Determinants of voting results in Poland in the 2015 parliamentary elections. Analysis of spatial differences

Wojciech Grabowski

University of Lodz, Department of Econometric Models and Forecasts, Lodz, Poland

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A B S T R A C T
This paper analyses spatial differences in the voting results in Poland in the 2015 parliamentary elections. Eleven clusters defining different support profiles are determined using the two most popular stopping rules. Parameters of the multinomial logit model are estimated and determinants of Polish communes' membership in specific clusters are identified. The results of the estimation indicate that economic, sociodemographic and location variables strongly determined the Poles' electoral preferences. However, historical and cultural factors turned out to be the most important determinants.

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1. Introduction

Analyzing the results of parliamentary, local government and presidential elections, political scientists and sociologists try to identify the relations between individual features of voters (for example, age, gender, education, income), and their decisions at election time. In Poland, these analyses are conducted on the basis of data from the Polish National Electoral Study. In this study, a voter's position in the social structure as well their attitude towards the solutions to important issues proposed by the parties, are taken into account. However, these analyses do not account for the impact that the voter's home and local area have on their electoral behavior. Even very simple analysis of regional differences in political preferences in Poland indicates that there are large differences in voting preferences between the regions (Zarycki, 2015). Haydukiewicz (2011a) suggests that Poland belongs to a group of 4 countries, including also Spain, Romania, and the Ukraine, in which history seems to have the largest impact on the durability of spatial differences in electoral preferences. Poland's historical partitioning seems to have had the strongest impact on regional differences in terms of voting results — while there were significant social changes during the industrial revolution, Poland was at the time still divided between Prussia, Russia, and Austria. The different levels of economic development in these three countries resulted in different levels of development in their Polish territories too. Moreover, different patterns of political culture were also formed in these territories, also affected by the different policies of Prussia, Russia and Austria in the 19th century. Therefore, in order to correctly interpret modern voting decisions, variables associated with the areas of the historical partition zones should also be considered.

The analysis of spatial differences in political preferences in Poland is also interesting, since the country belongs to the group of new democracies of the Central and Eastern Europe. The results of previous empirical studies indicate that the economic cleavage, which is traditionally dominant in Western democracies, mattered only in certain socio-cultural contexts in the Central and Eastern Europe (CEE). For example, in the case of Slovakia the importance of the urban-rural dimension for
political competition was confirmed by Plesivcak (2013). The strong territorial differentiation of electoral patterns in Hungary was found by Meszaros et al. (2007). In turn, the success of new parties in the Czech Republic after 2010 could not be explained by the traditional economic (left-right) cleavage (Maskarinec, 2017). Therefore, the analysis of the Polish case could contribute to the discussion concerning electoral patterns in the Central and Eastern Europe and show similarities between spatial patterns in Poland and other CEE countries.

When spatial differences in political preferences are analyzed, the theory of the political and cultural convergence of the society in question should also be mentioned. According to this theory, the process of modernization and urbanization results in homogeneous societies, characterized by homogeneous political preferences (Campbell et al., 1966). As a result, the largest cities in many countries are characterized by the homogeneity of the voting preferences of their residents. It should be stressed that the suburbanization process is very strong nowadays. As such, the political preferences of many of the residents of towns and villages surrounding the largest cities are becoming similar to the preferences of voters from the cities (Linkowski, 2017). Therefore, electoral behavior should depend not only on the size of the city/town lived in, but on the distance between the voter’s place of living and the capital of their region as well.

Though the literature devoted to the determinants of spatial differences in electoral preferences in Poland is very extensive, to the best knowledge of the author there is a lack of papers in which complex analysis is made, with the simultaneous impact of different factors considered. In this paper, factors affecting spatial differences in political preferences in Polish communes (the smallest unit of administration in Poland) are analyzed. The contribution of this paper is fourfold. Firstly, support profiles are identified using the statistical method of cluster analysis, and a set of all Polish communes is divided into homogeneous groups. This is the first case (known to the author), in which cluster analysis has been used to identify support profiles. Therefore, the obtained results enable more complex analysis of electoral attitudes than studies based on distinguishing the liberal vs. populist cleavage. Secondly, a very extensive set of factors are considered as determinants of membership in specific clusters (economic categories, socio-demographic variables, location variables, historical and cultural factors). In most of papers devoted to this problem only selected factors are considered as determinants. The analysis of a very broad range of factors affecting electoral attitudes should help in understanding the decisions of voters and enable better prediction of voting results. Thirdly, identification of the determinants of the high support for two new parties — Nowoczesna and the KUKIZ-15 — in specific communes should provide for interesting interpretations. Fourthly, the phenomenon of the cultural convergence of society is analyzed in detail on the basis of the results of voting in the communes around the largest cities.

This paper is structured as follows: Section 2 consists of a review of the literature on the topic of the Polish electoral geography. In section 3 clusters of support profiles are identified on the basis of cluster analysis. Section 4 consists of the estimation of the parameters of the multinomial logit model, interpretation of the impact of different variables on the probability of membership in specific clusters. Section 5 offers conclusions.

2. Review of the literature on polish electoral geography

After each election, politicians, political scientists, sociologists or geographers concentrate not only on the performance of specific political parties, but also analyze social structures of their supporters and concentrate on intra-regional differences in political preferences. Knowledge concerning the spatial distribution of political preferences is used by, among others, governing parties, which very often decide about importance of specific infrastructural investments. This knowledge may also help in attracting new voters from regions where the popularity of the governing party is low.

The many papers devoted to the interpretation of the results of elections in Poland may be divided generally into three main groups:

- Studies using aggregate data for the administrative units, in which historical and cultural factors are taken into account,
- Studies devoted to the results of voting in administrative units located in specific regions,
- Studies using individual data, in which very often variables associated with the location of the place of living are not included.

The first group consists of assessments and interpretations being in line with the concept introduced by Cox (1969). According to the approach based on the role of cultural and historical factors, the electoral behaviors of Poles depend on their membership in one of four historical regions. From the time of the Vienna Congress in 1815 until 1918 (after the Peace of Versailles), Polish territory was divided into three occupied/partitioned zones (Prussian, Austrian, Russian), with stable borders. The fourth part of Poland encompasses the Polish Northern and Western territories (the former German lands), where an exchange of population took place after 1945. This different heritage of different parts of Poland has resulted in

\[^1\] In Marcinkiewicz (2017), different factors are taken into account. However, variables associated with a level of bridging social capital and distance from the regional capital were not included.
\[^2\] Other papers devoted to the analysis of spatial differences in political preferences use alternative methods. For example, Zarycki (2015) used factor analysis to explain spatial patterns of Polish electoral behavior. The main advantage of the cluster analysis method is that it enables division of communes into homogenous groups.
interregional differences in the voting behaviors. Researchers who have previously indicated that the role of historical and cultural factors is very important argue that in the areas of the group of four analyzed historical regions, different patterns of political culture and different opinions about the role of religion and the country in its own economy have been formed. Social capital and civic activity has differed. If a certain town was located in one of the four historical regions, inhabitants in this town had to adjust to cultural patterns applicable in that historical region. This resulted in the emergence of different social norms, entrenched habits and collective attitudes towards politics.

As was argued by Zarycki (2015), analysis of Polish elections from 1990 onward indicates the regularity of the reappearance of 19th century heritage on the electoral map. This is all about the fact that the structure of political support in two neighboring administrative units is similar, when they belong to the same historical region. Strong differences are noted when they belong to different historical regions. Authors of papers stating that residence in one of the four historical regions is the most important determinant of spatial differences in the voting results prove their hypotheses by showing the durability of differences (Zarycki and Nowak, 2000; Jasiewicz, 2009). For example, analysis of the level of support for right-wing parties in two elections (1922 and 1997), indicates that the change in political preferences was slight (Kowalski, 2016).

To better understand the spatial differentiation of the results of parliamentary elections in Poland, studies devoted to the results of voting in administrative units in specific regions should also be noted. Results of analyses conducted by Haydukiewicz (2011b) for the Małopolskie region indicate that in parliamentary elections in 2007, the level of support for liberal parties was a decreasing function of the distance from its capital. Moreover, local districts located far from Kraków were characterized by above-average support for peasant and right-wing parties. An interesting study of the political preferences of the residents of the Kraków metropolitan area was conducted by Linkowski (2017). The results of this empirical investigation indicate that between 1993 and 2011, the differences between the voting profile of residents of Kraków and residents of its surrounding villages have significantly decreased.

Though the studies belonging to the third group do not concern the problem of spatial differentiation between political preferences, analysis of the results of these studies should also help in understanding spatial differences in electoral attitudes. In this type of research, the impact of individual features of respondents on their decisions in elections is analyzed. Many studies belonging to this group concern the results of elections taking place after 2005. Since 2005 a placement of an individual in a social hierarchy determined their voting decision. The results of studies conducted by, among others, Markowski and Stanley, 2016, Radkiewicz (2017) indicate that in the elections that took place between 2005 and 2015, economic issues (unemployment, social safety nets), as well as the legacy of symbolic issues from the past (the public role of the church, traditional family values) determined voters’ decision on which of the two largest parties to vote for (PiS [Law and Justice], or PO [Civic Platform]). Since the wealth of a district depends on the wealth of its residents, and the situation on the labor market in a specific commune depends on its residents, it is expected that aggregate values of commune wealth and labor market health should determine the aggregate characteristics of the level of support for consecutive parties. As such, interpretations from these studies should also help in explaining the support profiles in Polish districts.

3. Data. Methodology. Identification of clusters of support profiles

In the parliamentary elections in October 2015, 8 political parties registered their committees in at least half of all constituencies:

- Law and Justice (PiS),
- Civic Platform (PO),
- Together (RA),
- KORWIN (KO),
- Polish Peasant Party (PSL),
- United Left Alliance (ZL),
- Modern (NO),
- KUKIZ-15 (KU).

Before analysis of the level of support for specific parties is conducted, a short description of each, as well as their policies, should be given. This is because there is a strong correlation between the decision of an individual and their placement on the axis of interest and axis of values (Radkiewicz, 2017). Moreover, an attitude towards the communist period still has an impact (weaker than in 90s) on voting preferences in Poland. Therefore the identification of the placement of parties on the axis of values and axis of interest as well as analysis of their attitudes towards the communist period seem to be crucial. Though

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3 The concept of ‘historical region’ should be distinguished from the concept of ‘administrative region’. In Poland there are 16 administrative regions and 4 historical regions. When we say ‘region’ without the qualifier ‘historical’, we are thinking of administrative regions.

4 Support for parties such as ‘KORWIN’ and ‘Together’ was very low, and spatial differences in support for these parties are small as well. Therefore these two parties were excluded from the analysis.

5 In this paper, we use the Polish name of this party, ‘Nowoczesna’.
identifications are arbitrary, it seems they are consistent with common beliefs as well as with identifications provided by other authors (Zarycki, 2015).

In this empirical investigation, the turnout rate and percentage of support for the six largest parties in all Polish communes (NUTS-5) are taken into account. Therefore the following vector is considered:

$$x_i = [FR_i, PIS_i, PO_i, PSL_i, ZL_i, KU_i, NO_i]$$

which consists of variables taking on values in intervals <0, 100> and denoting the turnout rate and percentage support for political parties: PIS, PO, PSL, ZL, KUKIZ-15, Nowoczesna). It is assumed that a turnout rate also allows for differentiating among communes on account of support profiles. For example, a high level of support for liberal parties and a high turnout rate in a commune may stem from economic reasons. On the other hand, a high level of support for liberal parties and a low turnout rate in another commune may stem from historical and cultural factors. Results of empirical studies concerning earlier elections indicate that the wealth of citizens positively affects a level of support for liberal parties in the largest Polish cities, where a turnout rate is high (Markowski, 2006), while a high level of support for liberal parties and a low turnout rate, in small towns of the north-west part of Poland may be due to historical and cultural factors (Zarycki, 2015). Therefore, the classification of these different communes in the same cluster would provide misleading interpretations.

Cluster analysis is a statistical method which attempts to determine the natural groupings of observations (Everitt et al., 2011). The art of finding groups is based on an analysis of dissimilarities and on identifying clusters consisting of "similar enough" observations. Stopping rules are used to determine how many clusters there are in the data (Calinski and Harabasz, 1974; Duda et al., 2001). According to both stopping rules, 11 clusters were determined.

Table 2 presents differences (in percentage points) between average support for parties in specific clusters as well as descriptions of clusters.

Table 3 presents the percentage of communes belonging to consecutive clusters in the four historical regions, while the Fig. 1 presents the map for localization of communes in concrete clusters. From this, it turns out that the percentage of communes belonging to Cluster 1 is the largest in the former Austrian partition, and large in the former Russian partition. In the latter historical region, the most ardent PSL supporters dominate. In the case of the former Prussian partition, most of the communes belong to moderately liberal and liberal clusters, while in the Northern and Western territories, liberal and left-wing voters dominate.

4. Explanatory variables. Hypotheses. Results

According to the literature, there are many factors which may influence the membership of specific communes in specific clusters. These factors may be divided into the following groups:

- economic categories,
- historical and cultural factors,
- socio-demographic variables,
- location variables.

7 To identify the placement of consecutive parties on the axis of interests and axis of values, the parties’ policies were analyzed in detail (Marcinkiewicz and Stegmaier, 2016). When a postulate seemed to be liberal (for example, suppression of posts in trade unions), a value of 1 was given for that party on the axis of interests. When a postulate seemed to be social (for example, decreasing retirement age), a value of −1 was given. The higher the sum of the values, the more justified the classification of a party as 'liberal'. Placement of a party on the axis of values was determined in the same way. Details of the values for consecutive parties are available upon request.

8 The data was found on the web page http://parlament2015.pkw.gov.pl/.

9 K-means cluster analysis is applied. Differences in the level of support for consecutive parties are used to measure dissimilarities.

10 Results of determination of the number of clusters are available upon request.

11 Colored detailed Fig. 1 could be seen in our online version of this article.
Since the divide between liberal Poland and social Poland had an important impact on electoral attitudes of the Poles in 2005–2015 (Markowski and Stanley, 2016), variables reflecting the wealth of residents should be taken into account. The variable PIT denotes a commune’s share in revenue from personal tax per person in the period 2011–2014. CIT denotes a commune’s share in revenue from corporate tax per person in the period 2011–2014. In turn, REALEST\(^{12}\) denotes a commune’s share in revenue from property in the period 2011–2014. The unemployment rate is considered as a good indicator of

\[^{12}\text{In the case of the } \text{PIT}, \text{CIT} \text{and REALEST variables, zeroed unitarisation is applied.}\]
economic hardship in the region of the Central and Eastern Europe and is expected to affect the level of support for consecutive parties (Roberts, 2008). The variable UNEMP denotes the unemployment rate in 2014. Moreover, the level of satisfaction with the PO-PSL government should depend on the dynamics of changes observed in a commune in the period preceding the parliamentary elections. Before the election Civic Platform (PO) boasted about its success in getting and spending money from the EU. It seems that in communes characterized by a higher level of support (per capita), residents felt these changes were positive, and should support PO. Therefore, the variable SUP denoting the level of support from the EU (in PLN 10,000) in 2011–2014 is considered in the empirical investigation. In all years, values in constant prices (using the Producer Price Index) are calculated. The next economic category considered as a potential determinant of membership in a cluster is the variable ENTREP. This variable denotes the difference between the number of newly opened enterprises and the number of closed enterprises per 1000 residents in 2011–2014. Higher values of this variable mean that the outcomes of enterprises are better. Results of analyses devoted to the political preferences of entrepreneurs indicate that they support parties declaring the most liberal economic policy. Such attitudes are especially represented by entrepreneurs who are successful in their businesses (Bartkowski, 2013).

The next group encompasses historical and cultural variables considered as determinants of membership in a cluster. In many papers devoted to intraregional differences in political preferences, it is argued that local patterns in electoral attitudes strongly determine the decisions of voters (Jasiewicz, 2009). Therefore, binary variables associated with partition zones are considered in the empirical study. PRUS is the binary variable with a value of 1 for communes belonging to the Prussian partition zone. The binary variable WEST takes a value of 1 for communes belonging to the former German territories. In turn, AUS1 is the binary variable with a value of 1 for communes belonging to the Austrian partition zone.

The next group of determinants of membership in a cluster encompasses socio-demographic variables. NMR denotes the cumulated migration net (per 1000 residents) in 2012–2015. The results of studies devoted to intra-country differences in net migration indicate that the value of this variable depends on the wealth of the town/city and its potential for attracting workers and students (Harris and Todaro, 1970). In large cities (characterized by long-lasting and positive net migration), the percentage of more mobile residents is bigger. As a rule, these mobile residents are more open and should have more liberal views. The next considered determinant of membership in a cluster is the variable B_RATE. It denotes cumulated birth rate (per 1000 residents) in 2012–2015. The results of previous studies for other countries indicate that in more conservative regions (characterized by higher levels of support for conservative parties), the birth rate should be higher (Bilska-Wodecka and Matykowski, 2015). The next variable (ASSOC) denotes the number of non-governmental associations per 1000 people. Values of this variable reflect the level of social capital14 in a commune. The more non-governmental associations that are registered (per 1000 people), the better the outcome should be for entrepreneurs. Development of entrepreneurship should result in a more liberal attitudes of residents (Dziacek, 2014).

Finally, location variables as determinants of membership in a cluster are considered. Regional capitals affect the towns and villages surrounding them. In the largest Polish cities, the process of suburbanization is strong. Many residents move to the suburbs and the population of the communes surrounding the largest Polish cities is on the rise. However, most of these residents still have similar attitudes to the residents of the largest cities. The results of a study conducted by Linkowski (2017) indicate that the difference between the voting habits of a regional capital and the voting habits of people living in the surrounding villages is decreasing. Therefore, the variable DIST is included. It is defined as follows:

\[
DIST = \min\{5,\|DISTANCE\|/10\},
\]

where DISTANCE denotes the number of kilometers between a commune and the capital of the region. Marcinkiewicz (2017) pointed at the importance of the urban-rural divide in his analysis of the results of the election in 2015. Therefore, variables associated with the importance of a commune (from the point of view of the administrative function) should be included as well. TR is the binary variable with a value of 1 for the capital of a voivodship (region). The binary variable TC takes a value of 1 for towns with county status that are not capitals of their voivodships (regions). The binary variable TCC takes a value of 1 for towns being the capitals of a county, but without county status. Next, TNC denotes the binary variable with a value of 1 for towns not being capitals of their counties, while RUC15 takes a value of 1 for rural-urban communes.

On the basis of the literature review as well as taking into consideration Author’s own expectations about the impact of specific variables on the probability of membership in specific clusters, the following hypotheses are set:

**H1.** Residents of more wealthy communes vote for more liberal parties, while residents of poorer communes support peasant parties and parties focusing its core message on “bread and butter” issues.

**H2.** Residents of communes with a higher unemployment rate should either support populist parties or not participate in the elections.

**H3.** The probability of membership in clusters characterized by a high level of support for PO is an increasing function of the variable SUP.

13 RUS (Russian partition zone) is used as a base category.

14 Social capital is a multithreaded concept, and no universal definition of it exists. According to the definition proposed by Putnam (1993) and preferred by Sztompka (2016), social capital is based on the capability of citizens of creating formal and informal groups.

15 RC (rural commune) is used as a base category.
H4. An increase in the value of the ENTREP variable should result in a higher probability of a commune’s membership in more liberal clusters.

H5. In the former German territories and in the territories of the former Prussian partition, the probability of membership in left and liberal clusters should be higher, while in the former Austrian partition the probability of membership in Clusters 1–4 should be higher.

H6. For higher values of the NMR variable, the probability of a membership in the most liberal cluster is higher.

H7. For higher values of the B_RATE variable, the probability of membership in clusters characterized by above-average support for PiS should be greater.

H8. When the ASSOC increases, the probability of membership in the most liberal clusters increases too.

H9. As the value of the DIST variable increases, the probability of membership in Clusters 1–4 increases, while the probability of membership in the most liberal cluster decreases.

H10. The probability of membership in liberal and very liberal clusters increases, and the probability of membership in Clusters 1–4 decreases as a commune becomes more important (from the point of view of the administrative function).

Besides hypotheses about the impact of specific variables on the probability of membership in specific clusters, it is worth setting and verifying hypotheses about the differences between communes belonging to clusters characterized by very strong support for similar parties. For example, finding differences between clusters associated with two liberal parties (Cluster 10 – PO supporters, Cluster 11 – Nowoczesna supporters), seems to be crucial to understanding the differences in perception of these parties. Some studies analyzing the voting decisions in 2015 have indicated that Nowoczesna’s electorate was characterized by a stronger attachment to liberal values than PO’s (Maliszewski et al., 2016). It therefore seems that in wealthier communes the level of support for Nowoczesna should be larger. On the basis of these considerations, the following hypothesis is set:

H11. The ratio of the probability of membership in Cluster 11 to the probability of membership in Cluster 10 increases as the wealth of a commune increases.

Analysis of the electoral policies of left-wing parties with the policies of the PiS party indicates that they are similar in respect of social and economic policy, and that they differ significantly in terms of the level of conservatism (Tyrała, 2016). Analysis of Table 1 indicates that the placement of PiS and ZL on the axis of interests is very similar, while these parties are placed on opposite positions of the axis of values. Since cultural and historical factors should affect the placement of a voter on the axis of interests, the following hypothesis is formulated:

H12. The ratio of the probability of membership in a left-wing cluster (Cluster 8) to the probability of membership in the cluster of PiS supporters, depends on historical and cultural factors, not on economic wealth indicators.

Table 4 presents the results of the estimation of the parameters of the multinomial logit model (Mcfadden, 1973), explaining differences in the probabilities of membership in a specific cluster. Cluster 6 is used as a base category, as the level of support for consecutive parties in communes belonging to this cluster is very similar to that for national support. Relative

<table>
<thead>
<tr>
<th>Variable</th>
<th>Cluster 1</th>
<th>Cluster 2</th>
<th>Cluster 3</th>
<th>Cluster 4</th>
<th>Cluster 5</th>
<th>Cluster 6</th>
<th>Cluster 7</th>
<th>Cluster 8</th>
<th>Cluster 9</th>
<th>Cluster 10</th>
<th>Cluster 11</th>
</tr>
</thead>
<tbody>
<tr>
<td>PIT</td>
<td>0.34***</td>
<td>0.30***</td>
<td>0.58***</td>
<td>0.50***</td>
<td>1.01</td>
<td>0.75</td>
<td>0.79</td>
<td>0.51***</td>
<td>1.01</td>
<td>1.23***</td>
<td>1.06**</td>
</tr>
<tr>
<td>REALST</td>
<td>0.55***</td>
<td>0.91</td>
<td>1.00</td>
<td>0.72***</td>
<td>0.98</td>
<td>1.01</td>
<td>1.08*</td>
<td>1.00</td>
<td>1.01</td>
<td>1.06*</td>
<td>0.87***</td>
</tr>
<tr>
<td>UNEMP</td>
<td>1.05***</td>
<td>1.09***</td>
<td>1.08***</td>
<td>1.08***</td>
<td>1.13***</td>
<td>1.11***</td>
<td>1.05***</td>
<td>1.08***</td>
<td>0.98</td>
<td>0.87***</td>
<td>0.87***</td>
</tr>
<tr>
<td>SUP</td>
<td>0.80*</td>
<td>0.91</td>
<td>0.83*</td>
<td>0.80</td>
<td>0.88</td>
<td>1.00</td>
<td>0.89</td>
<td>1.23*</td>
<td>1.11*</td>
<td>1.19*</td>
<td></td>
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<tr>
<td>ENTREP</td>
<td>1.06**</td>
<td>1.01</td>
<td>1.02</td>
<td>1.05*</td>
<td>1.04</td>
<td>0.93*</td>
<td>1.03</td>
<td>1.00</td>
<td>1.03</td>
<td>1.09**</td>
<td></td>
</tr>
<tr>
<td>PRUS</td>
<td>0.06***</td>
<td>0.19***</td>
<td>0.25**</td>
<td>4.38***</td>
<td>16.25***</td>
<td>10.83***</td>
<td>3.82***</td>
<td>36.05***</td>
<td>36.65***</td>
<td>11.26***</td>
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</tr>
<tr>
<td>WEST</td>
<td>0.06***</td>
<td>0.08***</td>
<td>0.22***</td>
<td>0.14***</td>
<td>1.31</td>
<td>3.56***</td>
<td>7.02***</td>
<td>167.89***</td>
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<tr>
<td>AUS</td>
<td>1.18</td>
<td>0.15***</td>
<td>0.47***</td>
<td>0.19***</td>
<td>0.05***</td>
<td>0.29*</td>
<td>0.98</td>
<td>1.23</td>
<td>0.19***</td>
<td>0.26***</td>
<td></td>
</tr>
<tr>
<td>NMR</td>
<td>0.94***</td>
<td>0.95***</td>
<td>0.98***</td>
<td>0.96***</td>
<td>0.99***</td>
<td>0.98**</td>
<td>0.95***</td>
<td>0.97***</td>
<td>1.00</td>
<td>1.03***</td>
<td></td>
</tr>
<tr>
<td>B_RATE</td>
<td>1.04**</td>
<td>1.03**</td>
<td>0.96***</td>
<td>0.94***</td>
<td>0.94***</td>
<td>0.94***</td>
<td>0.89***</td>
<td>0.93***</td>
<td>0.91***</td>
<td>0.90***</td>
<td></td>
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<tr>
<td>ASSOC</td>
<td>0.75***</td>
<td>0.96</td>
<td>0.96</td>
<td>1.21**</td>
<td>1.04</td>
<td>0.89</td>
<td>1.01</td>
<td>1.04</td>
<td>1.22**</td>
<td>2.07***</td>
<td></td>
</tr>
<tr>
<td>Max(RC,RUC)</td>
<td>51.0***</td>
<td>40.39***</td>
<td>9.37***</td>
<td>23.41***</td>
<td>27.57***</td>
<td>1.64</td>
<td>8.18***</td>
<td>8.87***</td>
<td>0.39***</td>
<td>0.34***</td>
<td></td>
</tr>
<tr>
<td>DIST</td>
<td>1.20</td>
<td>1.73***</td>
<td>1.27*</td>
<td>1.94**</td>
<td>2.22**</td>
<td>1.16</td>
<td>1.86**</td>
<td>0.91</td>
<td>1.11</td>
<td>0.69***</td>
<td></td>
</tr>
</tbody>
</table>

* ** denote significance respectively at the 0.1, 0.05 and 0.01 level of significance.

* Variables not included turned out to be statistically insignificant.

Source: Author’s own elaboration
risk ratios are presented. These numbers\(^{16}\) inform about the impact of the unit change of explanatory variable on the following ratio \(P(C_i \in CL_j)/P(C_i \in CL_k)\), where \(P(C_i \in CL_j)\) denotes the probability that \(i\)-th commune belongs to cluster \(j\).

The results of the estimation indicate that there are significant differences in electoral patterns between rural and rural-urban communes, and towns/cities. The probability of membership in clusters number 10 and 11 is significantly lower for rural and rural-urban communes. Analogously, probability of membership in clusters 1–5 is significantly higher for these communes. This result confirms the hypothesis 10 and is in line with expectations, since citizens of rural areas prefer to vote for PiS or PSL, while citizens of the largest Polish cities and medium-sized towns in general support liberal parties. This result is in line with the results of the study conducted by Marcinkiewicz (2017), in which the rural-urban divide turned out to be the most important determinant of electoral attitudes. It should be stressed that the ratio \(P(C_i \in CL_{11})/P(C_i \in CL_6)\) decreases with an increase in the distance from the capital of a region. This means that in the case of rural areas located in the vicinity of large cities, the probability of voting for the most liberal party is higher, which is in line with the hypothesis 9. This is due to the fact that the process of de-urbanization is especially advanced in the vicinity of the largest Polish cities. The very high prices of real estate in city centers and a preference for tranquility encourages people from large cities to move to quieter, more rural areas. Therefore citizens of communes located in the area surrounding these large cities often have the same political preferences as people living in the city centers.

In the case of the variable \(ASSOC\), measuring the level of bridging social capital, it turned out that an increase in the number of non-governmental organizations leads to a significant decrease in the probability of membership in cluster 1 and substantial increase in the probability of membership in clusters 10 and 11, ceteris paribus. The highest level of activity of non-governmental organizations is observed in urban areas. The high level of activity of citizens of these areas indicates that these voters are more active and believe that, thanks to their participation in local organizations, they can change something in their neighborhood. Therefore, these people believe that citizens of the country can have a large impact on their economic standing, and vote for more liberal parties. These results are also in line with the results obtained by Dziaiek (2014), who found that the level of bridging social capital had a positive impact on the development of entrepreneurship in Polish sub-regions. Stronger pro-entrepreneurship attitudes are characteristic for citizens voting for the more liberal parties. However, it should be stressed that when the number of non-governmental associations per 1000 inhabitants increases by 1, then the ratio \(P(C_i \in CL_4)/P(C_i \in CL_1)\) increases too. This result indicates that there is a significant difference between the PSL support in the countryside and the PiS support in the countryside. When citizens of Polish villages are more engaged in the activity of non-governmental organizations they will probably support PSL instead of PiS. This result should also provide recommendations for PSL activists, who are strongly represented in the Polish local government. An increase in support for the development of civic society should increase the probability of winning in the competition for voters from villages.

Estimates of relative risk ratios for variables \(B\_RATE\) and \(NMR\) are in line with expectations and hypotheses 7 and 6. These results indicate that when the level of the variable reflecting birth rate increases, the probability of membership in the clusters characterised by the higher level of support for PiS (Clusters 1, 2), also increases. This is due to the fact that residents of communes from those clusters are, in general, more conservative. Families in these communes have more children. On the other hand, a lower level of conservatism in communes characterized by a higher level of support for left-wing parties equates to a lower birth rate. Therefore, the relative risk ratio for Cluster 8 for the \(B\_RATE\) variable is significantly lower than 1. Results indicating the positive correlation between the intensity of conservative attitudes and the probability of voting for right-wing parties is in line with the results obtained by Bilska-Wodecka and Matykowski (2015). The largest Polish cities and communes surrounding them are characterized by a positive migration net. Residents of these communes have liberal opinions, so a positive correlation between the variable \(NMR\) and the probability of membership in the most liberal cluster is not surprising. Negative migration tendencies are in general observed in villages located far from large cities as well as in small, poor towns. Residents of these poor towns support in rule parties neglecting the government. Therefore, the relative risk ratios for the variable \(NMR\) are significantly smaller than 1 in the case of clusters characterized by above-average level of support for the KUKIZ-15 committee (which neglected the political system in Poland), and PiS. A negative correlation between the variable \(NMR\) and the probability of membership in clusters characterized by the higher level of support for the PSL party are in line with expectations. The level of employment in agriculture has been decreasing in Poland for many years. Therefore, more and more people are migrating from the villages (located far from the urban conglomerations) to the towns and cities. Since in rural areas the level of support for the agrarian PSL party is high, the obtained result is compliant with expectations.

Estimates of the parameters for the partition dummies indicate that there are regional differences in political preferences. These differences result not only from inequality of economic development and differences in the socio-economic characteristics of residents, but are also due to cultural factors. According to the political culture theory, decisions of individuals are explained by such sociological factors as entrenched habits, collective attitudes toward politics, group values. Social modernization in the Polish territories occurred at the turn of the 19th and 20th centuries, when different parts of Poland belonged to different partition zones. Since different collective features were created in local communities in different parts of Poland, the differences in political preferences still remain.

The probability of membership in the first cluster for the Prussian zone and for the Northern and Western territories is much lower than in the case of communes which belonged to the Austrian or Russian partition zones. The very high

\(^{16}\) The interpretation should be clarified. For example the value 0.87 for the \(UNEMP\) variable for the 11-th cluster means that if unemployment rate increases by 1 percentage point then \(P(C_i \in CL_{11})/P(C_i \in CL_6)\) decreases by 13% ceteris paribus.
percentage of communes strongly supporting PiS in Galicia (the former Austrian partition zone) may be related to the ways of settlement of this region. The communes there consist of a smaller number of large villages which have a sufficient number of citizens to take collective actions, while at the same time not enough citizens to lead to anonymity. Moreover, the percentage of aboriginal citizens in this historical region is much higher than in other ones. These factors, together with the democratization of electoral laws and extension of political liberties at the turn of the 19th and 20th centuries, resulted in the diffusion of Polish culture, Polish political organizations, and the strengthening of national identity. During the period 1945–1989 Galicia was characterized by below average membership in the communist party (PZPR), and the inhabitants of the Galicia region today strongly support parties which condemn communism. Moreover, the exceptional strength of the Polish Catholic church (which supported PiS in the 2015 parliamentary elections) positively affected level of the support in Galicia for this winning party. Widespread rural poverty in this region is the result of the partition era heritage and may have affected the political behaviors of individuals as well. Since PiS focused its core message on “bread and butter” issues, the poor citizens of villages from Galicia might have expected a more equal distribution of the national income from a PiS government.

In the case of the former Russian partition, the results of the estimation indicate that the probability of membership in clusters 2–4 are much higher for this historical region than for the other three regions. It means that rural and rural-urban communes in this part of Poland are characterized by above average support for the PiS and PSL parties. However, there are significant differences among communes belonging to clusters 1–4, especially with regard to the level of support for PiS and PSL. Some villages of the former Russian partition had a grange. Some Polish sociologists have found that granges affected the behaviors of communities as well as their political preferences (Bartkowski, 2003). Very intensive conflicts between the gentry and peasants in the 19th century resulted in a very high level of support for peasant parties. A precise analysis of the communes from the former Russian partition zone belonging to the 4th cluster shows that most of them had a grange in the 19th century. On the other hand, the post-gentry villages of the eastern part of Poland are characterized by a higher level of religiosity, stronger attachment to national identity, and denunciation of communism, which is associated with the high percentage of deportations to Siberia in years 1939–1941. Therefore, citizens of these villages strongly support PiS as a conservative, anti-communist party emphasizing the role of national values in Polish society. A precise analysis indicates that most of the communes from the former Russian partition belonging to the 1st cluster are located on the territories with a high density of post-gentry villages.

In the Prussian partition zone, economic development and strengthening the economic situation of citizens was a way of protecting Polishness (Bartkowski, 2003). Polish enterprises had to compete with local Germans, which increased their efficiency. Therefore, on the territories of the former Prussian partition a Polish middle class appeared on a scale unknown in other parts of the country. Moreover, the history of the creation of modern society in the Wielkopolska and Pomorskie regions is a history of founding associations. This resulted in a higher level of social capital in these regions compared to other parts of Poland. During the partition period social distances decreased in the Prussian zone, and ambitious and gifted individuals and private associations from lower social strata had chances for social advancement. These factors resulted in higher level of support for parties assisting the development of entrepreneurship and creating good conditions for the middle class. Therefore citizens of the former Prussian partition tend to vote more for liberal parties. The probability of membership in the most liberal cluster 11 is the highest in this partition zone, while the probability of membership in clusters 9 or 10 is high as well.

The Northern and Western territories constituted a post-migration community. This community turned out to be more innovative, mobile and open. Therefore enterprises located in these territories are characterized by higher level of innovativeness. These factors resulted in a high level of support for more liberal parties and the probability of membership in the liberal clusters 10 and 11 is relatively high in this region. Citizens of the Western and Northern territories are less conservative and more tolerant towards cohabitations, divorces, illegitimate children, and others (Turek, 2016). This higher level of innovativeness (Arendt and Grabowski, 2017) and lower level of conservativeness was the result of the softening of traditional patterns and weaker control exercised by a group. Since this is a relatively “new” part of Poland, the level of local identity is lower. This translates into lower religiousness and correspondingly a lower impact of the Polish Catholic church. As a result, citizens of these territories tend to vote for parties which are not supported by the Polish Catholic church. Thus the probability of membership in the 9th cluster (characterized by very high level of support for PO and very low turnout) is very high for communes located in the Northern and Western territories. The high level of support for PO results from the fact that this party is PiS’s main competitor and citizens of the Western and Northern territories reject the conservative rhetoric of PiS. At the same time, an attitude of indifference (that is, low voter turnout) is prevalent due to the very strong disappointment associated with the liquidation of state farms in the 1990s in this historical region.

Estimates of relative risk ratios for economic variables are in line with expectations. It turns out that citizens from rich communes, characterized by a lower rate of unemployment support liberal parties. However, the results indicate that the wealthiest communes supported the Nowoczesna, while the slightly poorer supported the PO. The very strong support for the Nowoczesna party in the richest communes indicates that voting preferences in Poland are in line with the positional and patrimonial economic voting theory (Lewis-Beck and Nadeau, 2011). In general, these citizens have high incomes and therefore support less progressive taxation. Moreover, they are often property owners and care about their rights. Therefore they support the party which they feel best guarantees the protection of property rights, that is, Nowoczesna. An attachment

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17 Villages, which are inhabited by the descendants of impoverished Polish gentry.
to liberal values turned out to be the stronger in the case of the wealthiest communes in comparison to the slightly poorer communes belonging to Cluster 10. This result confirms hypothesis 11.

Results for the variable SUP indicate that as the level of support from the EU increases, the probability of supporting PO is higher. If receipt of EU grants leads to significant changes in the neighborhood (highways, swimming pools etc.) then people tend to support the governing party. Moreover, since the PO government was responsible for negotiations concerning the level of support for Poland from the EU, citizens appreciate PO's efforts as part of the positive impact of EU grants. However, this variable turned out to be significant for some clusters at only the 0.1 level of significance. The weak significance of this variable may be due to the fact that because of the Operational Program “Eastern Poland Development”, counties located in the eastern part of Poland benefited more than rural or rural–urban counties or small towns located in the western part of Poland. Since historical and cultural factors seem to be important determinants of intra-regional differences in voting preferences, citizens of communes from the eastern part of Poland voted for more conservative parties even though these communes benefited from the EU support. Moreover, citizens of the southern and eastern parts of Poland often voted against EU accession in the national referendum, and hence might not appreciate the changes associated with the utilization of EU grants. All these aspects probably led to the weak relation between the level of the EU support and voting preferences.

Analysis of the results for Cluster 7 also provides very interesting interpretations. Though the KUKIZ-15 committee declared that they would reduce the budget deficit and lower taxes, a high level of support for this party was seen in poor communes, characterized by high unemployment rates and bad conditions for entrepreneurial development. Though many members of KUKIZ-15 represent very conservative opinions and hold very negative attitudes towards the communist period in Poland, the ratio of the level of support for the KUKIZ-15 party in the Northern and Western territories, to average national support, is much higher than the analogous ratio for the PiS party. This result is not in line with KUKIZ-15's placement on the level of axis and level of interests, but is compliant with the results of other studies. Support for Paweł Kukiz (the popular Polish singer leading KUKIZ-15) in the first round of the presidential elections in 2015 was surprisingly high, and so sociologists looked into this phenomenon. Since the level of correlation between the propensity for supporting Kukiz and the propensity for voting for the KUKIZ-15 committee was high (CBOS, 2015), analysis of Kukiz’s supporters in presidential elections should help in understanding factors affecting the very high levels of support for this committee in specific communes. The results of the analyses conducted by CBOS in 2015 indicate that age was the most important factor affecting the level of support for Kukiz. Young voters, dissatisfied with the labor market situation, formulated negative evaluations of the economic and political situation in Poland. When Kukiz argued that the political system should be changed, he gained political capital. Most of his supporters had neither liberal nor conservative attitudes. 75% of Kukiz’s voters thought that the state should play a larger role in the economy, and 60% supported progressive taxation rules (CBOS, 2015). 52% of Kukiz’s voters thought that the concordat between Poland and the Vatican was not necessary. The analysis of Paweł Kukiz’s electorate, as well as the estimates of relative ratios for selected variables, indicates that the emotions inspired by certain politicians had a stronger impact on electoral attitudes than their analysis of the policies declared by the parties. The analysis of the sources of Kukiz’s success encourages to mention the issue of populism. As Havlík (2019) indicates, populism can be best understood with reference to the following characteristics:

- perception of the people and the elites as homogenous groups,
- construction of an antagonistic and moralistic divide between the two groups,
- a view of the people as a moral sovereign and the need to restore the sovereignty of the people.

The populism demonstrated by Paweł Kukiz contributes to the construction of the adversarial and hierarchical conflict between anti-party technocratic rule and the world of fundamentally ideological or political conflicts embodied in political parties. This kind of populism turns out to be similar to that represented by the ANO party in the Czech Republic (Havlík, 2019). It means that the phenomenon of populism standing for the success of new parties is similar for Poland and other CEE countries (Hanley and Vachudova (2018), Havlík and Voda (2018)).

Though it is thought that ZL supporters and PiS supporters differ only in respect of the axis of values, results of this estimation do not confirm hypothesis 12. Instead, they show that the probability of membership in Cluster 8 is much higher than the probability of membership in Clusters 1–4 for wealthier communes. Moreover, in the case of communes characterized by a very large share in revenue from property tax per person in the period 2011–2014, the probability of membership in Cluster 8 is the greatest.

In order to evaluate the goodness of fit of the econometric model, the Nagelkerke R squared (Nagelkerke, 1991) and McFadden R squared (McFadden, 1973) were calculated. A model including all variables as well as models without specific groups of variables were considered (Table 5).

The results of measuring the goodness of fit indicate that the econometric model is well fitted to the data. After excluding specific groups of variables, values of both measures of the goodness of fit are lower. The strongest decrease in the goodness of fit is observed when variables associated with the partition zones are dropped. This means that cultural and historical factors are very important determinants of intra-regional differences in voting preferences, which supports the view of authors indicating the very important role of context (Zarycki, 2015).
5. Conclusions

The parliamentary elections in Poland in October 2015 were characterized by a weaker domination of the two leading Polish political parties (PiS and PO) in comparison to the elections of 2007 and 2011, and by the defeat of the post-communist party SLD. Thus the new parties (Nowoczesna, KUKIZ-15) received relatively strong support and new interesting interpretations of the electoral patterns have emerged. As two liberal parties competed during the 2015 election, the analysis of differences between communes supporting PO and communes supporting Nowoczesna provided useful knowledge on the profiles of liberal communes.

Results of the cluster analysis indicate that there are 11 clusters defining different support profiles. Therefore, in comparison to alternative studies, in this paper a wider range of electoral patterns are analyzed. Instead of the liberal-populist cleavage (considered in many studies of election results between 2005 and 2015), more clusters are encompassed in the analysis (for example, very liberal, moderately liberal, left liberal).

On the basis of the estimation of the parameters of the multinomial logit model, different determinants of the membership of a commune to a specific cluster were distinguished. After checking the importance of specific groups of variables, it turned out that all groups of variables (economic, socio-economic, location) turned out to be important. However, the variables associated with partition zones turned out to play the greatest role. Though the level of support for PiS decreases and the level of support for more liberal parties increases with the wealth of communes’ citizens, membership in the partition zone is the most important determinant of the support profile. The validity of most hypotheses has been confirmed by data. The data shows that the regional capitals have higher revenue, better conditions for entrepreneurial development, a higher level of civic activity with higher probability and are classified as very liberal or moderately liberal. It also appears that the largest Polish cities strongly affect their closest communities, with the probability of membership in the most liberal cluster being very high. A positive correlation between net migration and the probability of being classified as a commune strongly supporting Nowoczesna is compliant with hypothesis 6, as positive net migration is very often observable in the largest cities and their surrounding communes. On the other hand, in territories characterized by a high intensity of conservative attitudes, a higher birth rate is observed. However, some of the results are more surprising and provide interesting interpretations. The results indicate that the level of civic activity is an important factor, which determines whether a commune belongs in the cluster of the most ardent PiS supporters, the cluster of mixed PSL and PiS supporters, or the cluster of the most ardent PSL supporters. When the level of bridging social capital increases, the probability of more support for PSL and their rivalry with PiS also increases. To the best of this author’s knowledge, this is the first result indicating the impact of the level of bridging social capital on the outcome of the rivalry between PSL and PiS in rural and rural-urban communes.

The analysis of the spatial distribution in electoral behavior in Poland indicates that there are similarities among countries from the CEE group. The importance of the urban-rural conflict in explaining electoral attitudes of citizens makes the Polish case similar to the Slovakian one. In terms of persisting spatial differences in political attitudes Poland turned out to be similar to the Czech Republic and Hungary. Electoral success of the new party KUKIZ-15 seems to be based on the same kind of populism, which increased the level of support for the ANO party in the Czech Republic.

It should be stressed that the results of the study based on the data for communes does not provide exact answers about the features affecting the decisions of individual voters. On the basis of the obtained results one can guess about the relation between features of individuals and their electoral attitudes. This is a limitation of the study, compared to studies based on data from the Polish General Electoral Study. However, research based on data from the Local Data Bank that concentrates on differences in electoral attitudes between communes does still have important advantages. Firstly, the data from such research informs us about the decisions of all voters. Moreover, when disaggregated data on the level of communes are used, identification of a very broad range of factors affecting electoral attitudes is possible.

References


