Party activists in the 2009 German federal elections

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Abstract

This paper analyses the role of activists in the 2009 German federal election. We apply a spatial vote model including valence and analyze within a three-dimensional policy space whether we would expect divergence or convergence based on the Mean Voter Valence Theorem under the assumption that activist influence is zero. We contrast the result with the empirical party configuration and reject the assumption of zero activist influence. Next, we calculate activists' positions for each party relying on the Balance Theorem. This reveals two different patterns of party and activist constellations for major and niche parties. Thus, this paper is a contribution to the large literature on spatial models of party competition by offering a solution for the often missing link between the equilibrium positions that formal models predict and the party positions that we empirically observe.

1 Introduction

Formal modelers of party competition often have to face the fact that their models predict far too centrist equilibrium positions when compared to empirically observed party positions. Various components have been suggested as extensions for the standard Downsian spatial model, in order to receive more plausible, diverging equilibrium configurations. One important improvement was the inclusion of a valence term that accounts for non-policy related factors that influence vote decisions [Schofield & Sened, 2005a, Schofield & Sened, 2005b]. The underlying assumption is that valence describes an overall perceived external popularity or competence, that is ascribed to a party and/or its leader and cannot be attributed to the parties' policy position. This valence term is thus assumed to be exogenous and constant among the voters. The model can further be extended by the inclusion of an additional individual specific non-policy element, such as partisan bias [Adams et al., 2005] or ideological distances to party positions [Kurella & Pappi, ming]. This stabilizes the formal game of party competition by diminishing the probability of parties leapfrogging each other in equilibrium configurations. Still, the predictions of those models show significant discrepancy to empirical party configurations.

One possible explanation for the missing link in those models is activists influencing parties' policy positions by having the power to manipulate parties' valences [Schofield, 2006, Schofield et al., 2011]. Thus, the valence term is not exogenous defined, but also depends to some extent on the policy position of the party. Beyond the literature of formal theory, activist influence is a widely studied field, especially for the American political system, starting from the primary to the presidential elections as well as covering the elections of governors. Within those settings, it has been shown empirically that campaign spending influences the probability of winning elections [Nagler & Leighley, 1992]. Thus, activists play a major role in political competition due to their spending behavior that affects the volume and scope of the campaign a candidate can run. This mechanism has also been revealed to hold outside the USA. For example, Chang and Lee show a positive effect of campaign spending on vote share for legislator elections in Taiwan [Chang & Lee, 2009] , and Cox and Thies show that the effect of campaign money on electoral success is even stronger in Japan than in the USA [Cox & Thies, 2000].

In German electoral competitions donations are expected to play a smaller role, due to the fact that German parties get public funds for their electoral campaigns, which diminishes the dependence on donors. Beside that, anonymous donations are not allowed and donations over 50,000 Euro have to be published immediately including the name of the donor. This fact may deter parties and donors from giving as well as receiving large donations so not to raise suspicion of lobbying or corruption. Thus, the role as well as the identity of activists in the German case is expected to constitute a different pattern than in the US and may be harder to grasp. This might also explain why activist influence on the German party competition is rather understudied, whereas there exists a large body of literature on activist influence on the American parties.

This paper provides an empirical investigation of the puzzle of activist influence on German parties in the federal elections of 2009 relying on formal theory. Five parties competed in this election campaign. Being in a grand coalition, the Conservatives CDU/CSU[1] and the Social Democrats SPD were in an invidious situation during the campaign. Both parties wanted to end the current grand coalition and rather form a new coalition with their partner of choice, which would be the liberal FDP for CDU and the Greens for the SPD. However, having worked quite well together in the grand coalition and having shared responsibility for the policies of the past four years, it would not have been a credible tactic to attack each other during election campaign. Also, both parties could not be sure whether their vote shares would suffice to form a new coalition with the respective smaller party, or whether they would have to continue the grand coalition. Thus, in order to keep all options open, competition was unusually lacking in content and more about promoting persons. This led the broad public to perceive the competition as being rather boring. In the end, both big parties had historically low vote shares, and the grand coalition was

[1] Throughout the remainder of the paper we will refer to CDU/CSU as one party "CDU". In the analyses the CDU is substituted by the CSU for the Bavarian respondents.

replaced by a coalition of CDU and FDP.

Considering this general set-up, one could argue that party valence played a large role in the 2009 election, and that policy positions of the two major parties would converge. However, parties' policy positions were perceived to be quite distinct. This may be due to activists influencing policy positions in a trade-off for increasing a party's valence. Because of the minor role of donations in the electoral campaign, it could be argued that the activists influencing German party positions are not wealthy donors, as in the US case, but rather ideologically committed partisans and intellectual leaders. Their way of manipulating a party's valence is thus not by donating money to run a bigger electoral campaign, but by advertising the party directly among their acquaintance and by public endorsements. This may lead to a smaller extent of activist influence in Germany than for example in the USA, but explains why it is still not zero.

The theoretical framework we will rely on concerning the underlying formal model of party competition and activist influence is the standard spatial model including a valence term and the balance theorem as described in [Schofield, 2006] and [Schofield & Gallego, 2011]. The basic idea is to regard the empirically observed party positions as an equilibrium configuration, in which parties are confronted with an electoral pull, which forces the party position to the center, and an activist pull, which forces the party position more to the extreme of the policy space. The position at which each party locates is the point that balances both forces, and at the same time considers the location of all other parties. This model will be used to estimate the position of each party's activist group within the policy space, which will offer insights in the mechanism of activist control within the German party system.

In the following chapter the basic concept of the model and the conditions for convergence will be described. Furthermore, the balance solution that applies if we do not observe convergence is presented. The third chapter describes the data and gives an overview of the empirical configurations in the German policy space at the 2009 federal election. Following that, the fourth chapter presents and discusses the results of the equilibrium analyses and the consequences that can be drawn concerning activist influence and positions. The last chapter concludes.

2 A spatial election model for Germany including activist valence

Germany's political system is one of proportional representation. At the time of the 2009 federal election campaign five parties were represented in the German parliament. They had been present in parliament since the German reunification in 1990 and all of them were reelected in 2009. So it is fair to speak of a stable five party system at the time period of interest. The formal model should be applicable to that. Furthermore, no restrictions should be placed on the dimensions of the policy space, so that the model can be flexibly applied to

the present data structure. Additionally, a valence term should be integrated in the model, which should further be differentiated into an exogenous fixed valence term and an endogenous valence term, that is generated by activists and depends on the policy position of the party.

A model that fulfills all those demands was developed by [Schofield, 2006]. This model, on the other hand, is based on the multiparty stochastic model of [Lin et al., 1999] which assumes vote maximization by the party or candidate. Vote maximization is a reasonable assumption for the German multiparty system with proportional representation, where an increase in vote share increases the chance to getting the power to form a coalition and thus participate in government. This is even true for the smaller parties who can become junior partner in the coalition.

Further, the model utilizes a broader concept of valence that not only takes into account exogenous, non-policy related evaluations of parties or leaders that corresponds to the valence term as conceptualized by [Stokes, 1992]. It also includes an additional endogenous, policy related valence term, referring to the work of [Aldrich, 1983a, Aldrich, 1983b] and [Aldrich & McGinnis, 1989]. This additional valence is generated by activists, who, depending on the policy position of the party, decide to invest time, money or other resources in supporting a party and thereby improving its standing in the electorate. The model thus combines two valence terms with spatial distance in the policy space. The utility voter i receives from voting for party j depends on her ideal point within the policy space described by the vector $\mathbf{x}_i$ and the vector of policy positions of party j, $\mathbf{z}_j$ in the k-dimensional policy space with $k = 1, ..., \omega$. It is given by

$$u_{ij}(\mathbf{x}_i, \mathbf{z}_j) = \lambda_j + \mu_j(\mathbf{z}_j) - \sum_{k=1}^{\omega} \beta_k (x_{ik} - z_{jk})^2 + \epsilon_{ij}.$$

The party's valence is described by the exogenous valence λ_j and by the endogenous activist function $\mu_j(\mathbf{z}_j)$ describing the additional valence of party j that is generated by activists as a function of the party's vector of policy positions $\mathbf{z}_j$. The vector of spatial parameters $\boldsymbol{\beta}$ is also k-dimensional and describes the relative weight of utility loss of the squared Euclidian distances between the voter's ideal points and the party's policy positions on the distinct dimensions of the policy space. The sum of those weighted distances constitute the spatial part of the model. The error term ϵ_{ij} is assumed to follow a type-I extreme value distribution (also known as Gumbel distribution).

It is assumed that voting behavior is stochastic in a way that the voter has a certain probability to vote for each party. The probability of voting for party

j is given by

$$\begin{aligned}
\rho_{ij}(\mathbf{z}) &= \Pr[[u_{ij}(\mathbf{x}_i, \mathbf{z}_j) > u_{il}(\mathbf{x}_i, \mathbf{z}_l)], \forall l \neq j] && (1)\\
&= \Pr[[\lambda_j + \mu_j(\mathbf{z}_j) - \sum_{k=1}^{\omega} \beta_k (x_{ik} - z_{jk})^2 - \lambda_l - \\
&\quad \mu_l(\mathbf{z}_l) + \sum_{k=1}^{\omega} \beta_k (x_{ik} - z_{lk})^2 > \epsilon_{ij} - \epsilon_{il}], \forall l \neq l]. && (2)
\end{aligned}$$

Since the difference of two type-I extreme value distributed variables follows a logit distribution, this results in the conditional logit model of the form

$$\rho_{ij}(\mathbf{z}) = \left[1 - \sum_{l \neq j} \exp(f_l) \right]^{-1},$$

where

$$f_l = \lambda_j + \mu_j(\mathbf{z}_j) - \sum_{k=1}^{\omega} \beta_k (x_{ik} - z_{jk})^2 - \lambda_l - \mu_l(\mathbf{z}_l) + \sum_{k=1}^{\omega} \beta_k (x_{ik} - z_{lk})^2.$$

The expected vote share of each party is just the mean of the individual choice probabilities.

$$V_j(\mathbf{z}) = \frac{1}{n} \sum_{i \in N} \rho_{ij}(\mathbf{z})$$

Equilibrium positions for all j parties can be found by maximizing this function while simultaneously conditioning on the policy positions of all other parties, $\mathbf{z}_{-j}$.

Schofield2007 formulates necessary and sufficient conditions for the joint electoral mean to be a Local Nash Equilibrium (LNE) for all parties in case the endogenous activist valence is identically zero. The joint electoral mean is defined by the vector

$$\mathbf{x}^* = \frac{1}{n} \sum_{i \in N} x_i. \tag{3}$$

Since the model utilized in this paper defines the spatial parameter to vary for the distinct policy dimensions, the theorem has to be adapted as described in the Appendix of Chapter 5 of Schofield2011c. However, before stating the theorem some definitions have to be given.

Definition 1. (The covariance matrix ∇_0^*.)
Let ∇_0 denote an $\omega \times \omega$ matrix containing the covariances of voters' ideal points within the policy space. The covariance matrix ∇_0^* is then defined to be $\nabla_0^* = \frac{1}{n} \nabla_0$.

Definition 2. (The characteristic matrix for party j.)
When located at the joint electoral mean, $z = (0, ..., 0)$ the vote share of each party is independent of i's ideal points and is given by

$$\rho_j = \left[1 + \sum_{l \neq j} [\lambda_l - \lambda_j] \right]^{-1}.$$

The characteristic matrix of party j is given by

$$C_j = 2(1 - 2\rho_j)\boldsymbol{\beta}\nabla_0^*\boldsymbol{\beta} - \boldsymbol{\beta}.$$

Here $\boldsymbol{\beta}$=$(\beta_1, \beta_1, ..\beta_\omega)$.is the vector of beta weights, one for each dimension.

Definition 3. (The convergence coefficient.)
The convergence coefficient for the model $M(\lambda, \beta)$ with zero activist valence is given by

$$c(\lambda, \boldsymbol{\beta}) = \frac{2(1 - 2\rho_1)\text{trace}(\boldsymbol{\beta}\nabla_0^*\boldsymbol{\beta})}{\frac{1}{\omega}(\beta_1 + \beta_2 + ... + \beta_\omega),}$$

where ρ_1 denotes the vote share at the electoral mean of the party with the smallest valence.

Utilizing those definitions, it can be tested whether the joint electoral mean is an LNE. The necessary conditions are stated in the following theorem.

Mean Voter Valence Theorem. (For different coefficients: $\boldsymbol{\beta} = \beta_1, .., \beta_\omega$)

(i) *The joint mean satisfies the first order condition to be an LNE.*

(ii) *A necessary condition for the joint mean to be an LNE is that the trace of the characteristic matrix C_1 is smaller than zero: trace$(C_1) < 0$.*

(iii) *A necessary condition for the joint mean to be an LNE is that the convergence coefficient is bounded above by the number of policy dimensions: $c(\lambda, \beta) < \omega$.* □

Note, however, that the theorem states only necessary, but not sufficient conditions. Thus, a further step has to be undertaken to proof the existence of an LNE at the mean. This proof can be made for example via simulation.

In case the activist influence is not expected to be identically zero, the theorem does not apply. Activists tend to take up more extreme policy positions than the average voter, which means that they exert a centrifugal pull on the party's policy position if it is located at the joint electoral mean. Therefore, the electoral mean is unlikely to constitute an LNE. According to [Schofield, 2006], the first order condition for a Nash equilibrium configuration is that the parties balance the two opposing pulls from the electorate and the activists in a way

to maximize their expected vote share. Such a balance solution is defined as stated below.

Definition 4. (The balance solution.)
Let ρ_{ij} be the n by j matrix of voting probabilities at the vector of party positions $\mathbf{z}_j$ and define the n by j matrix of weighting coefficients to be

$$[\varpi_{ij}] = \frac{\rho_{ij} - \rho_{ij}^2}{\sum_{l=1}^{n}(\rho_{lj} - \rho_{lj}^2)} \tag{4}$$

The balance equation for the policy position z_{jk}^* for party j on dimension $k = 1, ..., \omega$ is given by

$$\mathbf{z}_j^* = \frac{1}{2\beta_k}\frac{d\mu_j}{dz_j}(\mathbf{z}_j^*) + \sum_{i=1}^{n} \varpi_{ij} x_{ik}. \tag{5}$$

where $\sum_i \varpi_{ij} x_{ik}$ is called the weighted electoral mean for party j. Define

$$\mathbf{z}_{el} = \sum_i \varpi_{ij} x_{ik} \tag{6}$$

to be the matrix of weighted electoral means for each party j on each policy dimension $k = 1, ..., \omega$. The centripetal marginal electoral pull on party j is a vector pointing from the balance positions on all dimensions $\mathbf{z}_j^*$ towards the weighted electoral mean $\mathbf{z}_{el}$, which is the point where the electoral pull is zero. This vector is defined as

$$\frac{\mathrm{d}\mathcal{E}_j^*}{\mathrm{d}z_j}(\mathbf{z}_j^*) = \left[\mathbf{z}_{el} - \mathbf{z}_j^*\right]. \tag{7}$$

Reformulating the balance equation gives

$$\frac{\mathrm{d}\mathcal{E}_j^*}{\mathrm{d}z_j}(\mathbf{z}_j^*) + \frac{1}{2\beta_k}\frac{\mathrm{d}\mu_j}{\mathrm{d}z_j}(\mathbf{z}_j^*) = 0. \tag{8}$$

The term $\frac{\mathrm{d}\mu_j}{\mathrm{d}\mathbf{z}_j}$ is called the marginal activist pull and is a vector pointing towards the position where the activist valence is maximized. If the vector $\mathbf{z}^*$ of all parties' policy positions in the k-dimensional policy space fulfills the balance equation, call $\mathbf{z}^*$ a balance solution.

Proof.
According to Equation (4), the matrix of voting probabilities at position vector $\mathbf{z}$ is given by

$$\rho_{ij}(\mathbf{z}) = \left[1 - \sum_{l \neq j} \exp(f_l)\right]^{-1},$$

where

$$f_l = \lambda_j + \mu_j(\mathbf{z}_j) - \sum_{k=1}^{\omega} \beta_k (x_{ik} - z_{jk})^2 - \lambda_l - \mu_l(\mathbf{z}_l) + \sum_{k=1}^{\omega} \beta_k (x_{ik} - z_{lk})^2.$$

Thus

$$\frac{d\rho_{ij}}{dz_j} = 2\{[...\beta_k(x_{ik} - z_{jk})...] + \frac{d\mu_j}{dz_j}(z_j)\}[\rho_{ij} - \rho_{ij}^2]. \tag{9}$$

is a vector in $\mathbb{R}^{\omega}$.

The first order condition for $\mathbf{z}^*$ to be a LNE is given by

$$\frac{dV_j(\mathbf{z})}{dz_j} = \frac{1}{n} \sum_{i \in N} \frac{d\rho_{ij}}{dz_j} = 0. \tag{10}$$

So

$$\frac{dV_j(\mathbf{z})}{dz_j} = \frac{1}{n} \sum_{i \in N} 2\{[...\beta_k(x_{ik} - z_{jk})...] + \frac{d\mu_j}{dz_j}(z_j)\}[\rho_{ij} - \rho_{ij}^2] = 0 \tag{11}$$

or

$$\frac{1}{n} \sum_{i \in N} 2\{\beta_k[(x_i)] + \frac{d\mu_j}{dz_j}(z_j)\}[\rho_{ij} - \rho_{ij}^2] = \sum_{i \in N} [\rho_{ij} - \rho_{ij}^2]\beta_k z_j \tag{12}$$

$$\frac{1}{n} \sum_{i=1} \{\frac{1}{2\beta_k} \frac{d\mu_j}{dz_j}(z_j)\}[\rho_{ij} - \rho_{ij}^2]x_i = z_j \sum_{l=1}^{n} [\rho_{lj} - \rho_{lj}^2] \tag{13}$$

so

$$z_{jk}^* = \frac{1}{2\beta_k}[..\frac{d\mu_{jk}}{dz_j}(z_j)...] + \sum_{i=1}^{n} \varpi_{ij} x_{ik}. \tag{14}$$

where

$$[\varpi_{ij}] = \left[\frac{\rho_{ij} - \rho_{ij}^2}{\Sigma_{l=1}^{n}(\rho_{lj} - \rho_{lj}^2)} \right] \tag{15}$$

and. $\frac{d\mu_{jk}}{dz_j}(z_j)$ is the $k-$ dimensional component of the gradient $\frac{d\mu_j}{dz_j}(z_j)$. □

With those equations at hand, it can be tested whether we would expect convergence of party positions towards the mean under the assumption that activists do not influence parties' policies. If the conditions of the mean voter theorem are fulfilled, and we nevertheless observe divergent party positions, we would expect activists to exert a pull on parties' positions. In that case, the balance equation can be utilized to estimate the activists' position given that the empirical configuration is in equilibrium. This will be done in the remainder of the paper. The next section gives an overview of the empirical case at hand, which is the German federal election in 2009.

3 The German federal election in 2009

The analyses are based on data from the pre-election cross-section survey of the German Longitudinal Election Study 2009[2]. In order to construct a policy space for the 2009 electoral campaign in which voters as well as parties can be placed on a common scale, perception as well as self-assessment questions are used from the survey. Such item batteries are available for three distinct but still not too specific issues. More precisely, voters were asked to place all of the five parties according to their standpoint concerning an issue, and afterwards they were asked to report their own standpoint regarding this issue. The three issues concern a trade-off between low taxes and more social benefits, and attitudes towards immigration[3] and nuclear energy[4].

Since respondents may use different ways to handle and interpret the 11-point scale, using the reported perceptions to determine valid party positions might be problematic. Even more so, one could run into problems when using the reported self-placements to calculate comparable distances to party positions, considering that there may also be projection effects when placing the parties. Therefore, we apply a rescaling procedure developed by [Aldrich & McKelvey, 1977] to transform the original perception and self-placement data into a common policy space. The method rests on the assumption that the respondent does not report true values, but "an arbitrary linear transformation of his perception of the space" [Aldrich & McKelvey, 1977, 113]. Thus, the position z_j of each party is reported as $\hat{w}_{ij}$, where

$$\hat{w}_{ij} = c_i + v_i z_i.$$

c_i is the anchoring point each voter uses for his evaluation of positions on the scale and v_i is his personal transformation coefficient. Via a factor analytical transformation of the data, the true party positions z_j are extracted. The resulting c_i and v_i values are subsequently used to estimate the true ideal point y_i of the respondent by inserting the reported ideal point in the above equation. Thus, it is

$$\hat{y}_i = c_i + v_i x_i.$$

This allows to place the respondents as well as the parties within one perception space with a common metric[5]. Party positions are defined as the mean value of the respondents' transformed perception values of a party's policy position on each issue dimension. An overview of party positions and voter ideal points is given in Figure 1.

Concerning the tax issue, that constitutes the x-axes in both graphs, all parties are located in the expected order, with the left parties Linke, Greens

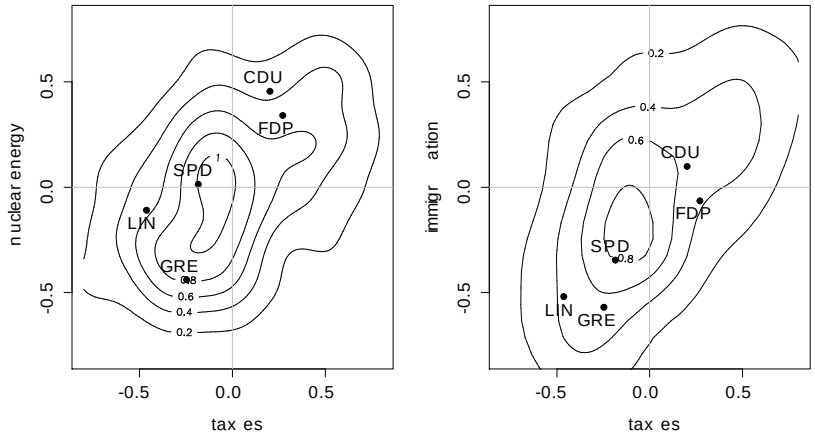
[2] The data is available under the study number ZA 5300 at http://www.gesis.org/wahlen/gles/.

[3] The scale ranges from hampering to facilitating immigration.

[4] The scale ranges from immediate shut-down of all nuclear energy plants to further extension of nuclear energy in Germany.

[5] Responedents with negative transformation coefficients are excluded from the analysis, to ensure that there are only individuals that share a basic understanding of the issue in order to arrive at a meaningful policy space for all respondents.

Figure 1: Density of voter distribution and party positions in Germany



and SPD to the left of the electoral mean and the conservative CDU and liberal FDP to the right. Furthermore, the Greens are clearly perceived to be anti nuclear energy, whereas the Conservatives and Liberals are correctly perceived to favor a further extension of nuclear energy[6]. Regarding the standpoints towards immigration, the order of the parties is again meaningful, with the leftist party Linke and the Greens having the most extreme positions, favoring simplification of immigration, the social democratic SPD taking a moderate position and the CDU and FDP holding the most rightist positions. However, it is remarkable that the most rightist position of the CDU is still only slightly north to the electoral mean. This indicates that there is a large part of the electorate favoring a stricter policy regarding immigration than is offered by any of the five parties. Overall, the density of voter ideal points is wider spread concerning immigration than it is with regards to the tax or nuclear energy issue.

Table 1 reports the results of a conditional logit model, in which the vote intention is taken as the dependent variable. Overall, the resulting vote shares based on the survey are 33.3% for the CDU, 27.1% for the SPD, 12.3% for the FDP, 13.9% for the Linke and 13.4% for the Greens, when considering only those respondents that finally enter our analysis. The true vote shares that the parties actually received in the 2009 federal election are 33.8% for the CDU, 23.0% for the SPD, 14.6% for the FDP, 11.9% for the Linke and 10.7% for the Greens. Thus, the proportions are quite truthfully represented in our sample.

The party constants reflect the differences in vote probabilities that cannot be explained by the policy positions of parties and voters, and can thus be regarded as a measure of valence. Note that this does not imply anything about the way this valence has been generated, whether it is due to activists or whether

[6] The CDU only changed its standpoint regarding nuclear power plants after the Fukushima disaster in 2011.

Table 1: Results of conditional logit model of vote choice.

	Coef.	Std. Error	p-value
Party constants			
CDU	1.04	0.10	0.00***
SPD	0.75	0.11	0.00***
Greens	0.26	0.12	0.04**
Linke	0.16	0.12	0.19
FDP	*base*		
Distances regarding			
taxes	-2.35	0.29	0.00***
immigration	-0.98	0.18	0.00***
nuclear energy	-1.90	0.22	0.00***

N=1,154; R^2=0.08; significance levels: * 0.10, ** 0.05, *** 0.01.

it is exogenous defined. The FDP is the lowest valence party, and therefore is chosen as the reference for the estimation of the other parties' valences. The constant of the Linke is positive, but not significant. However, for reasons of simplicity, we refer to the FDP as the lowest valence party throughout the paper[7]. As one would expect, the two major parties CDU and SPD have the highest valence among the electorate.

The distance parameters estimate the influence of the parties' and voters' policy positions on the vote decisions. We estimate distinct spatial parameters for each policy dimension. One could also summarize the distances on the three distinct policy dimensions into one measure and estimate a single spatial coefficient for all dimensions. However, that implies the assumption that the policy space can be treated as a homogeneous space in which all dimensions have equal weight in the calculation of the vote decision. This is a too strong assumption for the empirical case at hand, as can be seen by the separately estimated coefficients that differ largely in size, with the parameter of the immigration policy dimension being the smallest in absolute size. The straightforward interpretation for that is that immigration policy is just not as important to the individual vote calculus as taxes and nuclear energy. However, it may also be the consequence of the skewed distribution of party positions on the immigration dimension as compared to the distribution of voter ideal points. Thus the small coefficient could also reflect the fact that even if respondents would want to base their vote decisions strongly on this issue, the distance to the next party might still be quite large as compared to the distances on the other two dimensions. Overall, however, the spatial parameters work well by adding significant

[7] The results of the Mean Voter Theorem conditions do not change when assuming the Linke instead of the FDP to be the lowest valence party.

explanatory power to the vote model.

Taking the parameters from the conditional logit model, it can now be tested whether the mean voter theorem holds assuming that the activist influence is identically zero. Thus, it is $\lambda_F = 0$, $\lambda_L = 0.16$, $\lambda_G = 0.26$, $\lambda_S = 0.75$ and $\lambda_C = 1.04$. The vector of spatial parameters[8] is given by

$$\boldsymbol{\beta} = (\beta_{tax}, \beta_{imm}, \beta_{n.e.}) = (2.35\ 0.98\ 1.90).$$

The covariance matrix resulting from the data is

$$\nabla_0^* = \begin{array}{c} \\ tax \\ imm \\ n.e. \end{array} \begin{array}{c} \begin{array}{ccc} tax & imm & n.e. \end{array} \\ \begin{pmatrix} 0.20 & 0.09 & 0.05 \\ 0.09 & 0.27 & 0.06 \\ 0.05 & 0.06 & 0.13 \end{pmatrix} \end{array}.$$

The vote shares each party would receive when located at the electoral mean based on the vote model are $\rho_C = 0.337$, $\rho_S = 0.251$, $\rho_G = 0.154$, $\rho_L = 0.140$ and $\rho_F = 0.119$. Taking the lowest valence party FDP, we get the characteristic matrix

$$\begin{aligned} C_F =& 2(1 - 2 \times 0.119) \times \begin{pmatrix} 2.35 & 0 & 0 \\ 0 & 0.98 & 0 \\ 0 & 0 & 1.90 \end{pmatrix} \times \begin{pmatrix} 0.20 & 0.09 & 0.05 \\ 0.09 & 0.27 & 0.06 \\ 0.05 & 0.06 & 0.13 \end{pmatrix} \times \\ & \begin{pmatrix} 2.35 & 0 & 0 \\ 0 & 0.98 & 0 \\ 0 & 0 & 1.90 \end{pmatrix} - \begin{pmatrix} 2.35 & 0 & 0 \\ 0 & 0.98 & 0 \\ 0 & 0 & 1.90 \end{pmatrix} \\ =& \begin{pmatrix} -0.63 & 0.31 & 0.35 \\ 0.31 & -0.59 & 0.17 \\ 0.35 & 0.17 & -1.19 \end{pmatrix} \end{aligned}$$

with $\text{trace}(C_F) = -2.41$. The convergence coefficient is given by

$$c(\lambda, \boldsymbol{\beta}) = \frac{2(1 - 2 \times 0.119) \times 1.85}{\frac{1}{3}(2.35 + 0.98 + 1.90)} = 1.62$$

with the corresponding vector of Eigenvalues $\upsilon = (-0.16\ \ -0.88\ \ -1.37)$. The mean voter valence theorem stated above requires for the joint electoral mean to be an LNE in the absence of activist influence that $\text{trace}(C_F) < 0$ and $c(\lambda, \boldsymbol{\beta}) < \omega$. The present data fulfill both conditions. Since they are only necessary conditions, further proof has to be given. This is done via a computer simulation applying an optimization algorithm for each party subsequently. Given a certain configuration of starting positions, one party after the other can change its position within the policy space to a position where it would get a higher vote share given the present location of all other parties. The respective vote shares

[8] Note that we switch the sign of the spatial parameters of the conditional logit model for the following calculations, since the negative sign is explicitly included in the utility function as defined in Equation (1).

are calculated on basis of the empirically estimated parameters of the conditional logit model as shown in Table 1. When setting the initial positions to the electoral mean, no party moves away from that position. This proves that the joint mean is in fact an equilibrium configuration.

However, as can be seen in Figure 1, the empirical pattern of party positions does not show convergence towards the mean. The major party CDU even takes the most extreme position concerning the nuclear energy and immigration issue. This could be evidence for activists influencing German party competition by generating additional valence for the parties depending on their policy positions. The next chapter therefore looks at the balance equation to shed light on the question where the activists are located and how strongly they influence the distinct parties on each of the three policy dimensions.

4 Estimating activist positions and influence

Assuming that activist influence is not identically zero, the balance equation can be utilized to disentangle activist and electoral pulls in the 2009 German election. This implies that we assume the configuration of empirically perceived party positions to constitute an equilibrium configuration. Based on this assumption we can calculate the weighted electoral mean for each party separately on every policy dimension k using the vector of voter ideal points x_{ik} and multiplying it with the transformed voting probability α_{ij} as described in Definition 4. The resulting coordinates for each party are given by the matrix

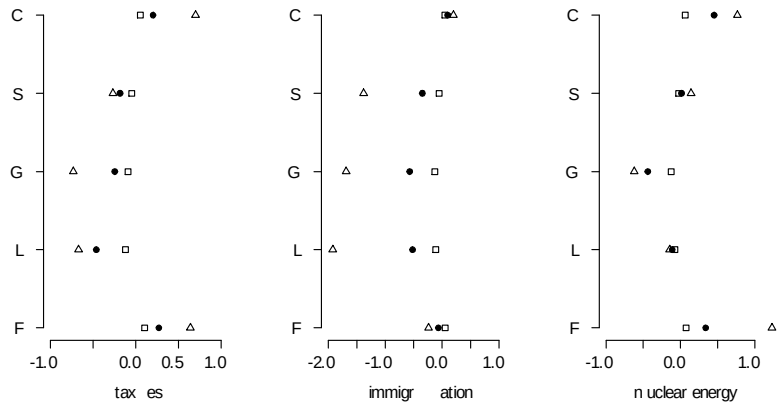
$$\frac{\mathrm{d}\mathcal{E}^*}{\mathrm{d}\mathbf{z}} = \begin{array}{c} \\ C \\ S \\ G \\ L \\ F \end{array} \begin{array}{c} \begin{array}{ccc} tax & imm. & n.e. \end{array} \\ \begin{pmatrix} 0.05 & 0.05 & 0.07 \\ -0.05 & -0.05 & -0.02 \\ -0.09 & -0.13 & -0.12 \\ -0.12 & -0.11 & -0.07 \\ 0.10 & 0.06 & 0.08 \end{pmatrix} \end{array}.$$

The weighted electoral mean lies to the left of the joint electoral mean for the left parties Linke and Greens as well as for the Social Democrats, whereas the Conservatives' and Liberals' weighted electoral means lie to the right on every policy dimension. Inserting this result as well as the empirical perceived positions $\mathbf{z}_j^*$ and the vector of spatial parameters $\boldsymbol{\beta}$ into Equation (13) yields to the following coordinate matrix of activist positions for each party.

$$\frac{\mathrm{d}\mu}{\mathrm{d}\mathbf{z}} = \begin{array}{c} \\ C \\ S \\ G \\ L \\ F \end{array} \begin{array}{c} \begin{array}{ccc} tax & imm. & n.e. \end{array} \\ \begin{pmatrix} 0.70 & 0.20 & 0.77 \\ -0.27 & -1.38 & 0.14 \\ -0.73 & -1.69 & -0.62 \\ -0.67 & -1.92 & -0.14 \\ 0.64 & -0.24 & 1.24 \end{pmatrix} \end{array}.$$

The SPD activists are located more in favor of nuclear energy than its weighted electoral mean. Thus, the activists are still more extreme, but in the opposite

Figure 2: Party positions • between activist △ and electoral □ pull.



direction than the average weighted social democratic electorate. A similar pattern is revealed for the FDP activist position regarding immigration. Again, the activists are more extreme than the average weighted electorate, but located on the opposite side of the joint electoral mean. This, however, does not contradict the intuition when considering the the means are relative measures. Figure 2 gives an overview of the resulting pattern by plotting the perceived party positions in between the electoral and activist pull.

The graph shows that the CDU activists call for a far more rightist position on the tax dimension, but the balanced position lies closely to the more moderate weighted electoral mean. Thus, concerning the economic dimension, the activist effect is rather small for the Conservatives and is easily overruled by the electoral effect. Concerning the immigration issue, there seems to be broad agreement between activists and electorate, thus the Conservative's position is clearly defined. When it comes to nuclear energy, however, the Conservatives again have to balance two quite distinct positions where this time the activist effect predominates by pulling the party position more towards the activists' bliss point. Since energy policy and environmental issues is not a very prominent and identifying topic for the CDU, it can be argued that it is plausible to count more on activist valence with regards to this dimension, since the Conservative's voters may base their decision rather on the other two policy dimensions.

The Social Democrats do not face strong pulls from either side concerning the tax and nuclear energy dimension. Regarding the immigration issue, the activists seem to be located far off on the extreme left side of the scale. This pulls the position to the left of the weighted electoral mean, although the effect is not very strong. We observe similar constellations on this dimension regarding the other two left parties Linke and Greens. This strengthens the assumption that the result could be due to the skewed pattern of party locations in relation

to the distribution of voter ideal points and the resulting low spatial coefficient on this dimension. Therefore, the patterns of activist positions with regards to immigration policy are to be handled with caution and we disclaim from drawing more specific conclusions on this dimension.

Regarding the smaller left party the Greens, the pattern follows a different logic than that of the major SPD and CDU. Unlike them, the Greens are far more influenced by activists regarding their very identifying core topic of nuclear energy. Here, the distance to the weighted electoral mean is larger than that to the activist position, indicating a larger benefit from activist valence than from diminishing the policy distance towards a larger part of the electorate. This may reflect the general difference between the major catch all parties and the minor parties, targeting on more extreme voters from the beginning. At the same time, they still try to appeal to the electoral mean on the other dimensions of tax and immigration. This strengthens the argument, by indicating that the Greens count on their core clientele with regards to nuclear energy. Since the voters' ideal points on the nuclear energy dimension are not highly correlated with their ideal points regarding tax or immigration policy, the Greens rather take a position close to the weighted electoral mean on those two dimensions in order to appeal to as many anti-nuclear energy voters as possible.

A similar pattern can be found for the leftist party Linke, who is also located closer to the extreme activist position on the tax dimension, which is a fundamental issue of their historical background and today's identity as a party. Concerning the other two policy dimensions, immigration and nuclear energy, the activist effect is minor and they are located close to the weighted electoral mean.

Concerning the liberal party FDP the pattern is not as clear as for the left parties. From the viewpoint of this analysis they cannot be easily defined as being a niche party as the other two small parties, because their political identity is not that exclusively related to one of the three issue dimensions. The most discussed topic in their 2009 campaign, however, was tax reduction. Based on the pattern that we detected for the other small parties, we would thus expect the FDP to balance the two opposing pulls more in favor of its activists on the tax dimension. However, this is not what we observe in Figure 2. The electoral effect is much stronger, resulting in a very moderate policy position closely to the weighted electoral mean and quite distant from the activists' ideal point. Furthermore, one would generally expect a liberal party to promote a liberal domestic and labor market policy, which would lead to the prediction of a left position regarding immigration, favoring a simplification of immigration to ensure a flexible labor market. Yet, the FDP's activists are located very moderately, only slightly to the left of the joint mean, whereas the weighted electoral mean lies even to the right of the joint mean. The party position lies closely in between. Generally, the FDP is located very moderately on all dimensions and its standpoint is closer to the weighted electoral mean than to the activists ideal point on all issues, making it the most central party in the three-dimensional policy space. Only on the tax dimension they propose a slightly more right policy position than the Conservatives.

It could be the special circumstances of the 2009 election that led the Liberals to pursue those unusually moderate policy positions. The Liberals aimed at replacing the Social Democrats in the current grand coalition. This would be their only chance of participating in the government, and at the same time it was common knowledge that the voters were quite happy with the current government. Since a continuation of the grand coalition was a credible threat, it could have been a risky strategy for the Liberals to take positions clearly to the right of the Conservatives. It seems plausible that they did not want to end up in a situation like that of the 2005 election, where the vote shares of CDU and FDP did not suffice to form a coalition together. Thus, this time the Liberals tried to appeal to the moderate voters to ensure their place in government. This implies not to let the extreme activists pull the position too far to the extremes.

In the end, one could argue, the strategy payed off since the FDP got over 10% of the votes and could replace the SPD as coalition partner of the CDU. At the same time, however, a discussion about the liberal party forgetting its ideological foundation and liberal principles started. In the following election of 2013 the vote share of the FDP did not even suffice to enter parliament. Referring to the above detected pattern of extreme positions on the core dimensions of small parties, one could is tempted to interpret this downfall as the prize for a small party abandoning its defining and distinctive positioning. However, this explanation is too short-sighted by disregarding the complex influence of strategic voting in German coalition systems. Yet, a discussion of the effects of strategic voting and vote splitting goes far beyond the scope of this article.

5 Conclusion

This paper applied Schofield's valence model and balance solution to data of the 2009 federal election of Germany in order to detect activist influences in the German party system from a formal modeling viewpoint. We constructed a three-dimensional policy space and used different spatial coefficients for the distinct dimensions with the goal of achieving precise predictions on rather concrete policy dimensions. It turns out that the joint electoral mean constitutes a local Nash equilibrium for all parties if we assume that the activist influence on parties' valences is identically zero. However, the empirical pattern of perceived party positions tells a different story, with all five parties taking clearly distinct and diverging positions within the three-dimensional policy space.

Therefore, we reject the assumption of zero activist valence and calculate the balance condition resting on the assumption that the empirical pattern is an equilibrium configuration. This yields to the revelation of activist positions on each dimension for all parties. We see that activists always take rather extreme positions on all dimensions, although we refrain from drawing too specific conclusions from the immigration dimension due to peculiar party behavior. Generally, we observe two different patterns of activist and party locations for major and smaller parties. Major parties locate very close to the weighted electoral mean on dimensions on which they put much emphasis, e.g. taxes

vs. social benefits. However, on dimensions that do not play a major role in their party identity, activists seem to be more successful in pulling the party towards their ideal point, as observed with the CDU regarding the nuclear energy dimension.

Small parties, on the other side, pursue the opposite logic. They are heavily influenced by activists' extreme positions on their core topics, such as nuclear energy for the Greens or social benefits vs. taxes for the Linke. On dimensions that are less important to their ideology, however, the electoral effect is stronger, placing the party more towards the electoral mean. Thus, the small parties appeal to a larger electorate on issues that they do not put as much emphasis on as voters may do.

The liberal party FDP constitutes a special case in the analysis, since it does not clearly follow that pattern. This may be due to several reasons, e.g. its experience from the previous election which might have led it to pursue a different strategy by trying to appeal to more moderate voters than before. It seems that it was quite successful with that strategy, considering the large vote share it got. However, there are also strategic considerations of those voters who wanted to end the grand coalition, who would trade their CDU vote to the FDP, increasing the odds for their favored coalition. Thus, we do not want to jump to a conclusion on the basis of those results alone, especially not against the background of the disastrous defeat of the FDP in the most recent election of 2013.

The aim of this paper was rather to analyze activist influence on German parties, and one conclusion we can generally draw from this analysis is that activists do influence party positions. Furthermore we can conclude that activists may only achieve to influence major parties' positions on less important issues, whereas small niche parties are more likely influenced by activists on their core issue dimensions. Thus, although activist influence may not be that obviously exercised and measurable as in the American political system, it still finds a more subtle way to influence German parties by manipulating their valences. The identification of those activist groups as well as the concrete mechanism by which they influence parties' valences remains an open question. This analysis can merely constitute a starting point for more research on activist influence within the German party system.

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