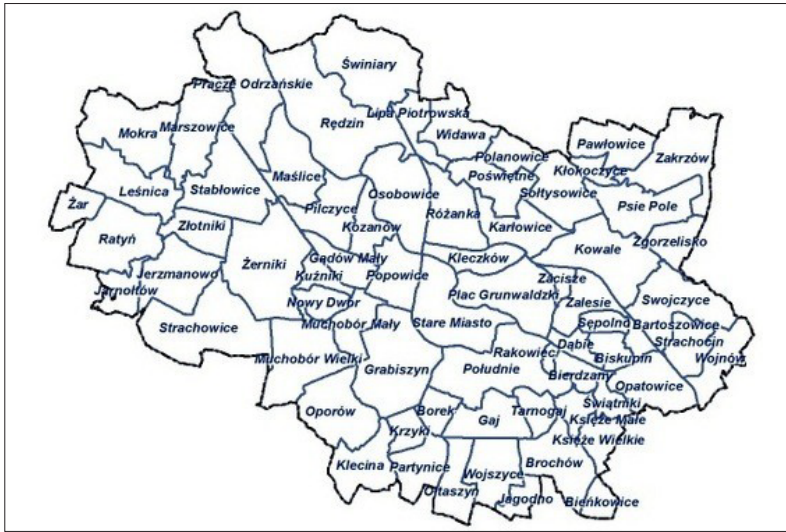
Figure 1. Map of Wrocław's neighbourhoods

Source: https://www.wroclaw.pl/dzielnice-wroclawia-mapa-liczby-i-fakty-o-osiedlach-i-dzielnicach-
-wroclawia (2020.02.21).

Wrocław first ran a participatory budget cycle in 2013 and since then has repeated it each year. The main features of Wrocław's participatory budget edition starting in 2019, compared with its counterparts in Lublin and Rzeszów, are presented in Table 1.

**Table 1. Features of participatory budgets in Wrocław, Lublin and Rzeszów
(editions starting in 2019)**

Specification	Wrocław	Lublin	Rzeszów
Pool of funds (PLN)	25,000,000	15,000,000	10,000,000
Approximate share of the city budget[3]	0.55%	0.64%	0.72%
Share of funds dedicated to projects directly bene-fiting neighbourhoods	64%	54%	40%
Important acceptance criteria for projects (examples)	backed by a minimum of 100 valid votes	feasible, cost-efficient, implementable within one budget year	implementable within one (extendable to two) budget year with no costs ensuing in the following year

Source: own study based on Attachment no. 2 to the President of Lublin's decree no 127/3/2019; Bednarska-Olejniczak, Olejniczak (2016); Resolutions No. IX/165.2019 and No. XI/237/2019 of Rzeszów City Council; Rules of Participatory Budget in Lublin (http); Wrocław Participatory Budget (http); Wrocław annual report on budget execution 2018.

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[3] Calculated as a share of total city budget expenditure reported in the last available budget execution report.

PB in Wrocław has some distinctive features when compared with the two other cities. A minimum of 100 votes per project as an acceptance threshold prevents the flow of funds into projects favoured only by small communities. Also, since 2016 neighbourhoods are grouped into artificial zones for the purpose of limiting funds concentrating in single locations in the city. Furthermore, lack of the principle of one-year-implementability creates possibilities for the citizens to submit financially demanding proposals as a series of smaller neighbourhood projects for two or more consecutive years.

Is participatory budgeting popular among the inhabitants of Wrocław? Voter turnout[4] between 2015–2018 for three age cohorts and the whole city is presented in Figure 2.
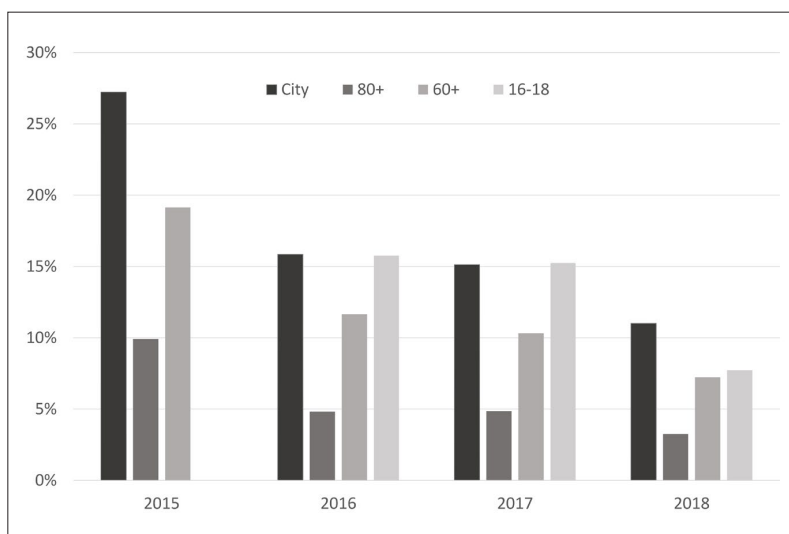

**Figure 2. Voter turnout in Wrocław's participatory budget between 2015–2018
for all residents (*City)* and broken down by age cohorts**

Source: own study based on Wrocław Participatory Budget (http).

The interest in participatory budgeting in Wrocław peaked in 2015 and then declined substantially. Except for the initial year, voter turnout of the youth cohort (16–18) resembles the share of the whole population that cast their votes, and the same applies to the population of the elderly. This is best visible in the years 2016 and 2017, when the participation rates of the elderly were at the level of 15%, close to or just as much as the city average.

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[4] Since no official data on voter turnout in Wrocław's participatory budgeting is published, the data is calculated as a number of voters divided by the number of registered residents in a given age group or in the city. For the year 2015, no separate data for the cohort 16–18 is available.

The drop in participation rates should be attributed to the sinking interest in participatory democracy among prime age voters[5], which could have been reinforced by changes to some of the PB procedures in Wrocław. These were meant to eliminate "loopholes" from the two initial PB editions and include the aforementioned "100 votes rule", as well as some other regulations concerning procedural requirements for the implementation of projects.

For further analysis, two editions, from 2016 and 2017, were chosen. They represent the beginning of a mature period of PB in Wrocław with no major changes in PB procedures, a stable funding level and stable participation rates.

Methodology

The methods used in the paper are clustering and multiple correspondence analysis (MCA). This combination proves useful when the research goal is to uncover the relationships between various quantitative or qualitative characteristics of observations and upon that – to build a typology of these observations. Clustering methods "aim at extracting hidden structure from data" (Schäfer, Laub, 2004, p. 682), that is, identifying groups (clusters) that would be hard to see otherwise. These groups should be homogenous – any two objects within a cluster should be more similar to each other than any two objects picked from two different clusters (Timm, 2002). There is a variety of clustering methods to choose from (see Kassambara, 2017a for an overview), the two most popular being centroid and hierarchical clustering. As opposed to the former, hierarchical clustering does not require any assumptions regarding the number of clusters to be generated and provides tree-like structures instead which can be conveniently cut at any level of details needed by the researcher. Hierarchies can be built either bottom-up or top-down, whereby the latter proves more time-efficient when the dataset is not big (Rajalingam, Ranjini, 2011)[6].

Clustering helps in reducing the volume of information that can be passed on to MCA. MCA is an extension of correspondence analysis (CA) in that it helps determine the relationship between more than two categorical variables. It delivers a graphic representation of observations in, preferably, a two-dimensional coordinate system (Stanimir, 2005), and so it helps to gain a general understanding of the data that can be explored further with more complex tools, such as regression methods.

The joint use of the two methods is a standard procedure used in medical and market research but also in urban studies, as exemplified by the works of Scheid (2004) and Deguen, Padilla, Padilla and Kihal-Talantikite (2017). In both studies,

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[5] Due to the higher population volume of the prime age cohort 25–44, which consists of several age subgroups, it is not presented in the figure in order to keep it readable.

[6] In the bottom-up approach (agglomerative clustering) each observation starts in its own cluster and then clusters are stepwise merged. In the top-down approach (divisive clustering) each observation is initially part of one cluster which is then split into smaller clusters.

variations of clustering and correspondence analysis methods were applied to sets of intra-urban features representing neighbourhood effects. Scheid (2004) classifies Dortmund's neighbourhoods to deliver a reference point for public policy makers, while Deguen *et al.* (2017) investigate the link between objective and subjective understanding of air pollution, concluding that the latter can be generally considered as a good proxy for the former.

In the present study, MCA is combined with top-down, divisive hierarchical clustering, similarly to the study design in Deguen *et al.* (2017). All calculations and related figures are delivered with *R* in version 3.5.2 (*R* Core Team 2018) with the addition of packages *factoMineR* (Lê et al., 2008) and *factoextra* (Kassambara, Mundt, 2017b).

Analysis and discussion of results

The overall aim of the analysis is to determine the relationship between the age composition of neighbourhoods and their PB performance. The following two hypothesis are tested:

H1: Neighbourhoods with higher shares of residents aged 25–44 and lower shares of those aged 80+ tend to perform better (accumulate greater shares of funds and votes).

H2: Neighbourhoods with lower shares of residents aged 25–44 and higher shares of those aged 80+ tend to perform worse (accumulate lower shares of funds and votes).

The analysis is conducted in two steps. In the first step, neighbourhoods are grouped by demographic criteria and, separately, by voting outcomes. The following variables are used:

1) Demographic features*:*
   a) residents aged 25–44 as a percentage of all residents in a given neighbourhood;
   b) residents aged 80+ as a percentage of all residents in a given neighbourhood.

2) Voting outcomes:
   a) votes cast in favour of neighbourhood projects benefiting[7] a given neighbourhood as a percentage of all votes cast in favour of neighbourhood projects in the city;
   b) funds assigned to the winning neighbourhood projects benefiting a given neighbourhood as a percentage of all funds assigned to neighbourhood projects in the city.

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[7] To determine whether a given project benefits a neighborhood (rather than is only physically ascribed to it), the project description was checked for mentions of project beneficiaries; additionally, the location criterion was used. In some cases, votes and/or funds were split between two or more neighbourhoods.

Data for the two PB editions are merged to calculate shares of total funds and total votes cast. Shares of residents in age cohorts are calculated as averages of respective values from 2016 and 2017. Some neighbourhoods were merged to ensure the comparability of demographic and PB-related data[8]. These are:
a) Brochów and Bieńkowice;
b) Ołbin and Plac Grunwaldzki;
c) Polanowice-Poświętne-Ligota, Lipa Piotrowska and Widawa.

In the second step, multiple correspondence analysis was run to inspect connections between the clusters across the two typologies presented in Tables 2 and 3.

Table 2. Age-based typology of neighbourhoods in Wrocław

Cluster	Number of neighbourhoods	City residents (%)	Min. and max. share (%) of the age cohort 25–44 in clustered neighbourhoods	Min. and max. share (%) of the age cohort 80+ in clustered neighbourhoods
Prime age	18	32	34–51	1–6
Moderate	17	44	29–34	3–7
Oldest	9	24	25–30	9–13

Source: own study.

**Table 3. Outcomes-based typology of neighbourhoods in Wrocław**

Cluster	Number of neighbourhoods	City residents (%)	Min. and max. share (%) of the total votes cast in clustered neighbourhoods	Min. and max. share (%) of the total funds accumulated in clustered neighbourhoods
Losers	20	36	0–3	0–1
Winners	17	34	1–3	2–4
Minority winners	7	31	4–6	4–7

Source: own study.

The cluster *prime age* is of special interest. Each of its members has a share of prime age residents higher than the city average, that is more than ca. 33%, with an outstanding case of Jagodno (over 50%). As far as the second typology is concerned, more than 1/3 of the city residents live in neighbourhoods where slightly over 10% of PB funds pool is assigned. Each of the *losers* benefits less than it would if the distribution was perfectly even, that is less than approx. 2.27% of total funding. Importantly, for most of the *losers* the share of votes cast lies between 0 and 1, which reflects a weak mobilisation in submitting projects. Only in Biskupin and Pilczyce-Kozanów-Popowice Pn, a fairly high share of total votes at around 3% did not translate into commensurate funding.

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[8] A full description of the data set used in research can be sent on request.

The remaining 2/3 of the city residents fall into two clusters of winners with a total of 80% of PB funding. Both *winners* and *minority winners* constitute neighbourhoods with mixed densities and area coverage. The difference between them lies in the efficiency of voting. The higher the ratio, the worthier a single vote and, assumingly, the more skilled a neighbourhood in casting votes on projects with real winning chances. *Losers* manage to get, on average, about PLN 50 from each vote cast, *minority winners* – double the amount, and *winners* – four times as much. The group of *winners* appears to be best at submitting well-planned projects backed by local communities.
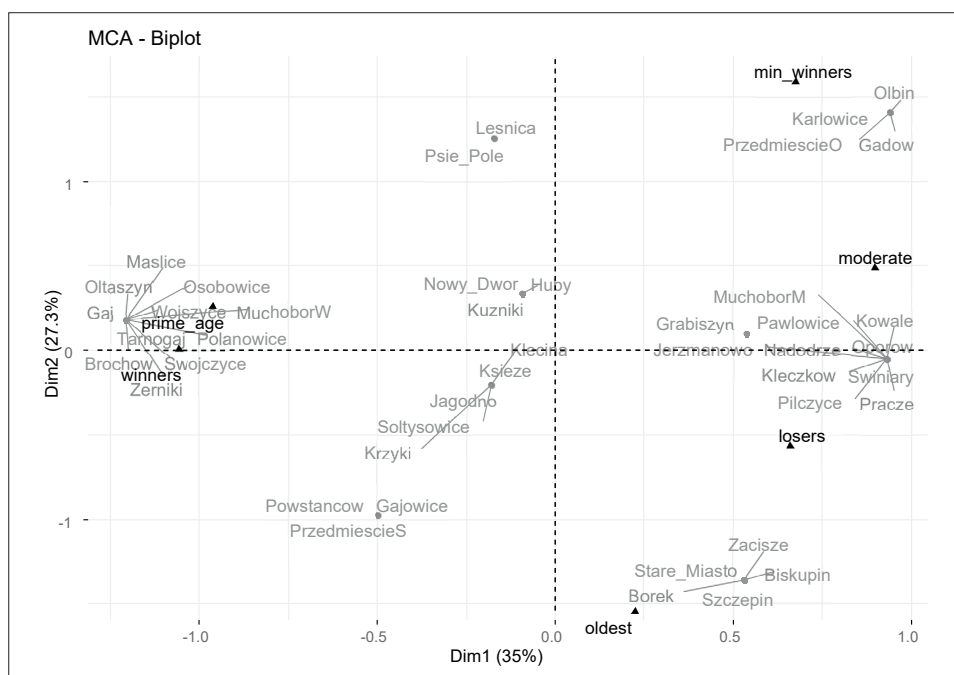
Note: Normalisation method: column-principal.

Figure 3. Multiple correspondence analysis: age-based and outcomes-based clusters

Source: own study.

In the following section the results of the final analysis step are presented. Figure 3 demonstrates the relations between clusters. Grey-coloured labels represent 44 observations corresponding to the modified set of Wrocław's neighbourhoods. Black-coloured labels with triangles are variables corresponding to six clusters from the two constructed typologies (see Tables 2 and 3). The further the variables and the observations are from the coordinate system origin, the more unique characteristics they possess. The closer the variables are to each other, the higher correlation between them can be assumed, given that the variation of data is explained by the two first principal components in about 60%.

Variables *prime-age* and *winners* appear to be related to each other. This suggests that neighbourhoods with high shares of the population aged 25–44 and low shares of the elderly have a higher chance of benefitting approximately proportionately or slightly more than proportionately (2%–4% of total funds) from participatory budgeting. No conclusions can be drawn for other variables, though, since they are scattered across the plot. Importantly, there is no indication that neighbourhoods with a higher share of the elderly are more prone to be the losers of the funds allocation system. Hence, other factors might contribute to the variation of data, which, as prior research suggests, are related to geographical expansion of cities.

In Figure 4, the geographical expansion of Wrocław is presented. The encircled individuals are *winners* that simultaneously fall into the cluster *prime age*. The neighbourhoods of interest were incorporated into the city mostly at later stages of urbanisation, after the Second World War. Their population density does not exceed 2000 people per km², with the exception of Gaj with over 7000 residents per km². The prevailing neighbourhood types are bedroom neighbourhoods with single-family dwellings (e.g. Widawa, Polanowice) and for example, former villages and small cities (Lipa Piotrowska, Brochów). These kinds of urban development are often called "incomplete" because they lack one or more elements of basic public infrastructure, such as schools or recreation spaces.
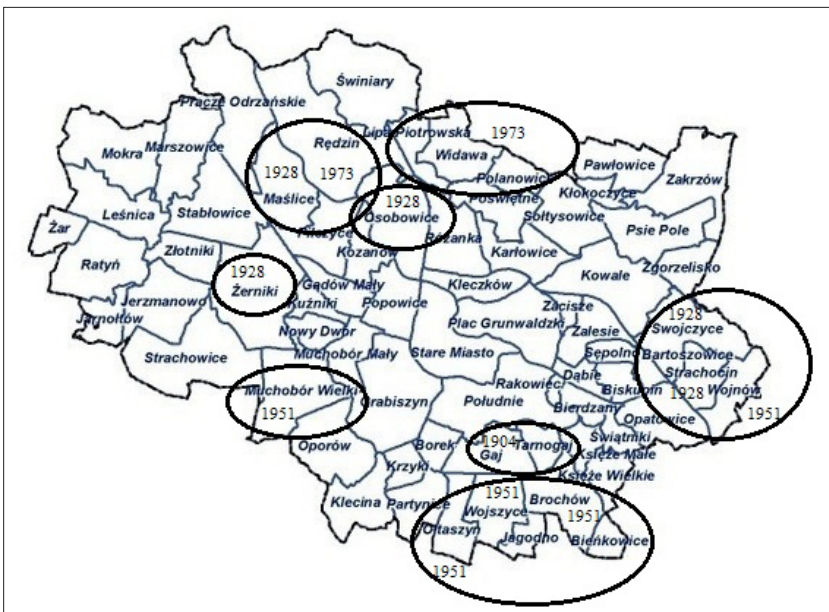

Figure 4. Geographical expansion of Wrocław with encircled neighbourhoods from the cluster *winners* (year of incorporation in brackets)

Source: own study based on the graphic retrieved from: https://www.wroclaw.pl/dzielnice-wrocla-wia-mapa-liczby-i-fakty-o-osiedlach-i-dzielnicach-wroclawia (2020.02.21).

The Functional Analysis of Wrocław's neighbourhoods conducted in 2015/2016 reveals that in the neighbourhoods under inspection the availability of services is low, but, at the same time, the level of citizens' engagement in local matters is high (Mironowicz, 2016). This is an important observation since in the first PB editions in Wrocław in 2013 and 2014, peripheral neighbourhoods with many detached houses were among the least active city parts in terms of the number of project proposals submitted (ibidem). Apparently, the inflow of wealthier, primary age population has enhanced social capital in these areas. The overall conclusion is that both city territorial expansion and age structure dynamics simultaneously contribute to the explanation of PB-funds allocation.

Conclusions

Findings from the analysis allow the confirmation of the first research hypothesis. A typical "winner" of the two PB editions in Wrocław is a low-to medium-density neighbourhood with an above-average share of prime age residents and a development type with one or more important infrastructural elements missing. It must be stressed that the verified connection applies only to a part of the group of winners. The second hypothesis could not be confirmed: there is no indication that neighbourhoods with greater shares of the elderly would tend to benefit less from funds distribution. Yet it is not to be ruled out that such an effect may occur in future, as the ageing process progresses.

An interplay between various *neighbourhood effects* shall be assumed, including the stage of infrastructural development and the role of peers sharing common interests (prime-age residents in bedroom neighbourhoods). These effects are probably reinforced by the lack of one-year-implementability-rule that helps maintain the interest of most politically active residents on a year-to-year basis. Another important factor to be considered is learning effects with respect to project submission, observed in prior research on PB in Wrocław (Mironowicz 2016). Again, those to learn the fastest are those who are wealthier, with a vital interest in improving their living conditions.

The undertaken analysis has some limitations. It should be assumed that by including only registered city occupants into the dataset, the population of some neighbourhoods, especially the newly incorporated, fast-growing neighbourhoods, could have been underestimated. Yet the study opens possibilities for further research, which is needed since the lack of comparable studies in the field allows for no cross-references. Participatory budgeting remains a relatively new phenomenon with a year-to-year dynamic difficult to interpret. One possibility for further research is to use regression modelling on panel data in order to study the PB dynamics and possibly uncover some geographical, time-related or city-specific patterns in the allocation of PB funds.

Undeniably, the evolution of participatory budgeting must be followed for scholars and policy makers to understand the possibilities it offers and to better utilise it in a dynamically changing world of urban development and societal ageing.

Bibliography

Allegretti, G., Herzberg, C. (2004). *Participatory budgets in Europe. Between efficiency and growing local democracy* (TNI Briefing Series, No 5). Amsterdam: Transnational Institute and the Centre for Democratic Policy-Making.

Attachment no. 2 to the President of Lublin's decree no 127/3/2019. Dziennik Urzędowy Województwa Lubelskiego.

Beard, V., Phakphian, S. (2009). Community-based Planning in Chiang Mai, Thailand: Social Capital, Collective Action and Elite Capture. In: A. Daniere, H. V. Luong (Eds.), *The Dynamics of Social Capital and Civic Engagement in Asia* (pp. 145–162). London: Routledge. DOI: 10.4324/9780203126516.

Bednarska-Olejniczak, D., Olejniczak, J. (2016). Participatory Budget of Wrocław as an Element of Smart City 3.0 Concept. In: V. Klimova, V. Zitek, (Eds.), *19th international colloquium on regional sciences June 15–17, 2016 , Cejkovice, Czech Republic* (pp. 760–766). Masaryk Univ, Fac Econ & Adm, Dept Reg Econ & Adm. DOI: 10.5817/CZ.MUNI.P210-8273-2016-97.

Deguen, S., Padilla, M., Padilla, C., Kihal-Talantikite, W. (2017). Do Individual and Neighbourhood Characteristics Influence Perceived Air Quality? *International Journal of Environmental Research and Public Health*, *14*(12), MDPI, 1559–1577.

Dias, N. (2014). 25 years of Participatory Budgets in the world: a new social and political movement? In: N. Dias (Ed.), *Hope for democracy. 25 years of participatory budgeting worldwide* (pp. 21–27). IN LOCO Association. Retrieved from: https://partycypacjaobywatelska.pl/strefa-wiedzy/biblioteka/publikacje/hope-for-democracy-25-years-of-participatory-budgeting-worldwide/ (2020.04.06).

Friant, M. C. (2019). Deliberating for sustainability: lessons from the Porto Alegre experiment with participatory budgeting. *International Journal of Urban Sustainable Development*, *11/1*, 81–99. DOI: 10.1080/19463138.2019.1570219.

Ganuza, E., Baiocchi, G. (2012). The Power of Ambiguity: How Participatory Budgeting Travels the Globe. *Journal of Public Deliberation*, *8*(2). Retrieved from: https://www.publicdeliberation.net/jpd/vol8/iss2/art8 (2020.02.24).

Grillos, T. (2017). Participatory Budgeting and the Poor: Tracing Bias in a Multi-Staged Process in Solo, Indonesia. *World Development*, *96*, 343–358. DOI: 10.1016/j.worlddev.2017.03.019.

Kassambara, A. (2017a). *Practical Guide to Cluster Analysis in R*. STHDA.

Kassambara, A., Mundt, F. (2017). *Factoextra: Extract and Visualize the Results of Multivariate Data Analyses. R package version 1.0.5*. Retrieved from: https://CRAN.R-project.org/package=factoextra (2020.02.24).

Kębłowski, W. (2014). *Budżet partycypacyjny. Ewaluacja*. Warszawa: Instytut Obywatelski.

Kociuba, D., Rabczewska, K. (2019). Rola budżetów partycypacyjnych w zagospodarowaniu przestrzeni publicznych polskich miast – studium przypadku Lublina. *Studia Regionalne i Lokalne, 2*(76), 82–109. DOI: 10.7366/1509499527605.

Lê, S., Josse, J., Husson, F. (2008). FactoMineR: An R Package for Multivariate Analysis. *Journal of Statistical Software*, *25*(1), 1–18. DOI: 10.18637/jss.v025.i01.

Lupton, R., Power, A. (2004). *What we know about neighbourhood change: A literature review (CASE Report 27)*. Retrieved from: http://eprints.lse.ac.uk/27357 (2019.09.01).

Map of Wrocław's neighbourhoods. Retrieved from: https://www.wroclaw.pl/dzielnice-wroclawia-mapa-liczby-i-fakty-o-osiedlach-i-dzielnicach-wroclawia (2020.02.21).

Marquetti, A., da Silva, C. E. S., Campbell, A. (2012). Participatory economic democracy in action: Participatory budgeting in Porto Alegre, 1989–2004. *Review of Radical Political Economics*, *44*(1), 62–81. DOI: 10.1177/0486613411418055.

Masotti, P. J., Fick, R., Johnson-Masotti, A., MacLeod, S. (2006). Healthy Naturally Occurring Retirement Communities: A Low-Cost Approach to Facilitating Healthy Aging. *American Journal of Public Health*, *96*(7), 1164–1170. DOI: 10.2105/AJPH.2005.068262.

Messer, K. (2013). *Participatory budgeting as its critics see it*. Retrieved from: http://www.buergerhaushalt.org/en/article/participatory-budgeting-its-critics-see-it (2019.09.01).

Mironowicz, I. (2016). *Analiza Funkcjonalna Osiedli Wrocławia*. Wrocław: Fundacja Dom Pokoju.

OECD (2018). *Divided Cities. Understanding intra-urban inequalities*. Paris: OECD Publishing. DOI: 10.1787/9789264300385-en.

Rajalingam, N., Ranjini, K. (2011). Hierarchical Clustering Algorithm – A Comparative Study. *International Journal of Computer Applications*, *19*(3), 42–46. DOI: 10.5120/2340-3052.

R Core Team (2018). *R: A language and environment for statistical computing*. R Foundation for Statistical Computing. Vienna. Retrieved from: https://www.R-project.org/ (2020.02.24).

Resolution No. IX/165.2019 of Rzeszów City Council, 26.03.2019. Biuletyn Informacji Publicznej Miasta Rzeszowa.

Resolution No. XI/237/2019 of Rzeszów City Council. Dziennik Urzędowy Województwa Podkarpackiego.

Rosel, N. (2003). Aging in place: Knowing Where You Are. *International Journal of Aging & Human Development*, *57*(1), 77–90. DOI: 10.2190/AMUD-8XVX-9FPK-MR8G.

Rules of Participatory Budget in Lublin. Retrieved from: https://lublin.eu/mieszkancy/partycypacja/budzet-obywatelski/budzet-obywatelski-vi-edycja/nowe-zasady/ (2019.09.01).

Schäfer, C., Laub, J. (2004). Annealed k-Means Clustering and Decision Trees. In: C. Weihs, W. Gaul (Eds.), *Classification – the Ubiquitous Challenge* (pp. 682–689). Proceedings of the 28th Annual Conference of the Gesellschaft für Klasifikationen, e.V. University of Dortmund, March 9–11. DOI: 10.1007/3-540-28084-7_81.

Sheely, R. (2015). Mobilization, Participatory Planning Institutions, and Elite Capture: Evidence from a Field Experiment in Rural Kenya. *World Development*, *67*, 251–266. DOI: 10.1016/j.worlddev.2014.10.024.

Scheid, S. (2004). Correspondence clustering of Dortmund city districts. In: C. Weihs, W. Gaul (Eds.), *Classification – the Ubiquitous Challenge* (pp. 690–697). Proceedings of the 28th Annual Conference of the Gesellschaft für Klasifikationen, e.V. University of Dortmund, March 9–11. DOI: 10.1007/3-540-28084-7_81.

Shybalkina, I., Bifulco, R. (2019). Does Participatory Budgeting Change the Share of Public Funding to Low Income Neighborhoods. *Public Budgeting and Finance*, *39*(1), 45–66. DOI: 10.1111/pbaf.12212.

Sintomer, Y., Herzberg, C., Röcke, A. (2008). Participatory Budgeting in Europe: Potentials and Challenges. *International Journal of Urban and Regional Research*, *32*(1), 164–178. DOI: 10.1111/j.1468-2427.2008.00777.x.

Stanimir, A. (2005). *Analiza korespondencji jako narzędzie do badania zjawisk ekonomicznych*. Wrocław: Wydawnictwo Akademii Ekonomicznej im. Oskara Langego we Wrocławiu.

Sześciło, D. (2015). Participatory Budgeting in Poland: Quasi-Referendum Instead of Deliberation. *Croatian and Comparative Public Administration*, *15*(2), 373–388.

Timm, N. H. (2002). *Applied multivariate analysis*. New York: Springer Verlag.

Wrocław Participatory Budget. Retrieved from: https://www.wroclaw.pl/rozmawia/wroclawski-budzet-obywatelski (2019.09.01).

Wrocław's annual report on budget execution 2018, Wrocław, March 2019. Biuletyn Informacji Publicznej Urzędu Miejskiego Wrocławia.

Summary

In Brazil in the late 1980s, participatory budgeting was introduced to help develop deprived neighbourhoods. Modern European cities must face environmental and social threats that cause intra-urban inequalities to grow, especially with respect to the elderly. Local governments are urged to reformulate their policy agendas to withstand these trends. Is participatory budgeting not becoming a threat to tackling these issues rather than a solution as it originally was?

To address this question, the intra-urban concentration of funds must be investigated. Do neighbourhoods with a higher share of the elderly – less politically active yet emotionally bound to their surroundings – tend to get less funding, as the theory of elite capture could suggest? While this question has been discussed in literature, neither the intra-urban age composition nor the specificity of Polish participatory budgets was considered.

The overall goal of the study was to investigate the relationship between the age structure of neighbourhoods in Wrocław and their performance in participatory budgeting editions run between 2016–2017. By means of clustering and multiple correspondence analysis, a typical "winner" of the two editions can be determined. It is a neighbourhood incorporated into the city at later stages of suburbanisation, with single-family housing and an above-average share of residents aged 25–44. The analysis performed does not reveal any similar connections for other types of neighbourhoods, including those with above-average shares of the elderly. It is safe to argue that territorial city expansion and age-related inter-city differences cannot be seen independently of each other.

Keywords: participatory budgeting, demographics, ageing, suburbanisation, Wrocław.

Alokacja środków z puli budżetu obywatelskiego w kontekście starzenia się społeczeństw i nierówności społecznych

Streszczenie

W Brazylii pod koniec lat 80. XX w. wdrożony został budżet obywatelski (BO), który zapewniał przepływ stosownej części funduszy do najbardziej zaniedbanych dzielnic. Współczesne europejskie miasta również muszą sprostać wyzwaniu rosnących wewnątrzmiejskich nierówności w jakości życia, zwłaszcza wśród osób starszych. Powstaje pytanie, czy współczesny budżet obywatelski jest narzędziem umożliwiającym realizację tych celów, tak jak w oryginalnym modelu z Porto Alegre?

Odpowiedź na to pytanie wymaga przyjrzenia się koncentracji środków z BO w obrębie miasta. Czy dzielnice z największym odsetkiem osób starszych – mało aktywnych politycznie i przy tym szczególnie związanych ze swoją najbliższą okolicą – otrzymują mniej środków niż inne dzielnice, jak może sugerować teoria *elite capture*? Choć pytanie to stawiane już było w literaturze, w dotychczasowych badaniach nie uwzględniano ani kwestii zróżnicowania struktury wiekowej w obrębie miast, ani specyfiki polskich BO.

Celem badania jest określenie związku pomiędzy strukturą wiekową dzielnic we Wrocławiu a ich osiągnięciami w dwóch edycjach budżetu obywatelskiego w latach 2016–2017. Zastosowanie analizy skupień oraz wielorakiej analizy korespondencji pozwala na określenie typowego „zwycięzcy" dwóch głosowań. Jest to osiedle powstałe na późniejszych etapach suburbanizacji, o zabudowie jednorodzinnej oraz o ponadprzeciętnym odsetku rezydentów w wieku 25–44. Badanie nie pozwala natomiast na ustalenie podobnych zależności dla innych typów osiedli, w tym takich o znacznym udziale rezydentów w wieku 80+.

Skłania to do wnioskowania, że procesy urbanizacji oraz przestrzennego zróżnicowania wiekowego miast powinny być rozpatrywane łącznie: ekspansja geograficzna miast pociąga za sobą przepływ do nowo powstających osiedli ludności zamożnej, zmobilizowanej do podjęcia działań na rzecz poprawy jakości życia w warunkach niekompletności infrastruktury.

Słowa klucze: budżet obywatelski, demografia, starzenie się, suburbanizacja, Wrocław.

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