

TRIPOL

The triangle of polarization, political trust and political communication: understanding its dynamics in contemporary democracies

Polarization indices

Josep Maria Comellas and Mariano Torcal

RECSM-UPF

Content:

- 1) **Affective polarization indices**
 - 1.1 **Weighted mean distance from most-liked voters/leader**
 - 1.1.1 **In-voters/leader liking**
 - 1.1.2 **Out-voters/leader dislike**
 - 1.2 **Weighted spread of like-dislike scores towards voters/leaders**
 - 1.3 **Highest like-dislike score towards voters/leaders**
- 2) **Ideological polarization indices**
 - 2.1 **Weighted perceived ideological polarization**
 - 2.2 **Ideological extremism**
- 3) **Weights**

We propose a set of individual indicators of affective and ideological polarization departing from the initial work by Wagner (2020). The affective polarization indices are based on the sentiments towards voters' groups and party leaders, while the ideological polarization indicators measuring the individuals' perceptions of ideological polarization among political parties and the individuals' level of ideological extremism are based, respectively, on the location of each party and respondent on the left-right scale.

All these indicators are weighted by party size. Given that the relevance of a political party (for the party system and the formation of government) is strongly related to its size, it should matter more if an individual strongly dislikes the leaders/voters of large parties rather than the leaders/voters of small ones, or if an individual perceives strong ideological differences between large parties rather than between small parties.

1) Affective polarization indices

1.1) **Weighted mean distance from most-liked voters/leader**

Based on Wagner (2020), affective polarization is measured, first, as the weighted mean distance from most-liked voters' group or party leader. This measure requires positive

identification with one specific group of voters or one specific leader, and it captures how much an individual on average dislikes other voters or leaders compared to his/her favoured voters' group or leader. The general formula is as follows:

$$WAPD_i = \sqrt{\sum_{g=1}^g v_g * (Like_{ig} - Like_{max,i})^2} \quad (1)$$

where g is the out-group (voters or leaders), i the individual respondent, $Like_{max,i}$ is the like-dislike score assigned to the most liked voters' group or leader (in-group), $Like_{ig}$ is the like-dislike score assigned to each out-group g by individual respondent i , and v_g is the size of each voters' party or leader's party. The size is measured as the normalized proportion of votes each out-party received in most recent election, or as the average vote intention of each out-party. This proportion is calculated over the total number of votes of the selected parties minus the votes received by the party of the preferred group of voters or the party of the preferred leader¹.

This index is computed, respectively, for the main voters' groups and party leaders of the different countries included in the project, using feeling thermometer scales which range from 0 to 100, where 0 means "unfavourable feelings" and 100 means "favourable feelings". The index is only calculated for all respondents who declare a level of affect for at least two voters' groups or leaders.

In case that some respondents assign their highest like-dislike score to more than one voters' group or leader, we need to identify with which of these voters or leaders respondents feel closer to. To do so, we assign the preferred voters' group/leader to these respondents based on, first, party identification. For those who are not identified with any of these parties, we use vote intention if that information is available. Finally, in case we are not able to identify any party as the closest, we take advantage of the probabilities to vote (PTVs) by assigning respondents to their highest PTV. The few remaining respondents who cannot be attributed to a specific preferred group are discarded.

The main advantage of WAPD is that it clearly distinguishes between in-groups and out- groups, and it directly measures the difference in feelings between them. Moreover, as described below, this index enables to separately analyse in-group liking and out-group dislike, which is theoretically relevant (e.g. Gidron, Adams and Horne 2020). However, the index also has some limitations. Since WAPD requires each respondent to have a specific preferred group of voters or party leader, it may be problematic in multiparty contexts where identification with more than one party or leader is usual. Moreover, current trends in various party systems in the form of increasing levels of electoral volatility, number of independent voters, and surge of new challenging parties may weaken the validity of the measure.

¹ For more details about the weights, see the section "Weights".

Departing from WAPD, we break down affective polarization into its in-group and out-group components:

1.1.1) In-voters/leader liking

This index simply measures the feelings thermometer scores towards the most-liked voters' group or leader:

$$\text{InLike}_i = \text{Like}_{\max, i} \quad (2)$$

The index ranges from unfavourable feelings to favourable feelings.

1.1.2) Out-voters/leader dislike

This index measures the weighted mean unfavorable feelings towards the voters' groups or leaders that are not the most liked one (out-groups). The general formula is as follows:

$$\text{OutDislike}_i = \sum_{g=1}^g (v_g * \text{Dislike}_{ig}) \quad (3)$$

where g is the out-group (voters' group or leader), i the individual respondent, Dislike_{ig} the (reversed) feeling thermometer rating assigned to each out-group g by individual respondent i , and v_g is the normalized proportion of votes of each out-party (calculated over the total number of votes received by the selected out-parties)². Given that the thermometer feeling scales are reversed, the index ranges from favourable feelings to unfavourable feelings.

1.2) Weighted spread of like-dislike scores towards voters/leaders

The second index, which is also based on Wagner (2020), measures affective polarization as the weighted spread of like-dislike scores towards voters or leaders. It captures the extent to which affect is spread out across the various voters' groups and leaders in a given party system. The general formula is as follows:

$$\text{WAPS}_i = \sqrt{\sum_{g=1}^g v_g * (\text{Like}_{ig} - \overline{\text{Like}}_i)^2} \quad (4.1)$$

where g is the group (voters' group or leader), i the individual respondent, $\overline{\text{Like}}_i$ is the respondent's average like-dislike score, Like_{ig} is the like-dislike score assigned to each group g by individual respondent i , and v_g is the size of each voters' party or leader's party. The size of a party is measured as the normalized proportion of votes each party received in most recent election, or as the average vote intention of each party³.

² For more details about the weights, see the section "Weights".

³ For more details about the weights, see the section "Weights".

The average like-dislike score is also weighted by party size:

$$\overline{Like}_i = \sum_{g=1}^g (v_g * Like_{ig}) \quad (4.2)$$

This index is measured, respectively, for the main voters' groups and party leaders of the different countries. As in the previous index, like-dislike feelings towards voters and leaders are operationalized using feeling thermometer scales, which range from 0 ("unfavourable feelings") to 100 ("favourable feelings"). Finally, this index is calculated for all respondents who declare a level of affect for at least two voters' groups or leaders.

Contrasting with WAPD, the WAPS index recognizes that individuals may not have a single positive party identification, and thus it takes into account all respondents who express feelings of like-dislike towards voters and leaders. Moreover, this spread measure is also better suited to capture opposition between blocs of partisans or party leaders rather than between single voters' groups or leaders, something relevant in multi-party settings (Wagner 2020). By contrast, the main disadvantage of this measure is that it does not allow us to disentangle affective polarization between its in-group and out-group components.

1.3) Highest like-dislike score towards voters/leaders

Finally, a variable that captures the maximum level of affect that each respondent assign to a voters' group or party leader is also built. Notice that this variable is equal to the in-group liking one, with the difference that it also includes the respondents to whom we are not able to attribute a specific preferred group (and, hence, who are not included in the WAPD index, although they are in the WAPS index). As argued by Wagner (2020), by including this variable in a model as a control variable, we prevent affective polarization from acting as a proxy of simply liking a leader or voter's group.

2) Ideological polarization indices

2.1) Weighted perceived ideological polarization

Following Wagner (2020), the first ideological polarization index is the weighted perceived level of ideological polarization between parties. The formula is as follows:

$$WPIP_i = \sqrt{\sum_{p=1}^p v_p * (IdPosition_{ip} - \overline{IdPosition}_i)^2} \quad (5.1)$$

where p is the political party, i is the individual respondent, $IdPosition_{ip}$ is the left-right position of party p assigned by respondent i , $\overline{IdPosition}_i$ is the respondent's average ideological position of political parties, and v_p is the size of each party, measured as the

normalized proportion of votes that each selected party received or the vote intention of each party⁴.

The average ideological position of political parties is also weighted by party size:

$$\overline{IdPosition}_i = \sum_{p=1}^p (v_p * IdPosition_{ip}) \quad (5.2)$$

The index includes the ideological position of the main parties of the different countries in the project. The scales that measure the ideological positions of each party (according to respondents' views) range from 0 ("Left") to 10 ("Right"). Finally, this index is calculated for all respondents who attribute an ideological position to at least two parties.

2.2) Ideological extremism

We measure ideological extremism by simply taking the absolute difference between respondents' self-ideological position and the average ideology of respondents per each panel wave. The formula of the index is as follows:

$$IE_i = \sqrt{(Ideol_i - \overline{Ideol})^2} \quad (6)$$

where i is the individual respondent, $Ideol_i$ is the reported self-ideological position of respondent i , and \overline{Ideol} is the average ideology of respondents. The self-ideological scale ranges from 0 ("Left") to 10 ("Right").

3) Weights

When panel waves are performed few days before or after a national election, we simply use the results of the election as the weights of each party, party leader and voters' group.

When panels are taking place far distance to any electoral process, we weight each party, leader or voters' group by the weighted mean voting intention estimate of each party. Concretely, we proceed as follows per each panel wave in each country:

- 1- We use the list of electoral polls for the next national election recollected by the Wikipedia.
- 2- We consider all the electoral polls performed 90 days before the first day of the wave's fieldwork.
- 3- We calculate the mean voting intention estimate of each relevant party, weighted by three different factors (this is a free adaptation of the general rules described in El País: <https://elpais.com/especiales/2019/elecciones-generales/encuestas-electorales/>):

⁴ For more details about the weights, see the section "Weights".

Weights by date. We assign more weight to the most recent polls by applying the following exponential formula:

$$\text{Date weight} = 1.01228161^t$$

where t is the number of days of the considered period, so that it ranges from 0 (which corresponds to the poll conducted 90 days before the first day of the wave's fieldwork) to 90 (which corresponds to the poll conducted at the first day of the wave's fieldwork).

According to the formula, the voting intention in a poll conducted at $t=0$ is multiplied by 1, while the voting intention in a poll conducted at $t=90$ is multiplied by 3.

Weights by repeated polls. We weight less the repeated polls from the same polling firm. Concretely, the most recent poll of each firm is multiplied by 1, while the rest of polls from the same firm are multiplied by 0.6.

Weights by sample size. The idea is that the polls with a higher sample size receive more weight, although following a decreasing trend. We establish two thresholds, based on the following formula (López-Roldán and Fachelli 2015: 22):

$$n = (z^2 \times P \times Q)/(e^2)$$

where n is the sample size, z is the number of deviation units that implies the adopted confidence level, P is the proportion of individuals who have a given characteristic, Q is the proportion of individuals who do not have this characteristic, and e is the sampling error.

Assuming a confidence level of 95% ($z=1.96$) and a situation of maximum indeterminacy ($P=Q=50\%$), we calculated n if $e=3\%$ and $e=2\%$:

$$n = (1.96^2 \times 50 \times 50)/(3^2) = 1067.11$$

$$n = (1.96^2 \times 50 \times 50)/(2^2) = 2401$$

Given that, all the polls that have 1067 respondents or less are multiplied by 0.6; the polls that have between 1068 and 2400 respondents are multiplied by 1; and those that have 2401 respondents or more are multiplied by 1.2. The polls that have an unknown sample size are multiplied by 0.6.

Finally, the **total weights** are calculated: Total weights = weights by date x weights by repeated polls x weights by sample size.

References

Gidron, N., Adams, J. and Horne W. (2020): *American Affective Polarization in Comparative Perspective*. Cambridge: Cambridge University Press.

López-Roldán, P. and Fachelli, S. (2015): *Metodología de la investigación social cuantitativa*. Barcelona: UAB.

Wagner, M. (2021): “Affective polarization in multiparty systems”. *Electoral Studies*, 69.