# Is this still a political competition or already a fight to the death? Looking at the voting behavior in the Polish parliament

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There have been growing concerns that political polarization is becoming Abstract: more intense over time and that this may have a strong influence on economic policy and thus may harm the economy. That being said, this notion is largely based either on the anecdotal evidence, some aggregate measures related to political competition or survey data, which aims at eliciting public opinion on one issue or another. In this paper we adopt a different perspective and take a closer look at polarization among political elite. Our example comes from Poland in the period 2005-2019 and our focus is particularly on the voting behavior of Polish MPs. Our results suggest that the level of political polarization has been on the rise in the studied period. However, contrary to popular claims, this is not due to a sudden increase in political divide that took place after the elections in 2015. Instead, we observe a gradual increase in the polarization of political views in the parliament over the whole time under analysis. Furthermore, the evidence implies that individual MPs from the governing party or the main opposition party were voting against the

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party line extremely rarely. Finally, we identify very few votes, in which the governing and the main opposition party voted in unison. This, in turn, shows that during the studied period there was very little willingness to build a consensus. Importantly, this effect appears to be even stronger in case of voting on economic policies.

Keywords: political polarization, voting behavior, political competition, institutional economics, public choice

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### 1. Introduction

Political conflicts are an immanent characteristic of a democratic system and thus should not be seen as something extraordinary or necessarily bad. However, it has been commonly argued that intractable and entrenched divisions, corresponding to inability to reach consensus on various essential economic policies (Duca & Saving, 2017), can lead to a dysfunctional political system with numerous potentially negative consequences for the society and the economy. In line with this view, there are voices and quantitative studies exposing that political polarization erodes democracy (Carother & O'Donohue, 2019; Arbatli & Rosenberg, 2021), increases the homophily of social groups (Iyengar et al., 2019) or reduces prosocial behavior and affects policy support (McCright et al., 2014; Allcott et al., 2020; Birch, 2020). In addition, it can amplify macroeconomic volatility (Alt & Lassen, 2006; Azzimonti & Talbert, 2011).<sup>4</sup>

Furthermore, and importantly given our focus, it has been commonly argued that political polarization has been on the rise in recent years.<sup>5</sup> To the extent the claims about negative impacts of political divisions on socio-economic outcomes are true, the increase in political polarization might be worrisome. The problem however is that our understanding of the trends in political polarization is still far from being complete. A great majority of the existing evidence comes from the U.S. (see e.g. Bonica, 2013; Gentzkow, 2016; McCarty et al., 2016; Autor et al., 2020) and therefore a legitimate question arises whether we should transpose the conclusions obtained from these works

<sup>&</sup>lt;sup>4</sup> It needs to be stressed though that the economic literature is not pointing to only negative consequences of political polarization. For example, there is empirical evidence that political polarization contributes to higher quality of government and policy (Testa, 2012) and is associated with smaller government in democratic countries (Lindqvist & Östling, 2010).

<sup>&</sup>lt;sup>5</sup> That political divisions in many countries is deeper now than ever before is a recurring theme not only in academic papers, but also in popular press. Numerous articles that have appeared in *Financial Times* or *The Economist* can serve as a good illustration.

to other settings. These doubts are supported by the recent study by Boxell et al. (2020) who look at nine OECD member countries and conclude that long-term trends in affective polarization varied considerably across the analyzed societies (increasing in some, but decreasing in other). For many other geographical contexts, in turn, there has been very little research and thus the claims about high (rising) level of political polarization are mostly based on intuition rather than on systematic evidence.

What adds greatly to the complexity of analyzing the phenomenon of interest is that there are multiple approaches to measure political polarization. One common approach is to look at affective polarization that captures the extent to which citizens feel more negatively toward the opposing political party than their own (lyengar et al., 2019). Various surveys measuring the level of citizens' trust towards the government/political parties or eliciting respondents' general attitudes and opinions offer an alternative to describing and investigating the scale of political divisions (Baldassarri & Gelman, 2008; Stroud, 2010; Lelkes et al. 2017; Levendusky, 2018). While this approach allows one to portray a wide range of issues that can be fundamental to understand political divides, it rests mostly on declarative data and therefore might be subject to several concerns related to this way of collecting information (e.g. the issue of social desirability, nonresponse bias, etc.).

A different way to measure the level of political polarization is to rely on behavioral data and to investigate the diversity of views and behaviors among political elites/political parties. In this paper we follow that approach and take a closer look at the behavior of politicians. More specifically, our focus is on legislative voting. The example that we consider comes from Poland, a country which often attracts the attention in current political debates in Europe (Meijers & van der Veer, 2019; Toplišek, 2020; Lendvai-

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Bainton & Szelewa, 2021). Importantly given our focus, Poland's political scene has often been portrayed as being deeply polarized (Radkiewicz, 2017; Zybała 2019). In addition, it has been argued that the political divisions intensified in recent years, especially since the return to power of the PiS party in 2015 (Tworzecki, 2019; Bill & Stanley, 2020). Quite surprisingly, however, these claims – to the best of our knowledge – have not been subjected to closer quantitative scrutiny. In fact, the advanced arguments often rely on anecdotal evidence, basic descriptive statistics from survey data or aggregated measures. In this paper we try to fill this gap at least in part.

In order to achieve that, we quantitatively analyze voting behavior of Polish MPs from different political parties in the period 2005-2019. In doing so, we develop a spatial model of parliamentary voting using Optimal Classification measure stemming from nominal three-step estimations (Poole, 2000). The period under analysis spans four terms: 2005-2007 when the PiS party was in power; 2007-2011 and 2011-2015 when the PO party was in power; and 2015-2019 when power was again with the PiS party. This allows us to check whether the lack of ability of the politicians to find the compromise can indeed be linked to the year 2015. Our results seem to reject this supposition. The findings suggest that the intensity of political divisions has been constantly increasing during the whole period under study. What we observe between 2015 and 2019 therefore is simply a continuation of the trend that was noticeable earlier. Furthermore, the evidence implies that individual MPs from the governing party or the main opposition party were voting against the party line extremely rarely. This might suggest in turn that party discipline can be seen as an important driver of political polarization. Finally, we identify very few votes, in which the governing and the main opposition party voted in unison. This, in turn, shows that during the studied period there was very little willingness to build a consensus. Importantly, this effect appears to be even stronger in case of voting on economic policies.

By adopting this perspective our paper is related to the increasing body of work devoted to legislative voting (Pierce & Lau, 2019; Canen et al., 2020). The available studies focus almost exclusively on the U.S. Congress. We are not aware of any existing study which would apply such analysis to investigate politicians' voting behavior in Central European countries. In addition to that, there are relatively few studies that adopt a dynamic perspective, which would allow for analyzing how the polarization evolves over time (Canen et al., 2021). By taking a closer look at voting behavior in four consecutive terms of the Sejm, the lower chamber of Poland's parliament, we aim at contributing to the literature also on that front.

Last but not least, our research is also closely related to numerous studies which place at the center of their view of political divisions the distribution of seats in parliaments, the number of parties operating on the political stage, etc. (Roemer, 2006; Cox, 2008). What we show in our work is that analyzing politicians' voting behavior may importantly complement the portrayal that we obtain while using more standard measures of political competition.

The article has the following structure. Section 2 provides general information about the lower chamber of the Polish parliament. In Section 3, we present our data, whereas Section 4 reports our empirical approach. Finally, Section 5 discusses our findings and Section 6 concludes.

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### 2. Background information

#### 2.1. Functioning of the Sejm

The Sejm of the Republic of Poland is the lower house of the Polish two-chamber parliament. The parliament has a sole authority to pass statutes, which, in turn, have a special position in the system of sources of law in Poland.<sup>6</sup> The 1997 Constitution of the Republic of Poland provides the Sejm with a leading and dominant role in the legislative process. Apart from the legislature, the Sejm performs control over the government, as members of the Council of Ministers bear political responsibility to the Sejm.

The Diet of the Sejm consists of 460 deputies, elected in universal and secret ballots, which have to be equal, direct and proportional.<sup>7</sup> Deputies are not formally bounded by the instructions or expectations of their electorate. The number of deputies elected from constituencies is dependent on their population. Apart from that, only candidates from political parties that scored at least 5% of the national vote, can be elected. As an excerpt, candidates representing ethnic-minority political parties are not obliged to meet this threshold.

The term of office amounts to 4 years. It starts on the day the Sejm assembles for the first session after the ballot and ends on the day preceding the assembly of the Sejm of the succeeding term of office. Importantly, there is no interim period in Poland in this matter. It is possible for the Sejm to shorten its term of office due to a resolution passed by a majority of at least two-thirds of the votes of the statutory number of deputies. The

<sup>&</sup>lt;sup>6</sup> A detailed description of the functioning of the Sejm is available primarily in the Constitution of the Republic of Poland and the Standing Orders of the Sejm (its statute).

<sup>&</sup>lt;sup>7</sup> Deputies are elected using the d'Hondt method. As an exception, the Sainte-Laguë method was used just once after 1989 – in 2001.

shortening of the term of office may also occur on the basis of a decision of the President of the Republic of Poland.

#### 2.2. Timespan of the study

Our study covers years 2005-2019, corresponding to four terms (V-VIII) of the Sejm (2005-2007, 2007-2011, 2011-2015 and 2015-2019). During that time, the Polish political sphere was generally dominated by the two center-right wing political parties and their coalition partners: the Law and Justice (PiS; Prawo i Sprawiedliwość) and the Civic Platform (PO; Platforma Obywatelska). Within the abovementioned period, the power at first was exercised by PiS (2005-2007) and PO was the main opposition party. Then, for two terms (2007-2011 and 2011-2015), PO was the governing party and PiS constituted the core opposition. Finally, between 2015-2019, PiS again had the majority in the Sejm, whereas PO was considered as the main opposition.

Although the two parties were expected to form a coalition in 2005, the following years showed that this has never happened. In fact, the two parties became fierce opponents, with its consequences for political debate and public sphere in Poland. According to both popular and academic discussion, the conflict between PiS and PO affected various aspects – from economic policies to ideological issues – rendering it impossible for the state to manage many basic tasks.<sup>8</sup> As mentioned earlier, some commentators claim that political polarization exacerbated in the aftermath of the 2015 elections (Tworzecki, 2019; Bill & Stanley, 2020). This view, however, although commonly accepted, is far from being obvious. Furthermore, the evidence provided to support such narrative relies largely on declarative data or aggregate measures. Instead, behavioral data is sparsely

<sup>&</sup>lt;sup>8</sup> A very recent example includes a huge delay in the process of electing new Ombudsman. Currently (July 2021) the parliament is considering the sixth candidate.

used for that purpose. In response to this, below we try to verify whether such statements could be supported by the behavior we observed in the Sejm during the period 2005-2019. In particular, we carefully analyze to what extent the governing and the main opposition party voted in unison, to what extent individual MPs violated party discipline, and whether economic issues provided more space for building a consensus in the parliament as compared to other (non-economic) issues.

The reason behind the selection of the period 2005-2019, is straightforward. The upper boundary is due to the end date of the last full term of the parliament (the IX<sup>th</sup> term is about to end in 2023). The lower boundary in turn stems from the fact that both PO and PiS were set up only in 2001, so during the IV<sup>th</sup> term (2001-2005) they did not constitute the main political forces in Poland. In addition, before 2005 Poland was obliged to implement a range of institutional changes related to the EU accession (in May 2004), which clearly influenced the voting patterns of MPs. Furthermore, and importantly given our focus, during the period under study each of the two main competitors was governing Poland for two terms (although the V<sup>th</sup> term was shortened and lasted just two years).

#### 3. Data and descriptive statistics

Our database consists of 1120 MPs that served as deputies between 2005 and 2019. As mentioned above, in each of the terms of the Sejm there were 460 deputies. However, some of them managed to get reelected. Moreover, some MPs died during their term in office or resigned from the parliamentary seat, and thus were substituted by other candidates. As a result, in the V<sup>th</sup> term we consider 477 deputies, in the VI<sup>th</sup> – 520, in the VII<sup>th</sup> – 512, and finally, in the VIII<sup>th</sup> term, we refer to the voting behavior of 504 MPs.

Across these four terms, voting in the Sejm took place 26 381 times. A more detailed view on the activity of the Sejm between 2005 and 2019 is provided in Table 1. Please note,

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however, that the V<sup>th</sup> term lasted just 2 years instead of 4 years, as in case of the following terms. Terms VI-VIII appear as quite similar, although during the VIII<sup>th</sup> the number of sittings of the Sejm, as well as the number of days of parliamentary debates, was lower than that observed for the earlier two terms. On the other hand, MPs during the VIII<sup>th</sup> term were relatively more productive, as reflected by the number of votes, enacted laws, adopted resolutions, speeches and interpellations.

	V <sup>th</sup> term	VI <sup>th</sup> term	VII <sup>th</sup> term	VIII <sup>th</sup> term
Sitting of the Sejm	48	100	102	86
Days of parliamentary debates	146	294	287	235
Votes	3 469	8 457	6 298	8 157
Enacted statutes (laws)	384	952	752	923
Adopted resolutions	203	289	286	390
MPs' speeches	22 955	46 182	39 293	42 161
MPs' interpellations	9 581	24 435	34 895	34 043

Table 1. Activity of the Sejm, 2005-2019

Source: Own calculations based on the data available on the webpage of the Sejm.

Table 2 shows information about MPs representing various political parties across the considered terms of the Sejm. As already indicated above, the Polish political scene between 2005 and 2019 was dominated by the two opposing camps – PO and PiS. The other political parties joined the first or the latter one within the ruling coalition or the opposition, depending on the term of the parliament.

Table 2. Deputies by their politica	l parties in the Sejm, 2005-2019
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	V <sup>th</sup> term	VI <sup>th</sup> term	VII <sup>th</sup> term	VIII <sup>th</sup> term
Prawo i Sprawiedliwość (PiS)	155 (GC)	166	138	235 (GC)
Platforma Obywatelska (PO)	133	209 (GC)	207 (GC)	138
Samoobrona RP (SRP)	56 (GC)	-	-	-
Sojusz Lewicy Demokratycznej (SLD)	55	42	26	-
Liga Polskich Rodzin (LPR)	34 (GC)	-	-	-
Polskie Stronnictwo Ludowe (PSL)	25	31 (GC)	28 (GC)	16
Polska Jest Najważniejsza (PJN)	-	15	-	-
Socjaldemokracja Polska (SDP)	-	8	-	-
Ruch Palikota (RP)	-	-	41	-

Solidarna Polska (SP)	-	-	18	-
Kukiz'15 (K'15)	-	-	-	42
Nowoczesna (N)	-	-	-	28
Non-attached	2	1	2	1

Source: Own calculations based on the data available on the webpage of the Sejm. Note: These calculations refer to beginning of each of the terms. GC denotes parties forming governing coalition during the given term of the Sejm.

#### 4. Empirical Analysis

#### 4.1. Explorative analysis

Table 3 contains information about the mean attendance rate of MPs from the main political parties during voting on various issues. In our analysis we distinguish between two broad topics of legislative voting – voting on economic issues and voting on all other issues. This allows us to check whether a political consensus is relatively more feasible in one type or the other. As the parliamentary voting in Poland is not labeled upfront, we need to classify the types of voting ourselves. With the help of text analysis we review subjects of all votes during the period under study and classify a given voting as 'economic' if its subject covers the stem forms of the following words: *budget* (POL: budżet), *tax* (POL: podatek), *pension* (POL: emerytura), *benefit* (POL: świadczenie), *fund* (POL: fund) and *financing* (POL: finansowanie). Based on these criteria, we identified 6 765 votes on economic issues in our data (which accounts for approximately 25% of all voting). This selection assures that in this category we capture the voting referring to the most crucial aspects of fiscal and redistributive aspects of the legislation, namely – budget act, tax rates, pension system, social transfers and benefits, as well as public funding.

As shown in Table 3, we find a very high mean attendance rate for MPs from the main opposing camps, PiS (ranging from 89.4% to 96% depending on the type of voting and term) and PO (ranging from 84.4% to 98.7%). We also find that regardless of the term at which we look at, the attendance for MPs from a governing party was always slightly

higher than that observed for MPs from the main opposition party. Interestingly, the average attendance rate was higher for voting on economic issues than for other cases. This, in turn, suggests that, from the perspective of political parties, voting on these issues is of higher importance than the rest. Voting on budget act seems to be especially salient.

		PiS	PO	SRP	SLD	PSL	LPR	RP	SP	K'15	N
	Economic issues	93.3%	90.9%	86.5%	84.1%	84.4%	94.0%				
Vth	EI: budget act	96.0%	96.5%	88.3%	87.9%	88.5%	96.7%				
term	EI: other than budget	90.3%	84.4%	84.5%	79.6%	79.5%	91.0%				
	Non-economic issues	91.2%	87.3%	83.9%	81.7%	79.2%	90.5%				
	Economic issues	90.1%	94.1%			88.3%					
VI <sup>th</sup> term	EI: budget act	90.9%	95.2%			91.6%					
	EI: other than budget	89.4%	93.2%			85.6%					
	Non-economic issues	90.5%	92.9%			85.8%					
	Economic issues	93.2%	98.1%		91.2%	92.7%		94.5%	94.7%		
VII <sup>th</sup>	EI: budget act	93.1%	98.7%		90.7%	93.0%		95.4%	95.1%		
term	EI: other than budget	93.3%	97.5%		91.8%	92.3%		93.6%	94.3%		
	Non-economic issues	92.8%	96.4%		90.4%	90.6%		90.3%	90.4%		
	Economic issues	95.6%	91.7%			88.0%				87.6%	85.9%
VIII <sup>th</sup>	EI: budget act	95.7%	92.1%			89.2%				87.4%	85.3%
term	EI: other than budget	95.3%	91.1%			86.3%				87.8%	86.8%
	Non-economic issues	95.0%	90.2%			84.5%				88.3%	88.0%

Table 3. Mean attendance rate of MPs, 2005-2019

Source: Own calculations based on the data available on the webpage of the Sejm.

In the next step, to approximate political polarization in the Sejm, we turn to the statistics on fully unanimous votes (Table 4). It appears that, as compared to voting on noneconomic issues, for voting on economic issues we observe a much lower incidence of a complete consensus. In addition, the observable share of unanimous votes drops since the VI<sup>th</sup> term for both types of voting. While this finding may incline to take this as a signal of deepening political polarization, one should remember that this statistic captures the instances when literally all of MPs voted in the same way, which is quite a demanding condition. Furthermore, one may argue that 100% unanimity may be found only in technical votes (declaring a given year as the year of person X; electing Senior Marshal; etc.) or some obvious amendments to the existing bills. Table 4. Unanimous votes, 2005-2019

	V <sup>th</sup> term	VI <sup>th</sup> term	VII <sup>th</sup> term	VIII <sup>th</sup> term
Economic issues	15.9%	17.6%	11.5%	7.2%
Non-economic issues	21.3%	27.7%	24.6%	14.%

Source: Own calculations based on the data available on the webpage of the Sejm.

Motivated by these results, we check the shares of voting, when the majority of MPs from a given party vote in the same way as the majority of MPs of the ruling party do. We include members (parties) of the ruling coalition separately, to get the information about the cohesion within the coalition as well. The output of this exercise is presented in Table 5. Two things are worth to note. First, we observe a decreasing share of MPs from the main opposition party voting as MPs from the ruling party. Interestingly, this trend is visible for voting on both economic and non-economic issues. For example, when we compare PiS and PO we find that the share of common voting on economic issues decreased from 48.2% during the V<sup>th</sup> term, to 35.1%, 21.0% and 17.9% in the following terms respectively. As regards non-economic issues, the respective shares were the following: 65.3%, 63.0%, 46.6% and 38.8%. Second, for voting related to budget act we record consistently lower scores than for voting on other issues. This indicates again that this issue enacted a particularly strong political divide. It is in line with the observable political conflict between the ruling coalition and the opposition across the considered terms of the Sejm. Namely, if the opposition aims to exert some pressure of the ruling party, voting on budget act is a good opportunity for that.

		PiS	РО	SRP	SLD	PSL	LPR	RP	SP	K'15	N
V <sup>th</sup> term	Economic issues	ruling	48.2%	91.1%(GC)	49.1%	61.5%	93.3%(GC)				
	EI: budget act	ruling	35.5%	92.2%(GC)	42.9%	61.3%	94.9%(GC)				
	EI: other than budget	ruling	63.8%	90.1%(GC)	56.6%	61.8%	91.6%(GC)				
	Non-economic issues	ruling	65.3%	94.1%(GC)	60.3%	65.3%	90.4%(GC)				
VI <sup>th</sup> term	Economic issues	35.1%	ruling			100%(GC)					

Table 5. Voting in the same way as MPs from the ruling party, 2005-2019

	EI: budget act	17.4%	ruling		100%(GC)				
	EI: other than budget	48.9%	ruling		100%(GC)				
	Non-economic issues	63.0%	ruling		100%(GC)				
	Economic issues	21.0%	ruling	27.1%	98.6%(GC)	67.6%	15.0%		
VII <sup>th</sup>	EI: budget act	7.8%	ruling	10.6%	99.4%(GC)	73.3%	7.5%		
term	EI: other than budget	35.9%	ruling	45.9%	97.8%(GC)	61.1%	23.5%		
	Non-economic issues	46.6%	ruling	72.9%	97.4%(GC)	69.2%	48.2%		
	Economic issues	ruling	17.9%		16.1%			20.9%	17.0%
VIIIth	EI: budget act	ruling	8.7%		6.9%			10.6%	9.5%
term	EI: other than budget	ruling	30.1%		28.5%			34.7%	26.9%
	Non-economic issues	ruling	38.8%		42.2%			55.1%	35.0%

Source: Own calculations based on the data available on the webpage of the Sejm. (GC) denotes parties that formed the governing coalition with either PiS or PO in a given term of the Sejm.

To provide a deeper insight into unison voting of various parties we built upon the Rice Index of Cohesion indicating the degree of agreement within a voting body (Born & Nevison, 1974). We apply its modified version, as proposed by Sokołowski & Poznański (2008):

$$CI = \frac{3}{2} \times \frac{\max(Y, N, A)}{Y + N + A} - \frac{1}{2}$$

where *Y* stands for the number of people voting "yes", *N* for the number of people voting "no", and *A* for the number of people that abstained. The presented index takes values from 0 to 1, where 0 implies that the groups of people that voted "yes", "no", or "abstain" are equal. 1, in turn, means that all MPs made the same decision (for instance all of them voted "yes"). Table 6 contains information about the cohesion index (CI) for the main political parties in the subsequent terms of the Sejm.

Table 6. Cohesion index for the main political parties in the Sejm, 2005-2019

		PiS	PO	SRP	SLD	PSL	LPR	RP	SP	K'15	N
V <sup>th</sup> term	Economic issues	0.986	0.961	0.947	0.921	0.930	0.944				
	EI: budget act	0.982	0.949	0.940	0.879	0.910	0.924				
	EI: other than budget	0.990	0.973	0.953	0.963	0.950	0.964				

	Non-economic issues	0.987	0.969	0.945	0.968	0.935	0.969				
	Economic issues	0.981	0.996			0.964					
VI <sup>th</sup> term	EI: budget act	0.982	0.998			0.966					
	EI: other than budget	0.980	0.994			0.962					
	Non-economic issues	0.978	0.991			0.960					
VII <sup>th</sup>	Economic issues	0982	0.997		0.975	0.974		0.851	0.967		
	EI: budget act	0.981	0.999		0.981	0.977		0.788	0.979		
term	EI: other than budget	0.985	0.995		0.965	0.969		0.973	0.940		
	Non-economic issues	0.978	0.988		0.946	0.955		0.957	0.875		
	Economic issues	0.995	0.981			0.952				0.807	0.923
VIII <sup>th</sup>	EI: budget act	0.997	0.984			0.955				0.757	0.893
term	EI: other than budget	0.992	0.977			0.948				0.886	0.974
	Non-economic issues	0.992	0.975			0.935				0.871	0.970

Source: Own calculations based on the data available on the webpage of the Sejm.

The numbers above suggest that the observable cohesion within political parties in the Sejm was very high. In fact, in most of the cases the relevant coefficient is very close to 1 (in a large share of voting above 0.95). Especially in the core political camps, as PiS or PO, party discipline during voting was evident. This, in turn, supports our expectations based on the literature, that Polish political scene is characterized rather by disputes between parties instead of internal political conflicts.<sup>9</sup>

The goal of the next section of the paper is to obtain further insights about legislative voting patterns among MPs using spatial models. This approach allows for inferring politicians' location in an abstract policy or ideology space using their roll-call votes. This provides us with an additional information on the dynamics of political polarization in Poland, helps to assess the validity of party discipline during voting, as well as check if voting on economic policies is conducive to reaching a political consensus.

<sup>&</sup>lt;sup>9</sup> This is not to say that internal conflicts do not take place. However, they rarely manifest themselves during voting.

#### 4.2. Optimal Classification

Nominate (nominal three-step estimation) multidimensional techniques allow for holistic analyzes of parliamentary voting and for projection of the output on space with more than one dimension (Poole & Rosenthal, 1985; Poole, 2000). In a broad perspective, these methods aim at drawing a picture, where the distance of a given MP from the dividing line corresponds to the probability of his choice during the voting (for instance for voting in favor or against a bill). Although this methodology is a great fit for the American political scene, European environment may be somehow problematic in this matter. Namely, a variety of political parties and moot party discipline during voting weakens the quality and robustness of the output of pure nominate methods. Thus, taking this into consideration, we apply Optimal Classification (Poole, 2000; Rosenthal & Voeten, 2004).

Optimal Classification, stemming from the nominate methodology, has relatively more relaxed assumptions. As a non-parametric approach, it assumes just that MPs' space of views is Euclidean and that all MPs have symmetrical utility functions with one maximum (Poole, 2000). There are no restrictions, however, regarding the distribution of voting errors made by MPs. The objective function of Optimal Classification is to maximize the classification of MPs (in cells shaped by dividing lines) in terms of their correct votes – the number of times, when they are put on the right side of the dividing line. Each of the dividing lines stands for a separate voting. MPs placed in the same cell after drawing a dividing line are expected to vote in the same way. When points present in a cell have various coordinates, it implies that MPs must have had made various decisions in one of the voting. Optimal Classification has some serious flaws, like low accuracy in case of a small number of voting (dividing lines), but this problem does not occur in our study (Poole, 2000). Optimal Classification algorithm works in a loop of four steps: i) compute

a consent matrix, which dimensions correspond to the number of MPs (compute the ratio of voting, when a given pair of MPs voted unison) to provide the initial estimates of the coordinates for each of MPs, ii) draw a dividing line corresponding to the obtained coordinates, iii) considering the course of the dividing line as constant, look for the optimal coordinates of MPs, iv) go back to step two. The loop is repeated as long as the coordinates of MPs and course of the dividing lines cannot be corrected in terms of the objective function of Optimal Classification.

Importantly, given our focus, within our Optimal Classification exercise, we consider only two options within a vote – in favor and against. We consciously do not include any abstentions, because in case of voting requiring a particular threshold of votes "yea", abstention brings practically a similar result as voting "nay", but slightly more neutral. Another point is clarity of the output. Unfortunately, in our study we are not able to identify voting, when MPs from a given party were absent in order to signal their position on a subject of voting.<sup>10</sup>

In our study, Optimal Classification is based on all parliamentary voting between 2005 and 2019 (terms V<sup>th</sup>-VIII<sup>th</sup> of the Sejm). Following the literature, the cutoff level is 2.5%, meaning that voting with less than 2.5% MPs supporting the position, are dropped (Poole, 2000). Unanimous votes do not bring value-added in Optimal Classification and are troublesome in terms of drawing a dividing line. We include in our analysis MPs that took part in at least 5.0% of all voting. Last, but not least, following the literature and relying on the values of Average Proportion Reductions in Error (APRE) index<sup>11</sup>, we use the two-

<sup>&</sup>lt;sup>10</sup> Please note that not showing up during the voting may be not only due to illness (other objective reasons), but also might be strategically driven. Whenever there is a party discipline being absent allows you not to vote with the majority of your peers if you do not agree with them.

<sup>&</sup>lt;sup>11</sup> Calculations available upon request.

dimensional *party switcher* model, where a deputy is considered as a new observation after he/she becomes a member of another political party.

We identify the meaning of each of the two dimensions of our spatial voting models with reference to the values of Proportion Reduction in Errors (PRE) index for each voting and voting topics. The first dimension (horizontal axis) corresponds to socio-economic issues (liberal-solidarity attitude) in all of the terms, which is in line with the literature on the Polish parliament (Zagała, 2020). The second dimension (vertical axis), in turn, refers to topics specific for particular terms of the Sejm. Please note, however, that the latter dimension has a much lower explanatory value . The subjects captured by this dimension in the V<sup>th</sup> term cover, i.e., the authority of some state institutions, security of mass events and housing cooperatives. In the VI<sup>th</sup> term, in turn, these were mostly social security issues. For the VII<sup>th</sup> term, the second dimension captures anti-discriminatory policies, ecology and relations between the Church and the state. Finally, the second dimension in the VIII<sup>th</sup> term stands for education and ecology. Figures 1-4 show the output of Optimal Classification for all types of voting.

What drives our attention is a small, but observable, differentiation of votes within parties. It proves that party discipline was basically in force, with rather rare exceptions. However, we cannot identify overlapping points, which means that there were no MPs voting identically across the whole term. Interestingly, this within-party cohesion is usually in force just in one of the two considered dimensions. From this perspective, political polarization between PiS and PO on socio-economic issues appears as evident and similar across all terms of the Sejm. On the contrary, within the second dimension (vertical axis) for the whole period under analysis, MPs from PiS and PO voted in a relatively similar way. Importantly, party discipline for PiS and PO appears to be higher,

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when a given party is in charge of ruling the state. What we can also observe, are the changes in attitudes of MPs from smaller parties – standing in solidarity with PiS or PO, depending on which one currently is the ruling party.



V<sup>th</sup> term





VII<sup>th</sup> term



Source: Own calculations based on the data available on the webpage of the Sejm.

Taking into consideration that the first dimension in our models refers, to a large extent, to voting on economic policies, in the next step we focus on this group of cases. Our aim is to check whether economic issues rather divide or cement Polish political scene and whether they contribute to a consensus. As stated below, to select voting on economic

# policies, we apply text mining tools. Figures 5-12 show spatial models with dividing lines

for voting on economic and non-economic issues between 2005-2019.

Figures 5-12. Optimal Classification coordinates and dividing lines for terms  $V^{th}$ -VIII<sup>th</sup> of the Sejm (voting on economic and non-economic issues)

V<sup>th</sup> term, economic issues

0.1 PiS PSI Sam SLD 0.5 LPR niez RLN Second Dimension RLCH Prav PR NKP 0.0 9.2 -0 -1.0 -1.5 -1.0 -0.5 0.0 0.5 1.0 1.5 First Dimension

V<sup>th</sup> term, non-economic issues



VIth term, economic issues



VI<sup>th</sup> term, non-economic issues



VII<sup>th</sup> term, economic issues



VII<sup>th</sup> term, non-economic issues





VIII<sup>th</sup> term, non-economic issues



Source: Own calculations based on the data available on the webpage of the Sejm.

The figures above suggest that the dividing lines for some voting are somehow naturally clustered. On the other hand, the diversity of the dividing lines is also clear. It can be interpreted that not all kinds of voting are easily predictable in terms of decisions made by MPs. Voting on economic issues during the VII<sup>th</sup> term provide a particularly vivid

example. It also supports the supposition that from time to time, inter-party alliances take place. These figures suggest also that the output of voting on economic policies is relatively more foreseeable. Figures 13-14 provide information on PRE of voting on economic and non-economic issues. What may be concluded here is that indeed voting on non-economic issues is less predictable and some nonstandard patterns of voting may take place.



Source: Own calculations based on the data available on the webpage of the Sejm.

To obtain a deeper insight on voting on economic policies, we consider the slopes of the dividing lines<sup>12</sup>. For most of the terms of the Sejm we can observe differences between the slopes for voting on economic and non-economic issues. In particular, as reflected by repeatability of a specific slope, is seems that voting on economic policies strengthens political divisions rather than contributes to consensus.

<sup>&</sup>lt;sup>12</sup> We exclude the voting with PRE equal to 0, because then for given coordinates of MPs it is impossible to draw the dividing line to improve the output as compared to the model assuming that a given MP votes exactly as the majority.

Figures 15-22. Histograms of the slopes of the dividing lines for terms  $V^{th}$ -VIII<sup>th</sup> of the Sejm (voting on economic and non-economic issues)



V<sup>th</sup> term, economic issues

Tilt angles of cutting lines

V<sup>th</sup> term, non-economic issues

150

100 Tilt angles of cutting lines



Source: Own calculations based on the data available on the webpage of the Sejm.

#### 5. Discussion

The output of our empirical research implies that indeed strong political divisions were observable in the Polish parliament. This supports the portrayal sketched in the available literature, so that Polish political scene was unstable (Wesołowski, 1997) and polarized (Sanecka-Tyczyńska, 2015; Radkiewicz, 2017; Zybała 2019). We can confirm this statement with the results of legislative voting behavior of individual MPs, which complements more standard approximations of political polarization (Roemer, 2006; Cox, 2008). This finding, in turn, naturally raises the question about the dynamics of political polarization (Canen et al., 2021).

The results of our quantitative study puts in doubt the point that political polarization has been on the vast rise only recently, especially since 2015 (Tworzecki, 2019; Bill & Stanley, 2020). The evidence for the last years documents rather just a slight rise in this kind of polarization and the increasing animosities between the two main parties – PiS and PO – were noticeable much earlier. In this matter, we enrich the literature, focused mostly on the U.S. (e.g. Bonica, 2013; Gentzkow, 2016; McCarty et al., 2016; Autor et al., 2020) and large countries (Boxell et al., 2020), by providing conclusions for a small open economy. Moreover, by delving deeper into legislative voting (Pierce & Lau, 2019; Canen et al., 2020) and considering its various types, we show that voting on economic policies does not serve as a ground for a political consensus. In addition, it appears that party discipline has dominated voting behavior of Polish MPs.

By so far, there was very little international research devoted to political polarization in Central Europe in general and in Poland in particular. Our conclusions bring more precise characteristics of the Polish political scene to the current political debate (Meijers & van der Veer, 2019; Toplišek, 2020; Lendvai-Bainton & Szelewa, 2021). Importantly, our empirical strategy, based on Optimal Classification, and other exploratory tools like the cohesion index, can be used to investigate political polarization in other countries, where this sphere still constitutes an underexploited research subject.

### 6. Conclusions

Political polarization proves to be a sophisticated research topic, where the approach to measuring it plays an essential role. Instead of a static perspective, we refer to voting behavior of Polish MPs between 2005 and 2019. The output of our quantitative study based on Optimal Classification, to develop a spatial portrayal of parliamentary voting, brings several important implications.

Contrary to popular opinions and public debate, in the period under study the level of political polarization in Poland, as measured by the voting behavior of MPs, was not characterized by sudden discontinuities around the year 2015. Instead, more gradual and continuous increase in political divide since 2005 can be observed. On the other hand, in this assessment we use just the output of legislative voting in the Sejm, and we do not consider public statements of MPs, which sometimes heat up the dialogue. Keeping this in mind, another essential conclusion is that political party discipline was undoubtedly strong. Namely, instances of MPs voting against the party line were very rare. This stands still both in case of MPs representing the governing party (coalition) or the main opposition party. This observation is in line with another finding, which implies that there were just few voting, when the representatives of the governing and opposition parties voted the same way. This in turn, suggests that building a consensus in formulating public policies was a hardship these times. This supposition is confirmed by the results of voting on economic policies. Interestingly, it appears that the voting decisions made by MPs were driven mostly by their political party affiliation.

The text contributes to the current literature by dealing with a very timely question about the observable tendencies of political polarization in the recent decades. Our study sheds also a new light on the Polish political scene. Moreover, the empirical approach we present in our research, combining spatial model of parliamentary voting with exploratory analysis, can be easily replicated on cases of other parliaments. Apart from the contribution to the literature, our text may be useful also for policymakers, in the context of anticipated political consensus (or a lack of it) and voters due to what they may expect from MPs.

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