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Party Competition and Voter Decision-Making

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Abstract—**This paper combines two important findings from research on how voters and parties interact: Firstly, it acknowledges that voters possess different decision making mechanisms: Instead of weighing the parties' policy promises, they might also vote based on past performance or the personal qualities of party leaders. Secondly, it incorporates empirical findings challenging a prominent device by which party-voter linkages are modeled, i.e. the left-right scheme. Modern party systems have been shown to vary in the number of dimensions parties compete on. We model how voters aggregate issues into party rankings, assuming that voters switch decision making mechanisms contingent on their heuristic value, and develop hypotheses on how issue diversity in party competition influences voter heuristic use.** *Keywords*: **Political Psychology, Party Competition, Voting Behavior, Heuristics.**

I. Introduction

KEEPING up to date with politics is quite a demanding aim: Besides keeping track of current events, every new problem that arises can be studied in practically unrestricted depth. Moreover, the former of these decisions is afflicted with most citizens not assessing the rewards of political information too high. In other words: They do not care that much.

Because of that, there has been a lot of research on whether voters, uninformed as they may be, can make decisions 'as if' they were fully informed [21] [17] [16]. Its fundamental idea is that they use information shortcuts or *heuristics* that summarize information to workable quantities. That means they neglect certain aspects of the real world, but to a degree that 'by and large' probably does the matter justice.

Examples for these heuristics include voting based on the retrospective evaluation of candidate performance [9] or the endorsements of politically significant groups the voter has a positive affect for [3]. However, the most prominently discussed information shortcut probably is ideology, i.e. a broad summarizing device that allows voters to judge how close a party represents their preferences without having to learn about each and every issue that is currently politically salient. It is usually modeled as a continuum on which political discourse can be mapped, a conception mostly known as the left-right dimension. It has indeed become the default model of party competition [8] and has also taken deep root in the everyday language of politicians and citizens alike.

Accordingly, there is a lot of evidence that voters understand the left-right scheme well [10] and make ample use of it [27]. However, there is considerable variation in both of these aspects across countries as well as time. In countries where voters have very heterogeneous perceptions of the parties' left-right position, the correlation between party choice and left-right positions is weaker [26]. This, we would argue, can be related to the degree to which parties adhere to the left-right dimension as the arena of competition: The model's performance relies heavily on the assumption that the political space that voters perceive relates to the space that parties build.

Empirically, this assumption is met imperfectly at best. Party competition in Europe has become increasingly complex over time [1], so that today, adherence to unidimensionality varies widely across party systems [23]. Agent-based models have tremendously advanced the understanding of party competition in spaces of higher dimensionality (e. g. [20]), but work remains to be done concerning situations where dimensionality differs between the political supply and demand side.

Here, we try to model how this variation impacts on the likelihood of voters relying on policy promises as a voting heuristic. Using a 'strongly spatial' model [13] [20, p. 30], this would be straightforward: If parties compete on more dimensions than voters can perceive, this adds 'noise' to the 'ideology signal' and makes it less valuable.

However, acknowledging that dimensions of political conflicts are abstractions from the clustering of statements on different issues [11] and that these clusters need not necessarily be simple reverse images of each other [4], the picture becomes less clear: On the one hand, if parties compete over a too diverse set of issues, voters may be less and less able to extract messages on the issues they actually care about. On the other hand, the core mechanism of ideology, that is to evaluate parties only on issues of interest and to ignore 'clutter', may work very well even if the range of topics is very diverse.

Thus, the question we ponder here is *how the issue diversity of party competition influences the decision making of voters*. We study it by combining parties' capability to 'sort' voters by issues [2] [22] and voters' tendencies to overlook issues that do not fit their decision making heuristic [12]. Voters are assumed to possess different decision heuristics, one of them driven by party programs, between which they switch according to what heuristic has the smallest decision costs [7].

This criterion is defined to be fulfilled if the signal that a heuristic creates as to which party a voter should support is the strongest possible. Voters in the model assemble an individual ranking of the parties for each heuristic. Since voting is a process of *choice* rather than *evaluation* [19], voters decide by that heuristic that produces the greatest distance between the first and second ranked party, since it most clearly separates 'the best' from 'the rest'.

II. Model

The model is executed by running simulations with 1,000 voters each. The simulations consist of an iterative taking-turns of voters choosing a party to support and parties adapting

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their program to improve their support share. 1,000 iterations of these taking-turns are carried out per simulation.[1] The key variables that vary across simulations are the number of issues I, i.e. the maximum number of topics that can be politically debated, and the number of parties P that compete in the system (here, I ranges from 2 to 16 and P from 2 to 8).

A. Voter Behavior

There are three possible attitudes a voter can hold towards an issue: She can either regard it positively, negatively, or not care about it. The number of issues a voter cares about, as well as what preferences she holds concerning it are chosen at random. Moreover, each voter uses a subset of I as *diagnostic issues* that she employs to judge whether a party conforms to her preferences. This means she may have preferences on a lot of issues, but does not consider all of them making a party choice, as is consistent with the 'fast and frugal decision making' model of party choice [19]. The *programmatic preference profile* I_v of voter v can therefore be expressed as a set of categorical variables indicating how v feels about an issue and whether she employs it to assess how she feels about a party:

$$I_v = \{i_1, ..., i_I; i_1^d, ..., i_I^d\} \qquad (1)$$

$$i_j = \begin{cases} 1 & \text{if pos. issue} \\ 0 & \text{if does not care} \\ -1 & \text{if neg. issue} \end{cases}, \quad i_j^d = \begin{cases} 1 & \text{if diagnostic} \\ 0 & \text{if not} \end{cases}$$

Feelings about the issues are uniformly distributed across voters and issues. How many diagnostic issues each voter has and which these are is determined by the following procedure: Each voter is randomly assigned a number d_v that serves as the expectation of her number of diagnostic issues to simulate different degrees of 'political sophistication'. Which issues are diagnostic is then determined (contingent on d_v) through random assignment of 'diagnostic status' by use of three different 'correlation profiles' (see Fig. 1). In the first of these profiles, each issue has the same probability of being used as a diagnostic tool. In the second (third) profile, probabilities are shifted such that the first issue, compared to the uniform distribution, is 1.25 (1.5) times likelier to be diagnostic; the respective multiplier for the last issue is 0.75 (0.5). In between, the probability decreases linearly. This enables incorporating the effects of different degrees of correlation across voters with regard to their diagnostic issues in the model.

When making up their mind about which party to support, voters observe what each party has to say on their diagnostic issues. Specifically, they use the saliency of an issue in a party's program, measured by the share that statements on the issue occupy among all of the party's statements, $\frac{s_{pi}}{S_p}$, to judge how much a party advocates the issues they care most about
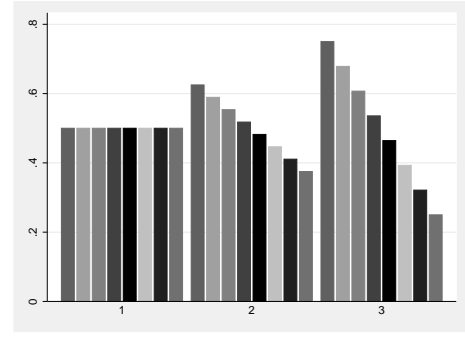
Fig. 1. Examplary probability profiles for assignment of diagnostic issues with $I = 8$ and a voter with $d_v = 4$.

(the process of how parties 'make statements' is elaborated on below). The score a voter assigns to a party is computed as

$$V_{pv} = \sum_{j=1}^{I} i_j i_j^d \frac{s_{pj}}{S_p}, \qquad (2)$$

which means a party is punished for statements the voter does not like to hear ($i_j = -1$) and rewarded for views the voter agrees with ($i_j = 1$). Voters produce a ranking of parties based on these scores. However, there is a second, exogenously given parameter by which they rank parties referred to as 'Likability' (L_{pv}) here. It is randomly chosen from a uniform distribution and can be interpreted as either of the other voting heuristics established in electoral research, such as the candidate appearance heuristic [18], retrospective voting [9], or as a residual category of 'all others'.

As mentioned earlier, voters use that heuristic producing the ranking with the maximal distance between the first and second best party. This is not to say that heuristic choice is a deliberate decision made by the voter, but it is modeled in that fashion for the sake of explicitness [15]. More precisely, a voter supports a party p^* if

$$V_{p^*v} = \max_p[V_{pv}] \text{ and } V_{p^*v} - \max_{p \neq p^*}[V_{pv}] > L_{p'v} - \max_{p \neq p'}[L_{pv}],$$
$$\text{where } L_{p'v} = \max_p[L_{pv}], \text{ or if} \qquad (3)$$
$$L_{p^*v} = \max_p[L_{pv}] \text{ and } L_{p^*v} - \max_{p \neq p^*}[L_{pv}] \geq V_{p'v} - \max_{p \neq p'}[V_{pv}],$$
$$\text{where } V_{p'v} = \max_p[V_{pv}]. \qquad (4)$$

Voter behavior as a whole can thus be summarized as follows: In each iteration (i) compute the programmatic score V_{pv} of each party according to its updated issue statements and (ii) compare the ranking of the parties on basis of programmatic scores to that on basis of likings L_{pv}. Use that ranking as voting heuristic that produces the clearest 'winner' and (iii) declare support for said winner.

B. Party Behavior

In the model, parties select issues they do or do not empha-size on grounds of the image they have of voter preferences

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and whether other parties have already taken up these issues. They do not know how voters process political debate into their choice of party support, but concentrate on the issue that is currently on the agenda: One issue $i_{ts} \in I$ and one party $p_{ts} \in P$ are randomly selected at the beginning of each iteration t; i_{ts} could for example be interpreted as a topic gaining acute media coverage that p_{ts} is expected to react to.

p_{ts} now faces a choice between emphasizing the issue in its program or keeping quiet about it. Since parties ultimately need to gather electoral support to gain access to both the spoils of office and the ability to implement policies, we assume that they emphasize issues that they think are seen positively by a majority of voters and keep quiet about those that they think most voters see negatively or are not interested in. To gather information about which is the case, p_{ts} "polls" a subset of voters at the begininng of its turn.[2] While the fact that parties cannot influence what the 'issue of the day' is probably does not do the reality of party competition full justice (see [6]), it seems to be a reasonable approximation of modern political campaigns, where parties try to find appropriate reactions to issues the salience of which they can often not control. It also appears to be most consistent with the 'issue-based' theories of party competition this model rests on.

The party concludes that the issue is 'relevant' if those who regard the issue positively make up 34 percent or more of the polled voters and outnumber those who regard it negatively (this threshold is chosen since it is just above the expected value for the share of voters in favor of the issue). In that case, it makes a statement on the topic (i.e. it increases s_{pj} by 5 or 10, depending on model specification); otherwise it remains quiet (does nothing). Note that this means that a party cannot 'take back' statements should its first idea about an issue's popularity turn out to be wrong.

One additional behavioral rule that parties have is that they take into account 'Issue Ownership', a concept which lies at the core of issue-driven theories of party competition [4] [5]: Each party wants to be associated with specific issues by the electorate to appear as the party with the most expertise in this field. Analogously, parties do not want to emphasize issues that are already 'owned' by others, because that is expected to benefit the issue's 'owner' more than themselves. Therefore, in the model, parties do not make statements on an issue i if for any other party p, $\frac{s_{pi}}{S_p}$ is larger than the 'ownership threshold'. The simulations were run with this threshold at 0.2, 0.5 and 1 (= no issue ownership) to be able to control for any efffects it might have on voter decision-making.

Party behavior, once the issue and party 'of the day' are chosen, can thus be summarized in the following way: (i) Poll a subset of the electorate on their preferences regarding the

Fig. 2. Predicted share of voters using party programs as a voting heuristic, by number of parties and issues.

currently salient issue i_{ts}; (ii) if a sufficiently large share of the polled voters has a positive view of the issue and if the issue is not 'owned' by another party, emphasize this issue (increase s_{pj}).

III. RESULTS

Fig. 2 gives an overview of the model's dynamics by indicating the average share of voters who are in 'programmatic voting mode' at the end of each simulation across the number of issues I and the number of parties P used. It suggests that voters have a higher probability to use their diagnostic issues as decision heuristic the more parties compete in a system. This is intuitively plausible: More parties should ceteris paribus cater to more specific preference profiles and make it easier for a voter to find 'her' party. Likewise, more issues also increase the share of programmatic voters. This seems to mean rather than confusing voters, a more diverse range of topics induces them to vote based on party programs more often.[3]

Table I provides further insight into the matter: It shows the results of several logistic regression analyses estimating the probability of a simulated voter to be in programmatic voting mode. To compute these, the 'virtual electorates' produced in the simulations are pooled into one data set. This allows using the numbers of both parties and issues, as well as the degree of correlation of diagnostic issues in the electorate, as macro level predictors. Furthermore, the analysis controls for the ownership threshold and the amount by which parties increment s_{pj} when making a statement. Additionally, individual characteristics of the simulated voters are controlled for, i.e. (i) the number of issues used as diagnostic as a share of all issues and (ii) the number of issues a voter sees either positively or negatively (but is not indifferent about; also divided by I).

The results support the previously stated: An increase in the numbers of parties and issues both lead to an increased probability of programmatic voting on the voters' side. The same is true if voters increasingly use the same issues as diagnostic issues, as is reflected by the coefficients of dummy

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[2]Of course, this is not to say that an actual poll is conducted, but rather that party leaders, through the party's member base, citizen appeals etc. have some kind of 'hunch' what voters think about an issue. This hunch is obviously likely to be biased towards the preferences of voters that already support the party. Since this bias cannot be quantified, the simulations were carried out both with the parties drawing representative samples of the electorate and them tending only to their own supporters' preferences, which turns the model into a kind of sorting model similar to that of Tiebout [25] (also see [14]). This should provide for appropriate benchmarks, although the actual bias remains unknown.
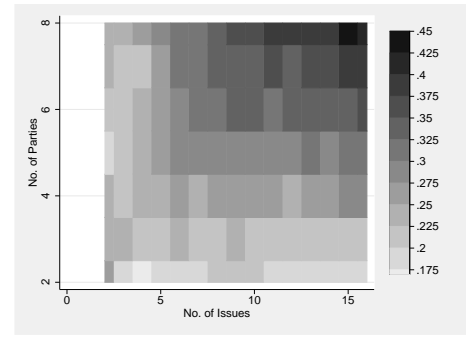
[3]Graphs for subsamples defined by polling mode, ownership threshold and amount of increment when making an issue statement (available on request) show differences in the level of programmatic voting, but the general pattern remains.

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TABLE I
MICRO-LEVEL EXAMINATION OF SIMULATION RESULTS

Variables	1	2	3
	Coeff. (se)	Coeff. (se)	Coeff. (se)
No. of Issues	0.063***	0.045***	-0.060***
	(0.000)	(0.001)	(0.001)
No. of Parties	0.159***	0.159***	-0.017***
	(0.001)	(0.001)	(0.001)
Diagnostic Issues	1.842***	1.589***	1.536***
(Ratio)	(0.004)	(0.009)	(0.009)
Preference Issues	1.812***	1.815***	1.824***
(Ratio)	(0.004)	(0.004)	(0.004)
Diag. Iss. * Issues		0.029***	0.036***
		(0.001)	(0.001)
Parties * Issues			0.020***
			(0.000)
Med. i_j^d Correlation	0.038***	0.036***	0.037***
	(0.003)	(0.003)	(0.003)
High i_j^d Correlation	0.102***	0.100***	0.100***
	(0.003)	(0.003)	(0.003)
Issue Increment = 10	-0.007**	-0.007**	-0.007**
Reference: 5	(0.002)	(0.002)	(0.002)
Ownership Threshold=0.2	0.469***	0.469***	0.472***
Ref.: no ownership	(0.003)	(0.003)	(0.003)
Ownership Threshold=0.5	0.093***	0.094***	0.094***
Ref.: no ownership	(0.003)	(0.003)	(0.003)
'Tiebout polling'	1.228***	1.229***	1.236***
	(0.003)	(0.003)	(0.003)
Constant	-5.315***	-5.151***	-4.222***
	(0.008)	(0.009)	(0.011)

Logistic Regression, DV: Programmatic Voting Mode (***$p \leq 0.001$; **$p \leq 0.01$)

variables indicating the different correlation profiles depicted in fig. 1. Issue ownership generally increases the probability of programmatic voting, more so as parties find it easier to claim an issue as theirs (i.e., the threshold for $\frac{s_{pi}}{S_p}$ decreases). The coefficients on 'polling mode' (see ftn. 2) and 'issue increment' suggest an interesting pattern with regard to party responsiveness, implying that programmatic voting should be most prevalent if parties primarily respond to their followers (as opposed to the electorate as a whole) and make not too large adjustments of their program.

On the micro level, the probability of programmatic voting is increased if a voter uses a higher share of the overall issues as diagnostic issues. This is consistent with the well established empirical finding that more 'sophisticated' voters are better able to use ideology as a heuristic [24] [16]. A rather interesting finding is that voters who have preferences (i.e. $i_j \neq 0$) on a higher share of issues have a higher probability of programmatic voting although these issues may not even be used in the programmatic assessment of parties.

Model 3 qualifies our findings regarding the numbers of parties and issues in an interesting way: The interaction effects included there suggest that in an environment with relatively few parties, greater issue diversity *can* make the parties' programs less available as a choice heuristic. When accounting for this interaction, that also extends to voters who consider fewer issues when making their minds up about the parties.

IV. ACKNOWLEDGMENT

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