Parties, politicians, and policies
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Chapter 3
Differences in the Calculus of Voting

The central argument of this book is that there is no reason to expect the calculus of voting to be identical between voters and between contexts. This means that not all individuals reach their vote choice in the same way, but rather they weigh evaluations of political objects (parties, politicians and policies) differently when casting their ballot. Given a vote function that includes party leanings, leader evaluations and left-right distances, some voters may, for instance, be more sensitive to the evaluation of politicians in their vote choice, while others may be guided more by policies, etc. Such variation in the calculus of voting may find its origins in (a) differences in the characteristics of individual voters and (b) differences in the characteristics of the choice situation, i.e. the context of elections.

The objective of this chapter is to investigate empirically differences in the calculus of voting. In a conditional logit regression of vote choice on party leanings, leader evaluations, and left-right distances, variation in the calculus of voting means technically that effect parameters of the three explanatory variables are not the same across units of analysis. Such differences in effect parameters can be found to exist either across individual voters (level 1) or across contexts (level 2). Two approaches exist to model such variation in effect parameters: random effect models and interaction models. Both methods follow a similar logic. In fact, random effects (or, random slopes) are sometimes also referred to as random interactions between groups. Such
random effects estimate group-specific parameter estimates. To the extent that variation exists in effect parameters of party leaning, leader evaluation, and left-right distances across groups, a random effects model approximates the data more appropriately than an ordinary regression model. Such variation implies subsequently that the assumption of ordinary regression models of equal effect parameters for all units of analysis (individuals and context) cannot be maintained.

In comparison to random effect models, interaction models do not estimate parameter effects for each group but for different values of an interacting variable, which in the study of this book can be located either at the individual or at the contextual level. Hence, random effect models estimate unconditional variation in effect parameters and interaction models measure conditional variation for different values of a moderating variable. In that respect, random effect specifications are more general than interaction specifications and therefore preferable if one is interested in the amount of variation in effect parameters per se. However, from a substantive point of view, interaction models are more instructive as they provide the analyst with information about why groups of voters or contexts differ in their reasoning of vote choice. The study of this book aims to obtain (where possible) both kinds of information in two steps: first, random slopes models estimate how much variation there is per se in the reasoning of vote choice across individuals and contexts. Second, interactions added to the random slopes specification explain such variation and reduce thereby random effects estimated in the first step. This chapter investigates the first step in which a random effects model

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46 For a formal description of random effect models see e.g. Greene (2000: 567). Note that multilevel models as discussed in Chapter 2 (and formally depicted in Appendix 2) belong to the category of random effect models. Multilevel models are specific in that they refer to group-specific effects on a higher, contextual level.
estimates the variation in the calculus of voting (the base model). The results thereof demonstrate that parameter estimates of party leaning, leader evaluation, and left-right distance vary significantly across contexts. Chapters 4, 5, and 6 focus on the second step and add to the random effects specification individual (Chapter 4) and contextual (Chapter 5) interactions that explain the slope variation of party leanings, leader evaluations, and left-right distances substantively.

This first random slopes model (the base model) thus provides information on differences in the calculus of voting. Subsequent analyses incorporating interactions explain, and therefore diminish, this slope variation. A second section of this chapter deals with the question of how such diminished slope variation between different model specifications lends itself to be used as a measure for the explained (slope) variance in the calculus of voting at the individual and the contextual level of analysis. A third section briefly describes country-specific parameter estimates, which serves as a preliminary exploration in patterns of the individual calculus of voting across contexts. Such context-specific estimates of the vote function will also be used to describe the applicability of the vote function to different contexts, to distinguish between long-term and short-term contextual variation, and to illustrate empirical implications of the 'white-noise' imputation of incomplete data as described in Chapter 2 and Appendix 1.

3.1 The Base Model

At the outset, a limitation of the estimated base model must be noted. I have argued until now that voters within as well as across political systems differ in the extent to which they rely on party, politician, and policy orientations in their vote choice. This idea suggests most naturally the use of a random
effects model with random slopes of party, politician, and policy evaluations both at the individual and the contextual level. The applied multilevel model provides only random parameters at the contextual level. Although the estimation of random effects at both levels appears ideal for the given problem, the lack of appropriate software that calculates such a model in an acceptable amount of time and with sufficient accuracy makes this impossible. Heterogeneity in voting behaviour can therefore only be shown across but not within countries by means of a random effects model. Nonetheless, heterogeneity at the individual level will be investigated in Chapter 4 by means of interaction terms between individual characteristics of voters and the components of the vote function (party, politician, and policy orientations).

The estimation of the simple vote function (multilevel conditional logit model) as described in Chapter 2 and as formally defined in Appendix 2 is performed in three consecutive steps, reported in Table 3.1 below. First, a null model without any independent variable estimates the original variance for all nested models as Log Likelihood of $-52,432$.

Second, independent variables (party leaning, leader evaluation, and left-right distance) are added to the specification of the null model, resulting in Model 2. This model estimates only fixed effects, assuming that mean parameter estimates for party, leader, and policy preferences explain vote choice uniformly for all 33,968 respondents in all contexts. It does not take account of the hierarchical structure of the data across multiple levels. The reduction in Log Likelihood indicates a McFadden Pseudo $R^2$ of the fixed model of 0.47.\footnote{McFadden's (1974) Pseudo $R^2$ as a measure of goodness of fit can be calculated from the reduction in Log Likelihood between the null model and a model including explanatory variables. The estimate follows in the given example as $\rho^2 = 1 - \frac{27,757}{52,432} \approx 0.47$.} In view of the empirical literature on vote choice, a variance reduction of almost 50% may be regarded
as satisfactory. Results of the ordinary conditional logit regression show that party leanings, \((t = 107, t\)-values are not reported in Table 3.1), leader evaluations \((t = 98)\), and left-right distances \((t = -49)\) all significantly impact on vote choice.\(^{49}\)

While it is assumed in an ordinary regression model that independent variables have a homogenous impact on vote choice, the reported random effects model (Model 3 in Table 3.1) allows for slope variation of party leaning, leader evaluation, and left-right distance across contexts. To the extent that this multilevel specification improves model fit, the Log Likelihood will be reduced when moving from a fixed effects model (Model 2) to a random effects model (Model 3). As reported in Table 3.1, model fit indeed improves in terms of Log Likelihood (difference LL \(-1,154\)) if random effects of party leanings, leader evaluations, and left-right distances across countries are added to the fixed effects model. A likelihood ratio test on the difference between both models would of course be highly significant.\(^{50}\)

\(^{48}\) The \(t\)-values are easy to calculate as the ratio between parameter estimate and standard error. In the given example it is \(t = 0.59209 / 0.00554 \approx 107\).

\(^{49}\) Since explanatory variables have been standardised before the analysis, effect parameters can also be interpreted in terms of relative magnitude. Although the \(t\)-value for the effect of party leanings is the highest of the three explanatory variables, the relative impact of leader evaluations turns out to be stronger than the impact of party leanings and left-right distances.

\(^{50}\) -Log Likelihood's as measure of lack of fit between model and data can be used to compare model improvement between two specifications. The fixed effects specification estimates three parameters: party leaning, leader evaluation, and left-right distance. The random effects specification estimates on top of these three parameters six additional ones: the variance parameters for party leaning, leader evaluation, and left-right distance, and the covariance parameters for party leaning/leader evaluation, party leaning/left-right distance, and leader evaluation/left-right distance. The -Log Likelihood difference between both models specifications is \(\chi^2\) distributed with degrees of freedom defined by the number of additional variables. Hence, the difference between both
This indicates that a multilevel model describes voting behaviour more appropriately than an ordinary regression model. However, in terms of Pseudo $R^2$ the gain is less impressive: knowledge about varying slopes across contexts improves the overall explanation of vote choice from a $R^2$ of 0.47 in Model 2 to a $R^2$ of 0.49 in Model 3.

The last part of Table 3.1 reports the parameters of Model 3. It contains, first of all, information on the vote function across all respondents and countries (fixed effects: $\beta$). These fixed effects are the mean parameter estimates of party leanings, leader evaluations, and left-right distances around which country-specific effects vary. These estimates basically confirm the results of the ordinary pooled model (Model 2). Standard errors are, however, somewhat larger than in Model 2. This reflects the fact that the results are not estimated from a single random sample of 33,968 respondents but from 30 (clustered) country samples. Second, the random effects part contains information on variances and covariances of slopes across contexts. Significant variance estimates clearly demonstrate systematic variation in the impact of party leaning, leader evaluation, and left-right distances on vote choice across contexts. This finding indicates the central thesis of this study in a contextual perspective, namely that the calculus of voting is heterogeneous. Differences in the reasoning of vote choice are no longer a premise but an empirical finding.

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specifications with six degrees of freedom (due to six additional variables) of $-1,154$ LL is highly significant.
Table 3.1  Base Models of Voters’ Reasoning: (Multilevel) Conditional Logit Models of Vote Choice in 30 Contexts

<table>
<thead>
<tr>
<th></th>
<th>Party Leaning</th>
<th>Leader Evaluation</th>
<th>Left-Right Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model 1: Null Model</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model Fit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N Individuals</td>
<td>33968</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Log Likelihood</td>
<td>-52,432.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mc Fadden R²</td>
<td>0.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Model 2: Fixed CL Model</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fixed Effect</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>β</td>
<td>0.592** (0.006)</td>
<td>1.133** (0.012)</td>
<td>-0.547** (0.011)</td>
</tr>
<tr>
<td>Model Fit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N Individuals</td>
<td>33968</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Log Likelihood</td>
<td>-27,757.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mc Fadden R²</td>
<td>0.47</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Model 3: Multilevel Model</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fixed Effects</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>β</td>
<td>0.626** (0.007)</td>
<td>1.018** (0.013)</td>
<td>-0.559** (0.019)</td>
</tr>
<tr>
<td>Random Effects</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>σ Party Leaning</td>
<td>0.011** (0.001)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>σ Leader Evaluation</td>
<td>0.001 (0.001)</td>
<td>0.105** (0.007)</td>
<td>-</td>
</tr>
<tr>
<td>σ Left-Right Distance</td>
<td>-0.001 (0.001)</td>
<td>-0.008* (0.004)</td>
<td>0.041** (0.004)</td>
</tr>
<tr>
<td>Model Fit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N Individuals</td>
<td>33,968</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N Contexts</td>
<td>30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Log Likelihood</td>
<td>-26,602.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mc Fadden R²</td>
<td>0.49</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.* **p < 0.01; *p < 0.05; standard errors in parentheses. Data Source: CSES.

The variances of the parameter estimates can be interpreted as follows. The mean parameter estimate of, for example, leader evaluation across all 33,968 individual respondents and 30 elections is $\beta = 1.018$. The standard deviation across countries is estimated as $s = \sqrt{\hat{\sigma}^2} = \sqrt{0.105} = 0.324$. The mean slope ± two times the standard deviation gives the lower and upper bounds of 95%
of all parameter estimates across contexts. The estimate of leader evaluation therefore ranges between 0.370 \((=1.018 - 2 \times 0.324)\) and 1.666 \((=1.018 + 2 \times 0.324)\) for 95% of all contexts. Applying such calculations to all three parameters of the vote function, yields the estimates reported in Table 3.2.

Table 3.2 illustrates that each element of the vote function differs in its effect considerably across contexts. In terms of range, the parameter estimate of leader evaluations is most variable, followed by the left-right distances. The relevance of party leanings—even if significantly heterogeneous—is most similar across countries. It appears that party leanings are used as consideration of vote choice rather uniformly across political systems. Taking the ratio between the upper and the lower bound of parameter estimates as criterion for variability, it is clear that considerations of left-right distance are particularly variable across contexts. In some contexts this effect is almost negligible and in other ones it is highly important for vote choice.

### Table 3.2 Variation in Parameter Estimates
(Model 3, Table 3.1)

<table>
<thead>
<tr>
<th></th>
<th>Party Leaning</th>
<th>Leader Evaluation</th>
<th>Left-Right Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower bound, 95%</td>
<td>0.416</td>
<td>0.370</td>
<td>-0.154</td>
</tr>
<tr>
<td>Mean Estimate</td>
<td>0.626</td>
<td>1.018</td>
<td>-0.559</td>
</tr>
<tr>
<td>Upper bound, 95%</td>
<td>0.836</td>
<td>1.666</td>
<td>-0.964</td>
</tr>
<tr>
<td>Range upper and lower bound</td>
<td>0.420</td>
<td>1.296</td>
<td>0.810</td>
</tr>
<tr>
<td>Ratio upper and lower bound</td>
<td>2.01</td>
<td>4.50</td>
<td>6.26</td>
</tr>
</tbody>
</table>

*Data Source:* CSES.

From the covariances of parameter estimates across contexts one can learn to what extent these variations are interrelated. For instance, in a context in which party leanings are strongly applied, are leader evaluations also highly pertinent, or are they less relevant for vote choice? Slope
variations of party leaning, leader evaluation, and left-right distance are almost unrelated. Only leader evaluations and left-right distances are positively associated ($\sigma = -0.008$),\(^{51}\) which implies that in countries where a strong effect of leader evaluation is observed, left-right distances also have a somewhat higher impact. This covariance estimate can be transformed to a correlation coefficient of $r = -0.12$.\(^{52}\) These correlations are weak, most of them not even significantly different from zero ($p < 0.05$). This indicates that party leanings, leader evaluations, and left-right distances do not compete with each other as considerations for making a choice on the ballot. Such competition would exist if correlations were highly negative.\(^{53}\) These considerations also do not replace each other, as would be the case with highly positive correlations. That would indicate that the entire vote function is more applicable in some countries and much less meaningful in others. This evidently is not the case.

3.2 Explained Variance

Changes in Pseudo $R^2$ or Log Likelihood measure reduction of (unexplained) variance of the dependent variable, here:

\(^{51}\) Note that highly negative values of left-right distances indicate a strong effect. A negative covariance between leader evaluations and left-right distances refers therefore to a positive association.

\(^{52}\) Correlations of parameters are not reported in tables throughout this book since they do not provide additional information from a substantive point of view. They can of course be calculated from the reported covariance matrix as $r = \text{cov}(x,y) / (\sqrt{\text{var}(x)} \sqrt{\text{var}(y)})$. The correlation between the effect of leader evaluation and left-right distance for example can be calculated as $r = -0.008 / (\sqrt{0.105} \times \sqrt{0.041}) = -0.122$. The correlation between party leanings and leader evaluations estimates as $r = 0.040$ and the correlation between party leanings and left-right distances as $r = -0.025$.

\(^{53}\) The correlation would be positive if involving left-right distances. See footnote 51.
vote choice. But the aim of this study is not to improve the explanation of vote choice itself but to investigate differences in the calculus of vote choice, hence, to predict slope variation within the vote function. Therefore, total $R^2$ or absolute Log Likelihoods only incompletely serve as indicators for the quality of models (Snijders & Bosker 1999: 99-109). Instead, a $R^2$ measure that relates to slope variation displays the success or failure of models more accurately.\(^{54}\)

To construct such a measure, one first has to separate slope variation from the total variation of the model. As a solution to this problem, it has been suggested to calculate a total unexplained slope variance for different model specifications. Since this total is comparable between nested models (Goldstein 1995, see especially Chapter 3), it provides a basis for calculating the variance reduction between the base model and subsequent models that include interaction terms.\(^{55}\) For the applied conditional logit model I propose to use the comparison of Log Likelihoods between nested ordinary and multilevel model specifications to separate the slope variation.\(^{56}\) The following paragraphs describe this practice of variance decomposition.

\[^{54}\text{In many applications of the multilevel approach, variance parameters are used to gauge the explanatory power of contextual explanations. Unfortunately, this straightforward heuristic cannot be applied in the study of this book. This has to do with the complex variance structure across several random slopes and across two levels of analysis. Depending on the direction of included interaction terms, estimated variance parameters might even increase. This means that the size of the estimated variance parameter of, for example, leader evaluation is not necessarily smaller in a model that explains most of the random effect. For more information on this point see footnote 85 in Chapter 4.}\]

\[^{55}\text{However, procedures to calculate total variances as suggested in the literature are unfortunately inapplicable for the analysis reported in this book. These existing methods are designed for OLS models and binary logit/probit models (cf. Snijders & Bosker 1999), but not for the Conditional Logit models that are used in this book.}\]

\[^{56}\text{Keep in mind that all reported models of this book are nested. They are based on the identical set of respondents. The only difference between the}\]
Models 2 and 3 reported in Table 3.1 can be seen as the ‘base models’ for the following chapters. They include only orientations towards parties, politicians, and policies as explanatory variables of vote choice. Recall that the ‘gain’ in terms of model fit of a random slope specification (Model 3) compared with an ordinary conditional logit model (Model 2) is LL $-1,154$. In other words, the estimated total slope variation in the model equals this LL $-1,154$. The aim of the next chapters will be to explain this slope variation in the calculus of voting, thus, to reduce this ‘gain’ of a random slope specification compared with an ordinary specification. Adding explicit interactions between evaluations of political objects (parties, politicians, and policies) on the one hand and contextual characteristics on the other hand, to the base model explains variation in voters’ reasoning substantively and will thereby replace some of the estimated slope variation across contexts.\(^{57}\) A random slope specification will improve an ordinary model specification to an increasingly lesser extent. Ultimately, if interactions explain all slope variation completely, a random slope specification of voters’ reasoning (including these interactions) estimates the same effect parameters and the same reduction in Log Likelihood than an ordinary conditional logit specification (including these interactions).

base model reported in Table 3.1 and following models is that more explanatory variables are added. Log likelihoods can therefore be compared across models.

\(^{57}\) This heuristic can be applied for contextual variation only as the model only estimates variation in slopes across contextual units. As outlined before, preferably one would like to estimate a model that conceptualises variation in parameters across voters (level 1) and countries (level 2). This should allow separating slope variation across individuals and slope variation across contexts from the total variance. Due to technical limitations, only random effects for the contextual level are included in the model estimation. Therefore it is only possible to distinguish contextual slope variation. But it is not possible to discriminate how much of the remaining variance is due to slope variation at the individual level.
The separation of slope variation from the total variance at the contextual level leaves two measures of variance reduction based on the comparison of Log Likelihoods across different nested models. As described above, a first $R^2$-measure calculates the amount of unexplained variance of random slopes at the contextual level by comparing two different (but nested) model specifications, one estimated with random slopes, and the other without random slopes. A second $R^2$-measure calculates the relative reduction of the remainder variance by comparing the unexplained variance of a random slope model with the amount of variance in the null model after subtracting contextual slope variation (LL $-1,154$). This second $R^2$-measure therefore involves variance of the dependent variable ‘vote choice’ and the (unobserved) slope variation at the individual level.

Equation 3.1 gives the formal expressions of the first of these two measures. $L(\hat{\theta}_f)$ denotes the Log Likelihood of the estimated specification of a model with only fixed effects (here: party leaning, leader evaluation, left-right distance, plus interactions). $L(\hat{\theta}_r)$ denotes the Log Likelihood of a model with the same variables plus random slopes (here: for party, leader, and policy orientations). The superscript $B$ signifies the model specification of the base model including only main effects (see Models 2 and 3 in Table 3.1).

$$\rho^2_{\text{Slopes, Level 2}} = 1 - \frac{L(\hat{\theta}_f) - L(\hat{\theta}_r)}{L(\hat{\theta}_f^B) - L(\hat{\theta}_r^B)}$$  \hspace{1cm} (3.1)

The second measure of goodness of fit indicates variance reduction at the individual level. Recall that the proportion of explained variance at the individual level refers to the dependent variable of vote choice, including random slope variation at the individual level. The individual slope variation, however, is not distinguishable from the overall
variance since it is technically not feasible to estimate a random slopes model simultaneously at the contextual and the individual level. That is why the $R^2$-measure at the individual level only imperfectly indicates the success of individual level accounts, which is to explain slope variation. Estimates are, however, reported since $R^2$ values are more intuitively readable than improvements in Log Likelihoods. The notation of equation 3.2 is equal to the notation of equation 3.1. The additional superscript $N$ denotes the null model in which no explanatory variables are included. This null-specification estimates the maximum Log Likelihood of all nested models (here: $-52,432$ LL).

$$\rho^2_{\text{Level 1}} = 1 - \frac{L(\hat{\theta}_r)}{L(\hat{\theta}^*) - (L(\hat{\theta}^B_r) - L(\hat{\theta}^B_r))} \quad (3.2)$$

The proposed estimate for a $R^2$ value for the individual level in a multilevel model basically follows McFadden's (1974) suggestion of a Pseudo $R^2$ in an ordinary Conditional Logit model. The only difference is that the maximum Log Likelihood of the second level, $L(\theta^B_r) - L(\hat{\theta}^B_r)$, is subtracted from the maximum Log Likelihood of all nested models. Hence, even if interaction terms between elements of the vote function and individual characteristics explain slope variation considerably at the individual level, the $R^2$-measure at the individual level (equation 3.2) will not detect this reduction as it is hardly sensitive to slope variation.

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58 Interaction effects between variables of the vote function and contextual and individual characteristics reduce slope variation. Yet, slope variation adds little to the explanation of the overall variance as the difference between Models 2 and 3 at the contextual level illustrates. The same is in all likelihood true for random slopes at the individual level. Hence, even if interaction terms between elements of the vote function and individual characteristics explain slope variation considerably at the individual level, the $R^2$-measure at the individual level (equation 3.2) will not detect this reduction as it is hardly sensitive to slope variation.

59 For the study of this book, equation 3.1 equals $\rho^2_{\text{Slope Level 1}} = 1 - \frac{L(\hat{\theta}_r) - L(\hat{\theta})}{-1,154}$ and equation 3.2 equals $\rho^2_{\text{Level 1}} = 1 - \frac{L(\hat{\theta}_r)}{-52,432 - (-1,154)} = 1 - \frac{L(\hat{\theta}_r)}{-51,278}$. 

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Likelihood of both levels, $L(\hat{\theta}^N)$. As described in the previous step, the comparison of a fixed and a random base model can estimate the maximum variance at the second level. This procedure leaves only variance at the individual level in the measure of the goodness of fit.

Table 3.3 illustrates the practice of variance decomposition as applied in this book. Log Likelihood values of five nested models are reported. The first three rows are obtained from Table 3.1. The null model without any explanatory variables estimates an overall Log Likelihood of $-52,432$. The fixed effects model (Model 2, Table 3.1) reduces unexplained Log Likelihood to $-27,757$. Hence, $-53,432 - (-27,757) = -24,675$ LL, or 47% of the variance, has been explained by the introduction of party leanings, leader evaluations, and left-right distances. Taking account of the hierarchical structure reduces the unexplained variance further to $-26,603$. Knowledge of the hierarchical structure therefore adds $-27,757 - (-26,603) = -1,154$ LL. Variance at the second level is not due to the dependent variable of vote choice but to random slopes across political systems. Although this Log Likelihood of $-1,154$ is explained in a technical way by the random part of Model 3, it is not explained in substantive terms. Rather, it defines the total variance of the model at the second (contextual) level and is therefore reported in the column of unexplained variances. From the comparison of explained and unexplained variances at the first level one can calculate the share explained at the individual level. Explained variance at the second level of the third model is by definition zero.
### Table 3.3 Decomposition of Variance across Levels of Analysis and Nested Models

<table>
<thead>
<tr>
<th>Level of Analysis</th>
<th>Explained</th>
<th>Unexplained</th>
<th>Pseudo $R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Model 1: Null Model</td>
<td>0</td>
<td>-</td>
<td>52,432</td>
</tr>
<tr>
<td>Model 2: Fixed Effects Base Model</td>
<td>24,675</td>
<td>-</td>
<td>27,757</td>
</tr>
<tr>
<td>Model 3: Multilevel Base Model</td>
<td>24,675</td>
<td>0</td>
<td>26,603</td>
</tr>
<tr>
<td>Model 4: Fixed Effects Interaction Model</td>
<td>31,611</td>
<td>-</td>
<td>26,944</td>
</tr>
<tr>
<td>Model 5: Multilevel Interaction Model</td>
<td>24,908</td>
<td>580</td>
<td>26,370</td>
</tr>
</tbody>
</table>

*Note. Cell entries in the columns 'Explained' and 'Unexplained' denote Log Likelihoods. Data Source. CSES.*

Suppose the two additional Models 4 and 5, which include interaction terms with individual and contextual characteristics in the specification, one model without and one model with random effects for party leanings, leader evaluations, and left-right distances at the contextual level. The results of Models 4 and 5 are taken from the final model of voters' reasoning, estimated in Chapter 6 of this book. The fixed and the random specification of this interaction model estimate a Log Likelihood of $-26,944$ and $-26,370$ respectively. Hence, knowledge of the context-specific effects adds to the fixed specification only $-26,944 - (-26,370) = -574$ LL. Recall that this gain in the multilevel base model was $-1,154$ LL. The introduction of interaction terms has therefore explained $1 - (-574)/(-1,154) = 50\%$ of slope variation at the contextual level. The explained variance at the individual level remains with a Pseudo $R^2$ of 0.49 almost constant. Note that Log Likelihood values for each model can be added up to the Log Likelihood of the null model of $-52,432$. This procedure of comparing nested models will be applied in the empirical analyses of the following chapters. Of particular importance is the variance reduction on the second level, which is due to contextual differences in the importance of parties, politicians, and policies.
3.3 Country-Specific Results

While variances in parameter estimates tell us that the calculus of voting in fact differs across contexts, a descriptive analysis of these differences tells us where party leanings are particularly pertinent, where voters are strongly affected by considerations about political leadership, and where they are particularly sensitive to parties' policy stands. Country-specific effect parameters of party leaning, leader evaluation, and left-right distance can be derived in two ways. First, an ordinary Conditional Logit model of the vote function (Model 2, Table 3.1) can be estimated for each context separately, yielding estimates of effect parameters for each context. Second, based on the multilevel conditional logit model of the vote function (Model 3, Table 3.1) one can derive posterior mean estimates. These posterior means denote country specific increments/decrements from the mean estimated effect parameters. Whereas separate analyses always generate unbiased estimates of the true parameters, posterior means have the tendency to be biased towards the estimated overall mean effect parameters (cf. Snijders & Bosker 1999). Country-specific parameter estimates of an ordinary conditional logit model (Model 2) are therefore reported in Figures 3.1 to 3.3 below instead of posterior means. More detailed information on these country-specific models can be found in Table A.2.2 of Appendix 2.

Descriptive Findings

Figure 3.1 contains information on the variability of the parameter estimate of party leanings across the thirty parliamentary elections that were analysed. These parameter estimates and their standard errors are also reported in Table A2.2 of Appendix 2. Figures 3.1 to 3.3 contain information

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60 Posterior mean estimates are sometimes also referred to as empirical Bayes predictions (cf. Snijders & Bosker 1999).
on the main effects of party leanings, leader evaluations, and left-right distances in all contexts (Model 3) and specify the region of ± one standard deviation around these main effects. In the Ukraine, Australia, Switzerland, and Sweden party leanings are particularly relevant for vote choice.\(^{61}\) Respective effect parameters are above the narrow band around the main effect plus one standard deviation. On the other hand, parliamentary elections in Spain (in 1996), the Netherlands, Peru, Slovenia, Mexico (in 1997), Canada, and Romania are found to have especially weak party attachment effects (below the one standard deviation band). In all countries, however, party leanings affect vote choice significantly.\(^{62}\)

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\(^{61}\) Voting behaviour in Russia and Poland is also noticeably affected by party leanings. Hence, party leanings seem surprisingly important in transition democracies. This finding questions a narrow interpretation of party leanings as long-term attachments (see Section 2.2 of Chapter 2). A discussion of the merits of the variable ‘party identification’ for the comparative analysis of voting across political systems will be provided in the conclusions of Chapter 7.

\(^{62}\) With the exception of left-right distances in Hong Kong, all reported effect parameters are significant with \(p < 0.05\) (see Table A2.2 of Appendix 2).
Figure 3.1 The Effect of Party Leanings Across 30 Contexts, CSES

Main Effect = 0.626
Standard Deviation +/- 0.105
(Model 3)
Figure 3.2 The Effect of Leader Evaluations Across 30 Contexts, CSES

Main Effect = 1.108
Standard Deviation = +/- 0.324
(Model 3)
Figure 3.3 The Effect of Left-Right Distances Across 30 Contexts, CSES

Main Effect = -0.559
Standard Deviation = +/- 0.202
(Model 3)
When turning to parameter estimates of leader sympathy one finds a larger range of values across countries than for party leanings as documented in Figure 3.2. Parameter estimates are above average in many Eastern European countries. Very strong leadership effects are observed for Hungary, the Czech Republic, and Romania. Particularly weak effects exist in the 2000 election in Mexico, in Japan, and 2000 in Hong Kong. Voters in Asian democracies on the whole seem to base their vote choice less on considerations of leadership than voters elsewhere. Yet, irrespective of how small the effect of leader evaluations for vote choice may be, the variable nonetheless significantly affects individual vote choice in all elections analysed.

Finally, country-wise parameter estimates of left-right distances are reported in Figure 3.3. This effect parameter varies strongly across contexts. Left-right distances are especially important in the Netherlands, in Spain (at least in the 2000 election), in Denmark, the Czech Republic, Iceland, Portugal, and Switzerland (more than one standard deviation higher than the main effect). Voters appear less

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63 The effect of political leadership is also relatively weak in Israel. This maybe considered a surprising finding. However, keep in mind that this study analyses the 1996 Knesset election, in which the prime minister was elected in a direct and popular election external to the parliamentary election. Analyses of Chapter 6 will show that the direct election of the prime minister detracts leadership effects from parliamentary election across countries, which may explain this at first sight surprising finding.

64 There is a substantive gap between parameter estimates of left-right distances in the 1996 and in the 2000 Spanish election. In a subsection of this chapter on ‘Election-Specific Variation’ I discuss such differences in effect parameters within political systems in particular.

65 The strong effect of left-right distances in Switzerland may also be considered surprising. The high fragmentation of governments in Switzerland may provide an account for this finding (see Chapter 6). To the extent that many parties join in coalitions, voters seem to use the left-right scale to locate their preferred coalition-constellation. Specific party or politician evaluations tend to be less pertinent since not a single party or a single politician can govern the country unaccompanied.
concerned about policy preferences (in terms of left-right distances) outside Western Europe. In Hong Kong, the effect of left-right distances is even close to zero.

These country differences are not the result of random variation. Heterogeneity in the calculus of voting across democracies seems to show systematic patterns that may well be explained by characteristics of these countries. A descriptive examination of Figures 3.1 to 3.3 leads to the expectation that, for example, left-right voting is supported by contextual characteristics that Scandinavian countries have in common. Yet another conjecture is that the impact of party leanings is comparatively low in countries that experienced an early dealignment of traditional social cleavages like Britain, New Zealand, and Canada (Franklin et al. 1992).

Such interpretations of the descriptive results, however, are not conclusive. One may come to different plausible conjectures. The Britain, New Zealand, and Canada not only have an early dealignment of partisanship in common but also share, for instance, a common history in the British Empire. Hence, it may be the legacy of political culture or institutional settings dating back to their common history, which accounts for a weak impact of party leanings in these countries. Eyeballing a descriptive analysis can neither support nor refute such inferences with any certainty. A systematic analysis is necessary to state with some certainty which aspects of a political systems influence variation in the strength of these factors on vote choice. Chapter 5 focuses on this question, analysing by means of interactions to what extent contextual characteristics determine voters’ reasoning.

The Applicability of the Vote Function
The comparative study of this book is based on the expectation that voters in all political systems (potentially) consider party, leader, and policy evaluations when casting a
ballot. This may be regarded as a somewhat problematic assertion since these concepts are the product of electoral research in just some of these countries. It may very well be that individuals' vote choice rests on entirely different motivations in countries external to the small number of frequently analysed advanced democracies. Although it is not possible with the given data to assess whether respondents in different political systems comprehend concepts of, for example, left and right in the same way, it is possible to demonstrate that these evaluations of political objects (parties, politicians, and policies) serve a similar function in all countries, namely, to derive vote choice. Country-specific findings on the vote function provide information on the relevance of the chosen vote function and by implication also on the functional equivalence of party, leadership, and policy evaluations across contexts. Two empirical criteria can be used in this respect. First, does each object of the vote function (parties, politicians, and policies) exert a significant impact on vote choice in all contexts? Second, does the complete vote function explain vote choice to a reasonably high degree in all contexts? If these two conditions hold, it appears plausible to regard the chosen vote function as sufficiently relevant in different political systems.

Figures 3.1 to 3.3 and in more detail Table A2.2 in Appendix 2 show that party leanings, leader evaluations, and left-right distances affect vote choice significantly in nearly all cases. The only exception is Hong Kong, where the parameter estimate of left-right distances is not significantly different from zero. This finding generates the next question: is this caused by factors of the context that may override or crosscut the importance of policy orientations (that can be summarised by the left-right distance) or by the fact that the left-right scale does not play a role in Hong Kong at all (since it is functionally not transferable). In other words, does Hong

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66 For a brief discussion of the term 'functional equivalence' see Chapter 2.
Kong, with respect to voters’ reasoning, belong to the same ‘population’ as the other countries? The first interpretation implies that voters think in terms of a left-right continuum, however, they do not under all circumstances apply the scale in their calculus of voting. The weak impact of policy orientations on vote choice in Hong Kong may be explained by traits that hold across contexts. Suppose a specific electoral system is found to downplay the effect of the left-right scale and Hong Kong happens to grasp this specific electoral structure. Another explanation could be that a specific election campaign does not focus on policy differences but on qualities of political leaders. In such cases, the finding of ineffective left-right distances in Hong Kong is not a peculiarity of the context but a consequence of institutional settings or short-term factors of elections. The second explanation is based on the idea that voters in Hong Kong are different from voters in any other country analysed. It is not only that citizens of Hong Kong do not apply such policy evaluations in their calculus of voting, but that they do not even hold them. This implies that Hong Kong ought to be excluded from the analysis because the chosen vote function does not apply to this context. In my opinion, there is evidence that the first explanation is more plausible.

First, respondents in Hong Kong have no particular problems in stating their own position or the perceived positions of parties on the left-right scale. Voters apparently have an idea what left and right means. Second, the extent to which consensus exists within electorates about placements of parties on the left-right scale (perceptual agreement)\(^67\) is higher in Hong Kong 2000 than in many established

\(^67\) Chapter 5 will introduce a measure of perceptual agreement on parties’ left-right position as proposed by van der Eijk (2001). The measure describes the extent to which consensus exists within electorates about placements of parties on an ordered rating scale (here: the left-right scale). More detailed information on ‘perceptual agreement’ and country-specific estimates of the measure can be obtained from Appendix 4.
democracies for which the applicability of the scale is beyond doubt such as, for example, Germany or the UK. Hence, voters in Hong Kong more than voters in Germany or the UK share a common perception of (parties on) the left-right scale. This suggests that the left-right scale is functionally transferable to the context of Hong Kong even if its effect on vote choice is indistinguishable from zero. Third, perceived distances on the left-right scale significantly affect vote choice for some parts of the electorate, namely the highly educated respondents. Finally, in Chapters 5 and 6, contextual features of elections are identified which moderate the relevance of left-right distances for vote choice. These factors turn out to be particularly important in Hong Kong, which explains the weak effect of left-right distances empirically (see Tables 6.2 and A4.8). Hence, the fact that the country-specific effect parameter of left-right distances is indistinguishable from zero is caused by specific, explicable factors, and not by its irrelevance as such. Therefore, I consider the case of Hong Kong as belonging to the same 'population' as the other countries.

The second criterion for evaluating the relevance of the vote function for different systems is the extent to which it reduces the overall variance of the dependent variable. This is documented in Table A2.2 in Appendix 2. Country-specific models of the vote function show that the variance reduction in vote choice varies between a McFadden's Pseudo $R^2$ of 0.24 in Hong Kong and a $R^2$ of 0.72 in the Ukraine. Disregarding these extreme cases, Pseudo $R^2$ ranges roughly between 0.30 and 0.65 in the other countries. A vote function that contains party, politician, and policy evaluations therefore explains vote choice to a considerable degree in all

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68 In the group of highly educated respondents in the 1998 survey of Hong Kong, left-right distance has a negative effect on vote choice at a 90% significance level (education is split in 3 groups of low, medium, and high education; see Appendix 3 for more information on the variable). This finding is not separately reported elsewhere in this study.
contexts investigated. It is not the case that the vote function utterly fails to explain vote choice in any of the political systems. Also the range of the variance reduction appears to me fairly acceptable. From these figures one cannot conclude that this specific vote function is only relevant in some countries.

Overall, party leanings, leader evaluations, and left-right distances are important for vote choice in all contexts. How important exactly, is a function of individual characteristics of voters and of contextual characteristics of elections and is therefore not identical at all times and all places.

**Election-Specific Variation**

A point of possible concern in results reported in Figures 3.1 to 3.3 is the differences in parameter estimates within one country but between elections. The data analysed include two parliamentary elections in Hong Kong (1998 and 2000), in Mexico (1997 and 2000), and in Spain (1996 and 2000). For Hong Kong, the results for each of these two elections are very similar. In Mexico this is also true for the effect of left-right distances but not for party leanings and leader evaluations. The effect of party leanings is stronger in the 2000 than in the 1997 election, the effect of leader evaluations is stronger in the 1997 than in the 2000 election. Finally, the two Spanish elections of 1996 and 2000 give rise to quite different results. In the 2000 election, voters follow their party, leader, and policy preferences much more than in the first analysed parliamentary election of 1996.

In this book, context is analysed and discussed in terms of stable characteristics that can be ascribed to democracies. These include institutional settings, the party system, etc. Differences in parameters estimated between elections such as these documented for Mexico and Spain, demonstrate that the context of elections is not constant in one country. This may be, for instance, because parties have
weak or strong leaders in different elections, which will increase or decrease leadership effects. Likewise, some election campaigns will emphasise policy differences between parties and therefore increase the role of left-right distances. As a consequence, differences in voters’ reasoning between countries as reported in Figures 3.1 to 3.3 not only reflect differences in stable country characteristics but also differences in characteristics that are specific to particular elections. Hence, the comparative analysis of country differences based on only one (and in some cases two) observation(s) per country contains slippage. In principle, the kind of analyses reported here makes it possible to disambiguate long-term and short-term contextual influences on the vote function. This ‘only’ requires a sufficiently large number of elections for each country, in conjunction with systematised information about long-term and short-term aspects of election contexts. Data on several observations (elections) per country that would avoid capitalising on what may be an atypical election, however, are currently not available from the CSES project.

One could argue that one of the parliamentary elections in Spain or in Mexico can be regarded the regular case and that the other one is likely to be the atypical one. In Mexico, the election of 1997 marks a significant transformation of the political system. For the first time since 1929, the hegemonic Institutional Revolutionary Party lost its majority in Congress (Klesner 1997). Since many voters switched from the dominating party of the system to alternative options, it stands to reason that party leanings had comparatively weak effects in this particular election. From

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69 Yet one may expect this slippage to be constraint by individual-level stability. Lau (1989) in his study of chronically accessible political schemata finds high stability over time in the way voters evaluate political objects on the basis of panel data from the US. Voters who comprehend politics as, for example, competition between preferred and non-preferred politicians in one election, tend to rely on similar standards in the subsequent election as well.
that perspective, the 2000 election in Mexico may be regarded as the more typical case and 1997 as a critical election (Key 1955; Converse 1966). For Spain, the 1996 election marked the end of 14 years of socialist governments. The election campaign revolved little around traditional issues such as economic performance and concentrated more on various kinds of scandals and incidents. The victory of the Popular Party under Jose Maria Aznar was caused by massive volatility in the electorate (Delago & Nieto 1997). The 2000 election may in contrast be described as more stable or ordinary. The dominating issue of that campaign was the economic performance of the government (Delgado & Nieto 2001).

However, to exclude allegedly deviating elections based on such ad hoc ‘explanations’ seems unwarranted. It would be very worrisome to include in a contextual analysis only those elections that fit alleged contextual knowledge. This judgement may rest on possibly false or outdated information. Therefore, all elections are kept in the analysis, reminding the reader that country differences also refer to peculiarities of elections, which add to the possible error of the contextual analysis.

*Variation in the Calculus of Voting and Incomplete Data Treatment*

Section 5 of Chapter 2 and Appendix 1 explain the ‘white-noise imputation’ of incomplete data that is used in the analyses reported in this book. These sections discuss under which circumstances such a procedure is to be used, for which variables ‘white noise imputation’ is applied in this book, and what the consequences of this procedure are. To summarise the argument, ‘don’t know’ answers or ‘haven’t heard of’ answers on the perceived party and self placements on the left-right scale and on questions about leader evaluations are treated as lack of information or opinion on the stimulus of the survey question. Absence of an opinion
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lends itself to 'white noise imputation'. Hence, if respondents state for example not to know a certain politician, such responses are replaced by random value on the sympathy ratings drawn from the distribution of valid responses. Thereby the association between this specific leader evaluation and respective vote choice is by definition zero in the group of respondents who do not have an opinion on this particular politician.

The reader should be aware of the implications of this missing data treatment for the findings reported in this book. To illustrate that point, consider the following example. As reported in Table 2.1 in Chapter 2, 93% of all respondents in Denmark report an opinion on all six political leaders about whom questions were asked in the Danish survey while the proportion of respondents reporting an opinion on all six political leaders in Peru is only 73%. Considering that the effect between leader evaluation and vote choice is zero for all respondents who report not to know a certain politician, the proportion of 'forced' zero-effects (or, white noise) is higher in Peru than in Denmark. Figure 3.2 and Table A2.2 in Appendix 2 reports the same effect of leader evaluations for vote choice for both countries ($\beta = 1.21$). This can be seen as an unconditional result that applies to all respondents in Denmark and Peru, in which the ratio of incomplete information in a country has been taken into account and of the effect in the section of the sample with complete information. If these respondents would be included in the analysis that report an opinion on all leader evaluations, the results would look different. In that case, the effect of leadership in Peru would be stronger than in Denmark. In sum, the conditional parameter estimates that are habitually reported in the literature and the unconditional effect parameters as estimated in this book are different. For the reasons that were elaborated in Sections 2.5 and Appendix 1, the latter should be regarded as a more useful characterisation of the entire sample.
3.4 Differences in the Calculus of Voting: Summary of Findings

This chapter had these objectives: first, to provide evidence supportive of the notion that voters' reasoning can be regarded heterogeneous. Different voters weigh party leanings, leader evaluations, and left-right distances differently in their calculus of voting. A random effects model of vote choice illustrates this across contexts. Similar variation in the calculus of voting between groups of voters within a single political system will be analysed in the following chapter by means of interaction models.

The second purpose of the chapter is to define the amount of variation in the calculus of voting, hence to split variation between the dependent variable vote choice and random slopes of party leaning, leader evaluation, and left-right distances. I introduce two $R^2$-measures for the decomposed variance of (a) slope variation at the contextual level and (b) the remaining variation at the individual level. The following chapters will account for this slope variation in the calculus of voting by means of interaction terms between independent variables and contextual variables. The success of such explanations can be quantified by these separate $R^2$ measures.

Third, this chapter reported brief explorations into context specific parameter estimates of the vote function. These provide a first glimpse of differences in patterns of voters' reasoning across political systems. Taking stock of this chapter's empirical findings, three points appear worthy of emphasis and will be discussed more fully in Chapter 7.

There is empirical support for the idea that voters do not respond uniformly to political objects (parties, leaders, and policies) when casting a ballot. Such variation is evident across political contexts. While voters apply party leanings
rather homogenously in their vote choice, they weigh leader evaluations and left-right distances very differently across political systems.

A descriptive analysis of voting behaviour across contexts shows that party leanings are particularly important in the Ukraine, Australia and Switzerland. Leader evaluations are particularly pertinent in Eastern European democracies and rather ineffective in Asian political systems. Finally, left-right distances have high importance in what is often referred to as Western European consensus democracies.

The chosen conceptualisation of the calculus of voting, comprising party leaning, leader evaluation, and left-right distance, explains vote choice to a considerable degree ($R^2 = 0.47$). Also, each element of the vote function has a significant impact on vote choice in all analysed political systems (with Hong Kong as a sole exception). Therefore, this vote function can be considered as relevant to describe vote choice across different political systems.

The next chapter focuses on individual sources of heterogeneity in the vote function. By means of interaction models I will show (a) that voting is different across individuals within political systems and (b) that such differences relate (in part) to voters’ social background and political awareness.