Abstract

Departing from the spatial model of voting, we show a straightforward way to isolate and to estimate the relative importance or salience of various issue dimension in voters’ choice. We demonstrate that when commonly researchers write about the weight of various issues in vote judgement, they conflate two factors, the true salience of the issues and the alignment of the parties across the issues. We also provide an estimate that measures how divisive is an issue over other for the electorate. From a theoretical perspective, we show that, in general, issue-emphasis has an ambiguous effect over the election results. We build on the real-world example of regional elections in the Basque province of Spain to demonstrate the mechanics and value of the approach developed.

Keywords: Salience; Priming; Issue-voting; Divisiveness; Positional Issues; Basque Elections
1 Introduction

The spatial model of voting has spawned an expansive empirical as well as theoretical literature, and with good reason. The spatial model provides empirical researchers a framework within which to model voter choice and to estimate the responsiveness of voters to policy choices and of representatives to their electorates. A particularly important application of this framework is measuring the relative importance or salience of various dimensions of public policy, such as economic, moral, or foreign policy, in voter choice. Commonly researchers conduct multiple regression analyses in which party or vote choice is a function of several issues or policy variables, and the coefficients on these variables are taken to measure the relative salience of the different policy dimensions in the voters’ minds (e.g., Budge and Farlie 1977; Iyengar and Kinder 1987; Ansolabehere, Rodden, and Snyder 2006; Gelman 2008). This paper demonstrates that such analyses in fact conflate two factors – the true salience of the issue and the distance among the parties across the various dimensions –. We build on the real-world example of regional elections in the Basque province of Spain to demonstrate the mechanics and value of the approach developed. The central insight is that correct interpretation of spatial voting depends not only on the salience of issues in voters’ minds but on the choices they are offered by parties and candidates.

The spatial model of voting was initiated by Downs (1957) and followed by Hinich and Ordeshook (1970), Riker and Ordeshook (1973) among many others. In a multi-dimensional setting, voters are characterized by holding an ideal policy in each of the issue-dimension. The different weights or saliences assigned to each of the issues is a key aspect, together with the location of the voter and the perceived location of the political parties to determine individual vote choice. The proximity between the ideal policy of the voter and the perceived position of the parties in each issue is weighted by its correspondent salience. In the spatial model of voting, voters are assumed to vote for the party that is closer to their ideal point, where "closeness" is measured by the described weighted proximity.
The pure spatial model of voting includes, as a requirement, that the salience or weight that each citizen assigns to an issue be equal across voters. As pointed out by Riker and Ordeshook (1973), this model does not allow some voters to care, while others do not care, about one issue. As indicated by these authors, salience can be understood as an average level of concern for each issue. Other authors assume that voters are heterogeneous in terms of the number and type of issues that they consider that are more salient (RePass, 1991), or that voters differ in the level of salience of each issue (Bélanger and Meguid, 2008).

In our analysis, we interpret salience as the average concern of voters over each issue dimension which captures how society cares, on average, about one issue against another. Our departing point is the spatial model of voting in which vote-choices are deduced from the utility comparisons across different political parties. We use these utility comparisons to define the probability functions of voting for one versus another political party. We then demonstrate that these probability functions can be estimated by a multinomial logit or probit model. Our main contribution is that the logit or probit coefficients allow us to define a straightforward way to isolate and estimate the relative importance or salience of various issue dimensions in voters’ choice. We also show that the logit or probit coefficients allow us to decompose the dispersion in the preferences of voters over parties along the issue dimensions when issues are independent. In doing so, we provide a measure of how divisive is an issue over another for the electorate.

We complete our methodological contribution with a theoretical analysis about the effect of increasing issue salience over the election results. This theoretical contribution questions the extended idea among political scientists by which campaigning or priming certain political issues over others has a direct effect over the vote-share of the parties. We show that only when voters are distributed according to a symmetric unimodal density function with independent issue-dimensions, we can deduce unambiguously that increased salience has a direct effect over the vote-share of a party.\footnote{Feld et al. (2014) illustrate potential non-monotonicities in priming effects in terms of the Fourier series decomposition of the distribution of voter preferences. In a similar vein, Amorós and Puy (2010) show...}
Finally, we apply our methodological contribution to the case of Basque Regional Elections during the period 1998-2012. The regional elections to the Basque region in Spain is a case of multi-party system in a multidimensional setting. As most European elections, the electorate is divided between two issue dimensions. These two issues are the traditional Left-Right and the Nationalist dimension where the later captures the degree of independence of the region from Spain. We pool the pre-electoral and post-electoral surveys in which survey respondents indicate in a ten-point scale, the Left-Right and the Nationalist orientation of themselves and that of the political parties.\(^2\)

We estimate issue-salience, for the two prominent issues in the region – Left-Right ideology and Nationalism –.\(^3\) Previous analysis of the topic by Fernández-Albertos (2002) and De La Calle (2005) indicate that the Left-Right issue, in contrast to the Nationalist issue, has more impact to predict vote choice.\(^4\) We find that even though the Left-Right issue is two times more salient than the Nationalist issue in the preferences of voters, Nationalism generates around three times more division than the Left-Right ideology among the electorate.

In the literature, we find that considerable attention has been put in the relevance of political issues as crucial factors to determine the electoral outcome (Borre, 2001). From an empirical viewpoint, the pioneering contributions by Riker (1993) and Petrocik (1996) analyze how parties emphasize different political issues in their campaigns. The underlying idea is that parties, during the election campaign, can benefit in terms of votes from emphasizing some issues more than others. Subsequent empirical analysis have tested whether competing parties emphasize the same or different issues in their

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\(^2\)These surveys are run by the Centro de Investigaciones Sociológicas (CIS), an independent entity of the Ministry of the Presidency of Spain.

\(^3\)As suggested by Poole and Rosenthal (1991) the legislators’ positions on a wide variety of public policies are interrelated (a left-wing party, for example, is likely to support increasing the minimum wage, mandatory affirmative-action programs, and funding for health-care programs). According to these authors, the parties’ policy positions can be captured with just two policy dimension.

\(^4\)Balcells i Ventura (2007) shows a similar pattern in Catalan Elections than Fernández-Albertos (2002) and De la Calle, (2005). These authors, however, just account for the estimated coefficients of each issue dimension in the regression.
political campaign. For example, Sigelman and Buell (2004) studied the percentage of time that a candidate is engaged in discussion of certain issues. In this literature, however, issue-emphasis is deduced from campaign strategies, that is, this is either measured by the time that politicians devote to an issue or by the number of times in which an issue is mentioned in the media. Our approach is a different one given that we do not measure issue-emphasis by political parties, but we instead propose an estimate of issue-salience deduced from voters’ preferences.

From a theoretical viewpoint, some scholars have treated issue-salience as an endogenous variable that can be strategically influenced by political parties. This phenomenon known as priming, consists on making some issues more salient through the advertising campaigns. Amorós and Puy (2013) and Blanchenay (2013) provide microfoundations that explain why priming affects voters’ preferences and, as a consequence, this affects voting decisions (see also Colomer and Llavador, 2011; Demange and Van Der Straeten, 2009). Other theoretical contributions not only incorporate parties’ decision to influence issue-salience but also parties’ decisions to improve the perceived competence in specific issues (Aragonès et al. 2012; Denter 2013). An alternative approach is provided by Egorov (2012) who suggests that issue-emphasis serves to reveal information about the competence of the party, but it does not modify the preferences of voters. The referred analysis provide new and insightful empirically testable predictions. For these predictions to be testable, however, a procedure to estimate issue-salience is needed in which the estimated salience be not conflated with voters’ preferences or parties’ political position. Our contribution fills this gap.

Issue salience is not only a relevant topic to judge political parties but also it has an impact in court decisions, with the justice working harder to produce decisions in

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6 These authors do not account for the spatial model of voting but instead they consider that voters opt for the party with higher weighted average of quality in the relevant issues. Issue salience is in their models, the weight assigned to each issue dimension and it measures, therefore, voters’ value per unit of quality in each issue. If "closeness" between the party position and the individual ideal policy is reinterpreted as quality, then the salience parameter can equally be interpreted in the same way than in the spatial model of voting.
key salient issues (Kluger 1976; Epstein and Segal, 2000). The later authors offer an alternative approach to measure issue salience for elite actors which is based on the coverage the media affords to a given issue. Their proposal is of particular interest to measure Court decisions and they discuss the drawbacks of other measures of salience used by scholars in the study of the U.S. Supreme Court. Their approach, however, measures media emphasis which may not coincide with issue-salience in the preferences of actors.

The rest of the paper is organized as follows. Section 2 introduces the spatial model of voting and the statistical model of vote choice. We provide an estimate of salience, and another that measures how divisive is an issue for the electorate. From a theoretical viewpoint, Section 3 analyzes the impact of issue salience on the election results as a function of parties’ positions and the distribution of voters. Section 4 applies the proposed estimates of salience and divisiveness of the issues to the case of the Basque Regional Elections. Section 5 presents the conclusions.

2 Model

We introduce a multidimensional pure spatial model of voting with Positional and Valence issues. The Positional issues are those that can be conceptualized in spatial terms. Examples of such issues are the Left-Right ideology – that can be scaled from left to right – and the Nationalism – that can be scaled from complete regional autonomy to complete dependence on a central government –. The Valence issues are those in which all voters are in agreement, such as economic prosperity and growth, and for which they hold elected officials accountable (see Stokes, 1992; Ansolabehere and Snyder, 2000).

Voting decisions imply comparisons between the positions of the parties on each of the issue dimensions. The salience of each Positional issue measures the intensity of the preferences of voters over one issue in comparison to others.

We first represent the optimal decision of voters when they have to choose between
two political parties. As we show, optimal decisions depend on four factors: the ideal policy of each voter, the perception of the voter about the position of the parties, the valence characteristic and the salience of the issues. In the second part of this section, we show that it is possible to isolate and to estimate issue-salience. Finally, we propose a measure to evaluate how divisive is an issue for the electorate.

2.1 The spatial model of voting

Consider two Positional issues — the Ideology (issue $X$) that is measured by the left-right scale and the Nationalist issue (issue $Y$) — and a valence issue.\footnote{\textsuperscript{7}It is easy to extend the model to more Positional issues by adding additional terms.}

There are $N > 1$ political parties. Each party $j$ has a platform $(x_j, y_j)$, that represents its position on the Ideology and the Nationalist issue. Each party is also characterized by a valence parameter $w_j \in \mathbb{R}$.

Each voter $i$ has an ideal policy represented by $(x_i, y_i)$ which indicates her most preferred policy on each Positional issue. The preferences of voters over political parties are represented by the valence plus the quadratic distance between the position of the party and the ideal policy on each issue, where each of these distances is weighted by its corresponding salience. That is,

$$U_i(j) = w_j - \alpha |x_j - x_i|^2 - \beta |y_j - y_i|^2,$$

where $\alpha, \beta > 0$ are the salience parameters that measure the weights that voters assign to issue $X$ and $Y$ respectively.

Regarding the salience parameters, which is one of the key aspect of our analysis, we can consider different cases. When $\alpha = \beta$, the salience of issue $X$ and issue $Y$ is the same, and indifference curves of voters are perfect circles centered in the voter’s ideal policy. When $\alpha > \beta$, the salience of issue $X$ is higher than that of issue $Y$ and indifference curves become narrower around the ideal policy of the voter.

Let $A$ and $B$ be two distinct political parties. Voter $i$ is indifferent between the
two parties when \( U_i(A) - U_i(B) = 0 \). Solving for \( y_i \), we deduce the linear function that describes the locations of the ideal policies of those voters that are indifferent between party \( A \) and party \( B \):

\[
y_i = a - bx_i
\]

where

\[
a = w_B - w_A + \frac{\alpha(x_A^2 - x_B^2) + \beta(y_A^2 - y_B^2)}{2(x_A - x_B)}, \quad b = \frac{\alpha(x_A - x_B)}{\beta(y_A - y_B)}.
\]

This expression is the dividing line between those voters that prefer party \( A \) over party \( B \) and those that prefer party \( B \) over party \( A \). We refer to \( \frac{a}{b} \) as the relative salience of issue \( X \) over issue \( Y \).

![Figure 1: Vote-division according to different values of issue-salience](image)

Figure 1: Vote-division according to different values of issue-salience

When the relative salience of issue \( X \) over issue \( Y \) is high, this cutline is steeper (see Figure 1.a). The cutline is flatter in the opposite case in which the relative salience of issue \( X \) over issue \( Y \) is low (see Figure 1.b).
2.2 The statistical model: issue-salience

According to the spatial model of voting, the probability that a voter chooses party $A$ over party $B$ is $Pr(U(A) > U(B))$. From where, the probability of voting for party $A$ over party $B$ can be measured by the following expression:

$$
Pr(V = A | A \text{ or } B) = Pr(\alpha(x_A^2 - x_B^2 - 2(x_A - x_B)x_i) + \beta(y_A^2 - y_B^2 - 2(y_A - y_B)y_i) + w > 0)
$$

(3)

where $w = w_A - w_B$ measures the net valence.

Rearranging the above terms, we derive the following main expression for our empirical analysis. In this expression, the probability of voting for a party versus another depends on three arguments: the position of voters on issue $X$; the position of voters on issue $Y$ and the net valence term $w$:

$$
Pr(V = A | A \text{ or } B) = Pr(k_0 - k_1 x_i - k_2 y_i + w > 0)
$$

where

$$
k_0 = \alpha(x_A^2 - x_B^2) + \beta(y_A^2 - y_B^2); \quad k_1 = 2\alpha(x_A - x_B); \quad k_2 = 2\beta(y_A - y_B).
$$

(4)

Importantly, we observe that for every paired comparison between party $A$ and party $B$, Expression (4) is a linear function of the position of the voters in the issue dimensions, $x_i$ and $y_i$, and of the net valence term $w$. The linearity of the probability function is a crucial feature of this expression since it allows the use of a multinomial logit or probit model to estimate the probability that a voter chooses party $A$ over party $B$ as a function of $x_i$ (position on issue $X$), $y_i$ (Position on issue $Y$) and $w$ (net valence).

We want to highlight that, according to Expression (4), the coefficients $k_1$ and $k_2$ on the issue dimensions measure two times the distance of the parties across the issue multiplied by the relative salience of the issue. Note that this observation is in close contrast to the interpretation that survey researchers and political psychologists have made when conducting regression analysis by which, the coefficients on these variables
are taken to measure the relative salience of the policy dimensions. In doing so, we
deduce, they conflate the salience of the issue and the distance between the parties
across the issue.

According to Expression (4), we can use the relationship between the estimated
coefficients and the salience parameters to derive, in a straightforward way, the esti-
mated salience or relative importance of various dimensions in voters’ mind. Following
the definition of the estimated coefficients \( k_1 \) and \( k_2 \) for the variables \( x_i \) and \( y_i \), the
salience of each issue dimension is defined by

\[
\alpha = \frac{k_1}{2(x_A - x_B)} \quad \text{and} \quad \beta = \frac{k_2}{2(y_A - y_B)}.
\]

That is, the salience of an issue can be estimated as the ratio between the estimated
coefficients of the logit or probit specification, and two times the distance between
the parties on that issue. The interpretation of salience derived in this way is the
average concern of voters over each issue dimension which captures, how voters care,
on average, about one issue relative to another.

The estimation of the salience parameters allow us to isolate salience from the
perceived position of the political parties. For example, if two parties are quite similar
on Nationalism, quite different on Left-Right ideology and the coefficients \( k_1 \) and \( k_2 \)
are approximately the same, then the salience of Nationalism must be higher than the
salience of the Left-Right ideology.

Our probability model suggests that we cannot interpret the coefficients of the
independent variables \( x \) and \( y \) as the salience or weigh of an issue. In fact, when the
underlying vote-choice is in coherence with the spatial model of voting, such coefficients
are a function of the distance between the parties’ position and the salience parameter,
as indicated by Expression (4). Finally, observe that when estimating salience, we
should derive a positive parameter since otherwise, it makes no sense to interpret
negative salience.
2.3 The statistical model: issue-divisiveness

Expression (4) measures the probability that a voter chooses party A over party B. Consider the following derivatives

\[
\frac{\partial(U(A) - U(B))}{\partial x_i} = -k_1, \quad \frac{\partial(U(A) - U(B))}{\partial y_i} = -k_2.
\]

The first derivative indicates the utility variation derived from an additional unit in the self-location over the left-right scale, in other words, it quantifies the changing in the opinion of voters derived from an additional unit in issue X’s self-location. Likewise, the second derivative quantifies the changing in the opinion of voters derived from an additional unit in issue Y’s self-location. When the estimated coefficient \(k_1\) is higher than \(k_2\), this means that an additional unit in the scale of issue X has more impact in changing voter’s opinion than an additional unit in the scale of issue Y. We therefore suggest that this is wrong or incomplete to infer from the comparison of the estimated coefficients, \(k_1\) and \(k_2\), that vote choices depend more on one or the other political issues.

Motivated by this misinterpretation, we propose a measure of the total effect of an issue over the dispersion in the preferences of voters. In this way, we are able to measure which issue generates more division or more agreement among the electorate. We consider, for the sake of simplicity, that the ideal policies over the two positional issues, issue X and issue Y, are independently distributed across the population or, alternatively, their correlation is low. Formally, we consider that the dispersion in the preferences of voters when comparing two parties is measured by the variance of the term \(\Delta u = U(A) - U(B)\), which by Expression (4):

\[
\text{var}(\Delta u) = [k_1]^2 \text{var}(x) + [k_2]^2 \text{var}(y).
\]

According to (6), we can decompose the dispersion in the opinion of voters into two terms, the first term is \([k_1]^2 \text{var}(x)\) and measures the effect of issue X and the second
term \([k_2]^2 \text{var}(y)\) measures the effect of issue \(Y\).\(^8\)

Following the above decomposition, we can compare which Positional issue generates more division among the electorate. Observe that each of the terms depends on three different factors: i) the salience of the issue; ii) the distance between the perceived position of the political parties; iii) the variance of the distribution of voters over each issue dimension. Thus, when we say that an issue generates more division among the electorate, this is because each of the mentioned three factors contribute in a way or another. Note that when an issue has low salience, or when parties’ positions in the issue are very close to each other, or when there is a low dispersion of voters’ ideal policies, the issue does not generate division among the electorate.

In the last section, we analyze for the case of the Basque regional elections, which issue is more divisive. In our analysis we consider that when \([k_1]^2 \text{var}(x) > [k_2]^2 \text{var}(y)\), issue \(X\) is more divisive and, consequently, when \([k_1]^2 \text{var}(x) < [k_2]^2 \text{var}(y)\), issue \(Y\) is more divisive.

3 The effect of issue salience

In this section we isolate and analyze the effect of issue-salience on voting decisions for different locations of the political parties and distribution of voters. We study whether the increased salience of an issue generates increasing vote-share to the party that is better positioned in that issue. We analyze the case in which no party has a valence advantage.

Consider that there are two political parties, party \(A\) and party \(B\). According to Expression (2), the relative issue salience \(\frac{\alpha}{\beta}\) affects the slope of the cutline between the area of voters that prefer party \(A\) and the area of voters that prefer party \(B\). In

\(^8\)In the case in which the variables \(x\) and \(y\) are not independently distributed, the variance is

\[
\text{var}(\Delta u) = [2\alpha(x_A - x_B)]^2 \text{var}(x) + [2\beta(y_A - y_B)]^2 \text{var}(y) + 2\text{cov}(x, y)
\]

so that \(\text{var}(\Delta u)\) is decomposed into three terms where the last one is two times the covariance of the variables \(x\) and \(y\).
particular, the higher $\alpha$ or the lower $\beta$, the steeper is this slope (see Figure 1.a). On the contrary, the lower $\alpha$ or the higher $\beta$, the flatter is this slope (see Figure 1.b).

We normalize the policy space to the unit square $[0,1]^2$ so that $(x, y) = (1/2, 1/2)$ is the midpoint of this space. When $|x_A - 1/2| < |x_B - 1/2|$, party $A$ is closer to the midpoint than party $B$ in issue $X$, and when $|y_A - 1/2| > |y_B - 1/2|$, it is party $B$ that is closer to the midpoint than party $A$ in issue $Y$ (this is the case shown in figures 2.a and 2.b).

![Diagram](image_url)

**Figure 2:** Areas from where the party obtains votes

In Figure 2.a, when the cutline becomes steeper, (i.e., issue $X$ is more salient), there is a fraction of voters with policy position close to the midpoint in issue $X$ for whom party $A$ becomes more preferred than party $B$. At the same time, there is another fraction of voters whose policy position in issue $X$ is closer to that of party $B$ for whom party $B$ is now more preferred than party $A$. If the distribution of voters is
such that there are more voters with ideal policy around the midpoint in issue X, then party A can increase its vote-share when issue X becomes more salient. Likewise, when the cutline becomes flatter (i.e., issue Y is more salient), party B wins the fraction of voters with policy position around the midpoint in issue Y and loses the fraction of voters whose policy position on issue Y is closer to that of party A (see Figure 2.b). In this case, it is party B that can increase its vote-share when issue Y becomes more salient. For this to be the case, however, there must be a high density of voters with ideal policy around the midpoint or below the midpoint in issue Y.

We refer to those situations in which each party is closer to the midpoint in a different issue dimension as one in which parties’ positions show issue-competition. The opposite of these situations are those in which one of the parties is closer to the midpoint in both positional issues. In such cases, we say that parties’ positions do not show issue-competition.

Amorós and Puy (2013) show that the size of the area from where each party obtains votes is increasing in the salience of the issue in which the party is closer to the midpoint. In other words, when there is issue-competition, the relative issue-salience has a direct effect (increasing or decreasing) on the size of the areas from where the parties obtain votes.

Suppose now that parties’ positions do not show issue-competition. Figures 2.c and 2.d illustrate the case in which party A is located in the midpoint. Departing from the vertical cutline in Figure 2.c, when issue Y becomes more salient, the cutline rotates to left. We observe, by comparing the sizes of the areas that party A wins and that party A loses, that when there is a high density of voters around or above the midpoint in issue Y, party A benefits from this higher salience of issue Y. However, departing

\[\text{See Lemma 2 of Amorós and Puy (2013) for a proof of a similar statement which reads as follow: "If each party has an absolute advantage on a different issue, then the percentage of votes for the party that has an absolute advantage on issue X is a strictly increasing function of the relative salience of issue X over issue Y". The term absolute advantage of a party on a positional issue refers to the case in which a party is closer in a positional issue to the mean policy (i.e., 1/2) than its opponent. Besides, their model consider the case in which voters’ ideal policies are uniformly distributed over the unit square, so that the size of the area from where the party obtains votes measures the vote-share.}\]
from the horizontal cutline, if issue \( Y \) becomes less salient, the cutline rotates to the right (see Figure 2.d). In this case, if there is a high density of voters around or above the midpoint in issue \( X \), party \( A \) benefits from this reduction in the issue-salience of \( Y \). Figures 2.c and 2.d suggest that when there is no issue competition, the effect of issue-salience is ambiguous and we cannot derive a monotonic relation between the salience of an issue and the vote-share of the parties.

As indicated by Amorós and Puy (2013) if party \( A \) is closer than party \( B \) to the midpoint in both positional issues \( X \) and \( Y \), then the area from where party \( A \) obtains votes is increasing up to a value of the relative salience and decreasing afterwards.\(^{10}\) This result also implies that the other party, that is party \( B \), benefits when the salience takes the most extreme values. However, depending on the distribution of voters, this party may benefit from either higher salience of issue \( X \) or higher salience of issue \( Y \).

We can generalize the above mentioned results to the case in which the distribution of voters is symmetric unimodal and such that \( x \) and \( y \) are independent variables.\(^{11}\) Some examples are the bivariate Gaussian distribution or the \( t \)-distribution among others in which the contour sets are axis-aligned ellipses (see Figure 3.a).\(^{12}\)

As we show in Figure 3.a, suppose that party \( A \) is closer to the midpoint in issue \( X \) and that party \( B \) is closer to the midpoint in issue \( Y \) which implies that the position of the parties show issue-competition. Observe that by symmetry and unimodality, the density of voters increases around the midpoint and, as a consequence, the higher the salience of issue \( X \) (i.e., the steeper the cutline), the higher the vote-share of party \( A \). That is, by unimodality and independence of \( x \) and \( y \), the additional area of voters that prefer party \( A \) over party \( B \) when issue \( X \) becomes more salient, has more density than the area of voters for whom party \( B \) becomes more preferred than party \( A \). On

\(^{10}\)See Lemma 3 of Amorós and Puy (2013) for a proof of a similar statement which reads as follow: "If a party has an absolute advantage on both issues, then the percentage of votes for that party is a single-peaked function of the relative salience of issue \( X \) over issue \( Y \)."

\(^{11}\)We refer to unimodal distribution as those that take a maximum density and out of it, the density always decreases with the distance to the maximum (i.e., there is no other local maximum)

\(^{12}\)The contour set refers to the set of policies \((x, y)\) in which the density of the distribution is constant. The axis-aligned ellipses is a direct consequence of the independence between \( x \) and \( y \).
the contrary, the higher the salience of issue Y (i.e., the flatter the cutline), the higher the vote-share of party B. We derive the following result.

**Proposition 1:** Consider that voters are distributed according to a symmetric unimodal density function with independent dimensions. If there is issue-competition, then the salience of each issue increases the vote-share of the party that is closer to the mean in that issue. If there is no issue-competition, there is an ambiguous effect of the relative salience of the issues over the vote-share of the parties.

Thus, the fact that issue-competition implies that there is a monotonic (increasing or decreasing) relation between issue-salience and vote-share is not an exclusive property of the uniform distribution but also of other types of symmetric distributions. Interestingly, there are several tests of multivariate symmetric distributions in the literature that can be used to check whether a distribution of voters belongs to one of the proposed symmetric types (Serfling, 2006; Heathcote et al. 1995; Beran, 1979).

Figure 3.b represents the contour sets of a symmetric distribution in which the variables $x$ and $y$ are correlated. This implies that the contour sets are not axis-aligned. In this figure, party A is closer to the midpoint in issue X and party B is closer to the midpoint in issue Y. Notice that when only issue X is salient, the cutline is vertical and party A captures a fraction of voters from the area of higher density. Taking the vertical cutline as the departing point, if issue X becomes less salient (that is, if the cutline rotates to the right), party A increases its vote-share given that this party captures an additional area with higher density of voters. In particular, due to the correlation between $x$ and $y$, party A becomes more preferred than party B for those voters which policy position on issue Y is closer to that of party A but on issue X, their positions are too apart from that of party A. Thus, the fact that party A is closer to the mean on issue X does not imply that its vote-share is increasing in the salience of issue X.

Figure 3.c represents the contour sets of a symmetric bimodal distribution. Party

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13 This statement is a follow up of Lemma 2 and 3 by Amorós and Puy (2013).
$A$ is closer to the midpoint in issue $X$ and party $B$ is closer to the midpoint in issue $Y$. We show in the figure that party $A$ can benefit, in terms of votes, from intermediate values of the relative salience of issue $X$ in comparison to the case in which only issue $X$ is salient.

The above two examples prove the following statement.

Figure 3: Distribution of voters’ preferences

**Proposition 2:** Consider that voters are distributed according to an asymmetric density function, or a symmetric density function which is not unimodal, or which dimensions are not independent (or both). Then (independently of whether parties’ positions show or do not show issue-competition), the relative salience of the issues has an ambiguous effect over the vote-share of the parties.

We therefore conclude that out of the scope of the very regular distributions of voters, such as the symmetric unimodal density function with independent variables,
we cannot deduce a direct relationship between the position of the political parties and the vote-share expressed as a function of the salience parameter. This implies that in order to predict the impact of issue-salience, we should not only account for the location of the political parties in the policy space, but also for the underlying distribution of voters over the policy space. However, even when we account for these features, we have showed that issue-salience may have an ambiguous effect.

4 Empirical analysis

Basque Parliamentary elections is an excellent clear case of multi-party politics in a multi-dimensional setting. There are four or five parties that divide most of the electorate, and parties are cleaved in two clear positional dimensions, the left-right or socialist-conservative dimension, and the degree of regional autonomy, ranging from complete incorporation into Spain to complete independence of the region.

We provide several estimations of the probability functions of voting for each of the parties in the Basque Regional Elections against voting for the main party in the region, Partido Nacionalista Vasco (PNV). These estimations are interpreted in a companion paper Ansolabehere and Puy (2013). In this section, we use the estimated coefficients to apply our methodological contribution by which we isolate and measure issue-salience, and we also measure which issue generates more division among the electorate.

4.1 Multinomial logit analysis

In this section, we estimate the probability model of the previous section using a multinomial logit.

We use the public opinion surveys from the Centro de Investigaciones Sociológicas (CIS), an entity of the Ministry of the Presidency of Spain. The CIS selects respondents at random and the interviews are in person. We pool the pre- and post-election surveys of five election years, from 1998 to 2012, yielding samples of 2,800. The surveys ask
people whether they voted and how, their political positions, their perception about
the parties’ positions and various sociological characteristics of the respondents.

In our analysis, we focus on five variables, Vote Preference or Choice, Nationalist
Orientation, Left-Right Orientation, Basque Identity or Language, and Assessment of
the Economy. Not every survey contains all the indicators of interest.

Vote Choice or Preference is the outcome of interest. The surveys branch the voting
questions, asking people whether they voted (or planned to vote). Of voters (or likely
voters) the survey asks for which party or coalition of parties the individual voted.
Left-Right Orientation measures the ideological position of the person. “Normally
when talking about politics the expressions left and right are used. On this cared
there are a series of boxes that go from left to right. In which box would you place
yourself? The box 1 is labeled “Izquierda" for left and 10 is labeled “Derecha" for
right. The second dimension of interest is Nationalism. The survey asks "In relation
to the nationalist sentiment, could you tell me please where you would place yourself
on a scale from 1 to 10, in which 1 means the least Basque nationalism and 10 the most
Basque nationalism?" We use these questions to map out the ideological orientation
of individuals. In addition, the surveys ask respondents to place the parties on the
Nationalist and Left-Right scales. Most of the surveys ask whether the individual
speaks Euskera fluently. Respondents also evaluate the state of the economy in the
Basque country (with which we capture the valence issue). Finally, the survey includes
an indicator of the size of the locality of the respondent.

We focus on the top five political parties in the region that divide 95 percent of the
votes and seats. Besides, these are the parties that have shown to be more stable over
the period of analysis (1998-2012). These parties are PNV (with an average support
of 36 percent of the votes), PSE (with an average support of 22 percent of the votes),
PP (with an average support of 17 percent of the votes), EH/Bildu (with an average
support of 18 percent of the votes), and IU (with an average support of 4 percent of
the votes). Throughout the 35-year history of the parliament, the PNV has served as
the governing party for all but 3 years (from 2009-2012). For our period of analysis,
the PNV has governed in minority following the 2012’s election and in coalition with other smaller parties (IU is one of them) following the 1998, 2001 and 2005 elections. During the period 2009-2012, PSE governed in minority (with the approval of PP) due to the broke down of the negotiations of PNV to form a new coalition.

We analyze information on voters’ perception about the position of the parties. Table 1 shows the average party score on the Left-Right and Nationalist dimensions. All the surveys, except for 2001, ask respondents to place the parties in the Left-Right scale from 1 to 10. Likewise, all the surveys contain the question of placing the parties in the 1 to 10 Nationalist scale. For the years 2005 and 2009, the party Herri Batasuna was banned and the surveys corresponding to these election years do not give the orientation of this party in the two scales.\textsuperscript{14}

Regarding their political positions, the PNV and EH/Bildu are strongly nationalist and they are different in their Left-Right orientation, with PNV somewhat Right of Center and EH/Bildu occupying the most leftist position of the parties in the analysis (with a score of 2.1). The parties, PSE, PP and IU, hold a score below 5 in the Nationalist issue, and we classify them as Non-Nationalist parties. Among them, the PP keeps the strongest rightist position (with a score above 8.4), the PSE appears closest to the centre (with a score around 4.6) and IU is a left-wing party (with a score in between 2.6 and 3.2).

We deduce two main observations from Table 1. First, the positions of the political parties over time have been very stable, there is almost no variation from year to year in their positions. Second, the parties differentiate much more cleanly along the Nationalist dimension. Along this dimension the PNV and EH/Bildu take highly nationalistic positions, locating at 8.1 and 8.7, respectively. The PP and PSE stake out similar turf at 2 and 3, respectively. Along the 10 point Left-Right scale, however, the parties are more widely dispersed: IU locate at 2, EH/Bildu at 3, PSE at 5, PNV at 6, and PP at 9.

\textsuperscript{14}This party was banned because some of its members were shown to keep ties with the armed band ETA.
Table 2 presents the estimated coefficients and standard errors derived from the multinomial logit where we include Positional issues, Valence issues, language and population size as independent variables. We take the estimation of the probability of voting for a party or for the PNV. We perform a separate analysis for each year. The results show a clear evidence of the effect of Positional issues and language, and highly unstable or insignificant effect for some of the years of economic assessments and community size.

4.2 Estimating issue-salience

In this section, we apply our methodology to deduce an overall estimate of the salience parameters of the two Positional issues in the Basque Regional Elections, the Left-Right issue and the Nationalist issue. For that, we follow these steps.

First, we compute the average position of the parties over time as the average of the rows in Table 1 and then, we calculate the deviation of a given party from the PNV.

Second, we compute the average value of the logit coefficients, in Table 2, for a given party on a given issue across time.

Third, following Expression (5), we estimate the salience by dividing the average coefficient by negative two times the deviation of the party from the PNV.

Table 3 describes the overall estimate of the salience that we obtain. According to this table, the estimated salience of the Left-Right ideology is .18 in the comparison between PSE and PNV, .22 in the comparison between PP and PNV, .17 in the comparison between IU and PNV and .13 in the comparison between PNV and EH/Bildu. Notice how similar the salience term is from party to party and that the salience term is always positive and therefore, consistent with our theoretical model. Now consider nationalism. The estimated salience is .08 in the comparison between PSE and PNV, .08 in the comparison between PP and PNV, .08 in the comparison between IU and PNV and .21 in the comparison between PNV and EH/Bildu. As with the Left-Right
ideology, the salience coefficients are positive and very stable from party to party with the only exception of EH/Bildu for which, we do only have the estimated coefficient for two of the years due to the lack of data in the election years 2001, 2005 and 2009.

We also calculate the estimate of the salience for every election year. Table 4 describes the estimated salience parameters. For the 2001 election, there is no perceived position of the parties in the Left-Right dimension and we have used for this year an average of the perceived position of the parties in this issue for the 1998 and 2005 election years.

In nearly every year, we observe, the salience of the Left-Right dimension is substantially higher than that of Nationalism, about twice as large. This implies that voters in the Basque region, on average, care more about the Left-Right dimension than they do about the Nationalist dimension, and that has been true for the past two decades. Besides, we observe that these values have been very stable over time. In 2005, Nationalism has been more salient than the Left-Right in the comparison between PSE and PNV. We guess that this may be due to the distortion in voters’ decision induced by the ban placed on EH during the 2005 election.

In coherence with the spatial model of voting, the underlying utility specification is such that political issues are perfect substitutes in voters’ mind. The fact that the salience coefficient of the Left-Right dimension is about twice the salience coefficient of the Nationalist dimension implies that on average, one unit distance in the Left-Right scale is equivalent for voters to two units distance in the Nationalism scale. However, how divisive is an issue for the electorate is not merely measured by the salience, but it also depends on the alignment between the parties and the distribution of voters’ preferences over each issue dimension. We next analyze this question.

4.3 Measuring issue-divisiveness

We estimate how much each issue contributes to explain the dispersion in voters’ opinion when comparing political parties. For that we follow the decomposition derived in
Expression (6). We compare which issue contributes more to the dispersion in voters’ valuation over the political parties.

First, we check the extent to which the preferences of voters across dimensions are independent or they exhibit low correlation. Table 5 shows the coefficients of correlation between the two variables – the Left-Right orientation of the Basque electorate (variable $x$) and the Nationalist orientation of the electorate (variable $y$) –, for each of the pre-electoral and post-electoral CIS surveys when available. We find that the preferences of the respondents exhibit only a slight negative correlation that in no case exceed -.18. The correlation has varied somewhat from year to year, but there is no clear trend of either weakening or strengthening ties between Nationalism and Left-Right ideology in the Basque electorate. The average correlation is -.12, which means that there is a slight negative correlation, but there is not a strong association.

Table 6 and Table 7 show the average, the median and the standard deviation of respondents’ self-placement in each issue dimension according to each of the CIS surveys. Two observations about the self-placement tables are in order. First, the median on each issue dimension has been very stable over time. The median is 4 in the Left-Right dimension and 5 in the Nationalist dimension for the last three electoral years. Second, the standard deviation of the Left-Right scale is smaller than in the Nationalist scale, i.e., there is more dispersion of ideal points in the Nationalist issue than in the Left-Right issue. Besides, since 1998, the standard deviation in the Nationalist issue shows an increasing trend which implies that respondents have become more polarized in terms of their Nationalist positions.

We observe, therefore, that there is more agreement within the Basque electorate on the Left-Right ideology than there is on the Nationalist issue. As we have just shown in Table 1, political parties also differentiate more cleanly along the Nationalist dimension. As a result, we should expect more alignment between parties and voters in the Left-Right issue than in the Nationalist dimension. For example, consider the comparison between PSE and PNV for the 2012 election. The parties’ positions on the Left-Right dimension are closer to each other, and possible, none of them are far from
the voter’s ideal position on that issue. The parties’ position on the Nationalist issue, however, are quite apart from each other and the electorate is bipolar in this issue. Because of the polarized electorate, voters must be closer to one of the parties and far from the other. Thus, even though the salience of the Left-Right dimension is higher, the Nationalist dimension may have a bigger total effect on most of the voters due to the low alignment with one of the parties in the Nationalist dimension.

Table 8 shows the decomposition across issues of the variance of the utility comparisons between pairs of parties. The first and the second columns show the dispersion in the utility comparisons of the respondents that can be explained by the Left-Right and the Nationalist issues respectively. The last two columns gives these values in percentage terms. Notice that third column measures the total variance of the utility comparisons.

The values in the first and the second columns are the product of the square of the estimate coefficients in Table 2, and the variance of the issue deduced from Table 6 and Table 7 respectively (that is, we follow Expression (6).

In all the comparisons between PNV and PSE and between PNV and PP, we observe that Nationalist issue generates more dispersion than the Left-Right dimension. Clearly, this is due to the higher dispersion of respondents over the Nationalist issue in comparison to the dispersion of voters in the Left-Right dimension. This conclusion is in coherence with the widespread opinion about politics in the region by which, Nationalism is the issue that generates more polarization among the Basque political parties and the electorate. We find that Nationalism generates, on average, three times more division among the electorate than the Left-Right issue in the comparison between three of the major parties in the region (which represent, on average, 75 percent of the electorate).

In the comparison between PNV and Bildu (or EH) we find that the Left-Right ideology generates more division than the Nationalist issue. This is due to the strong alignment between these two parties in the Nationalist issue. As a consequence, the dispersion in respondents’ opinion over these two parties is mostly explained by the
Finally, in the comparison between PNV and IU, we find that there is no clear pattern to explain what issue is more divisive. The Left-Right dimension is more relevant in the 1998, 2009 and 2012 elections whereas Nationalism has had a greater effect in the two remaining elections. This comparison, however, is not very relevant given that few respondents selected IU as their vote-choice (in fact, IU has received an average support of 5 percent of the votes during the period of analysis).

The dispersion of the opinion of the respondents over the period of analysis has not been very stable over time in the comparison between PNV and PSE. In terms of percentage, from 1998 to 2001, the Nationalist issue has explained a higher fraction of this dispersion (from 55 percent to 90 percent). During the period 2001 and 2005, the Nationalist issue has had an increasing total effect on voters’ opinions with respect to the Left-Right issue. However, from 2005 up to 2012, this tendency has changed and the Left-Right ideology as recovered its previous impact on voters’ opinion when comparing the only two parties that have governed in the region, PNV and PSE. We notice, therefore, that Nationalism has become less divisive during the last period 2009-2012, a period characterized by adverse economic conditions in the region.

In the comparison between PNV and PP, voters’ opinion while highly disperse, have not modified substantially. We observe that the contribution of each issue dimension to the dispersion in the opinion of voters is very stable and the Nationalist issue explains around the 72 percent.

As a result, even thought the intensity of preferences (or the salience) over the Left-Right ideology is two times the intensity of preferences over the Nationalist issue, the Nationalist issue is more divisive. We find that in the comparisons between three of the major parties in the region (PNV v. PSE and PNV v. PP), the Nationalist issue generates three times more division among the electorate than the Left-Right issue. The main reason for this is that there is much more dispersion between the Basque electorate on the Nationalist issue than there is on the Left-Right ideology and, as a consequence, Nationalism matters more for the electorate when deciding
their vote-choice.

5 Conclusion

In this paper, we have derived the relationship between logit or probit coefficients and the underlying salience parameter in the preference function of voters. This derivation is of general use and it is helpful for understanding how salience magnifies or reduces certain positional issues over others. Previous regression analyses take the coefficients of the voters’ self-location on each issue dimension, as a measure of the relative salience of the issue. We demonstrate that these analysis conflate two factors, the true salience of the issue and the distance among parties across dimensions.

We show that regression coefficients allow us to measure how divisive is an issue for the electorate when issue dimensions are independent or their correlation is low. This derivation is also of general use and it is helpful for understanding how some issues may generate more disagreement than others among the electorate.

From a theoretical perspective, we isolate the effect of issue-salience on voting decisions. We have shown that only for symmetric unimodal distributions of voters with independent dimensions, there is a monotonic relation between salience and the vote-share of a party.\textsuperscript{15} This implies that, in general, the salience of the issues cannot explain the vote-share of a party. As a consequence the strategy of priming over one issue in the election campaigns has, in general, an ambiguous effect over the vote-share of the parties.\textsuperscript{16}

When building on the real-world example of regional elections in the Basque province of Spain, we have showed that voters in the Basque region put much greater weight on one of the issues. In particular, we find that the Left-Right ideology is two times more salient than the Nationalist issue. Does it mean that the Left-Right dimension is the most relevant issue for the Basque electorate? No, our somewhat surprising conclusion

\textsuperscript{15}This is in coherence with previous results by Amorós and Puy, 2010; and Feld et al., 2014.

\textsuperscript{16}In a priming strategy, the political party puts more emphasis in one of the issues over another.
is that Nationalism matters more in Basque regional elections for two reasons. First, the parties differentiate much more cleanly along this dimension. Second, the electorate hold more disparate views on Nationalism than on Left-Right ideology. When measuring the dispersion in the preferences of voters, we find that the Nationalist issue generates about three times more division among the electorate than the Left-Right issue.

The provided example of the Basque regional elections suggests that the interpretation of the coefficients in regression analysis of vote-choice requires revision. As we have showed, the coefficients of the voters’ self-location contain information to deduce the salience of the issues, and to deduce how divisive is an issue for the electorate. These two pieces of information, we consider, are relevant in the debate of which issue is more relevant for the electorate. The estimated salience indicates the average weight that voters assign to an issue over the other whereas issue-divisiveness measures whether the electorate is more or less in agreement in an issue over the other.
References


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Table 2: Explaining Vote for Party, 1998-2012, Multinomial Logit Analysis

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* Language in 1998 is coded from 1 (Spanish exclusively spoken at home) to 5 (Euskera exclusively spoken at home).
Table 3: Estimated Average Issue-Salience

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Table 4: Estimating Issue-Salience, 1998-2012

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<td>0.08</td>
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<td>PP v PNV</td>
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<td>0.08</td>
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<td>IU v PNV</td>
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### Table 5: Correlation Left-Right and Nationalism

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<th>Year (Month) of Survey</th>
<th>Kendall’s tau-b</th>
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### Table 6: Left-Right Orientations of the Basque Electorate

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<th>Year (Month) of Survey</th>
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<td>Average</td>
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Table 7: Nationalist Orientations of the Basque Electorate

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Table 8: Estimated Dispersion of Preferences for Parties, 1998-2012

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<th>Nationalism</th>
<th>Total</th>
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<th>Nationalism%</th>
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