

# **Comparative Politics of Strategic Voting:**

## **A Hierarchy of Electoral Systems\***

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### **Abstract**

What is the impact of electoral rules on the way people make decisions in the voting booth? Institutional incentives moderate a voter's expectation formation process and, therefore, make the frequency of strategic voters predictable across a wide range of electoral systems. I provide evidence that there is a latent dimension of propensity to cast a strategic vote following the wasted-vote logic on which various seat-allocation systems can be placed even controlling for district magnitude. Thus the variance of vote-to-seat conversion mechanisms is far more important in determining the level of strategic voting across electoral systems than previously thought.

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### ***Institutional Mechanisms and Strategic Voting***

What is the impact of electoral rules on the way people make decisions in the voting booth? The effect of electoral rules plays out in at least two stages. Scholars of electoral systems point to the impact of electoral rules on how votes are translated into legislative seats on election day. It is well-known (e.g. Hermens 1941, Key 1964) that the same distribution of votes can be translated in totally different distributions of seats in parliament using different electoral rules. If the outcome of an election is not just a foregone conclusion then the effect of electoral rules might become a crucial determinant deciding who will be represented in parliament and who will govern. Preceding the vote-to-seat conversion stage, however, are the processes of how voters make their vote choices given their preferences. Studying these processes keeps motivating scholars of political behavior to get up every morning. While we have devoted so much time and know a great deal about the vote-to-seat conversion stage, we know less so about the influence of electoral rules at the preference-to-vote conversion stage. Electoral rules have an effect here if -- given the same set of preferences -- different electoral rules will lead voters to vote differently at the polls because voters try to avoid wasting their votes and vote strategically.

How many voters actually compromise their preferences and vote strategically given particular electoral rules? So far the literature has merely developed hypotheses about the predictive implications of this for the number of parties competing in an election. Traditionally the literature makes prominent the size of the district magnitude as the prime shaper of strategic voting. I argue, however, that the role of the district magnitude in determining the frequency of strategic voting at the district level is grossly overstated. Instead I will lay out a rational on the individual level and provide evidence that electoral systems carry different levels of risk that voters might waste their votes. Therefore I develop a hierarchy of types of electoral systems ordered by an implicit continuum of risk to waste

someone's vote. This hierarchy predicts the level of strategic voting at the district level. The results based on individual-level data using the CSES module 1 indicate that there is more meaningful variation in the level of strategic voting across electoral systems than previously thought and this variation cannot be merely attributed to incentives that get channeled through the district magnitude.

### ***A Comparative Look at Strategic Voting - Some Micro Foundations***

No matter whether you believe in Columbia, Michigan or the Rochester school of thought, traditional theories of voting behavior have in common the prediction that voters should end-up casting a vote for their most preferred party (or candidate)<sup>1</sup>. This is called a *sincere vote*. Students of strategic voting point out that we nevertheless observe systematic deviations from these traditional vote-choice predictions. In an attempt to model these deviations they suggest that voters do not merely take the utility into account that a voter derives from voting for her most preferred party but also the expectation about the outcome of the election, for instance whether her most preferred party is actually a viable alternative to win a seat in her primary electoral district (Blais et al 2001; Blais 2002; Cox 1997; Fisher 2004; Gschwend 2006). It is far from clear how voters actually form and weight their expectations against their preferences. Different voters might employ different decision rules. The particular approach I am following here is to assume for voters who turn out in the first place that they vote for a party that maximizes their expected utility. Consequently, a *strategic voter* is someone who votes for another party (or party candidate) than her most preferred one if the expected utility is higher than the expected utility from voting for her most preferred party. Strategic voting implies that voters form expectations, i.e., they estimate probabilities, as to whether or not parties gain seats in a particular electoral district. If their most preferred party is expected to

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<sup>1</sup> To simplify language I will just refer to political parties, even if voters can explicitly vote for candidates. Since I am looking at parliamentary elections, candidates are typically affiliated with a party list.

gain a seat, voters cast a sincere vote. If their most preferred party is not expected to gain a seat, voters cast a strategic vote for the most preferred party among those parties who are expected to gain a seat. Thus, the more uncertain voters are, i.e. the lower the expected probability whether their most preferred party is able to win a seat, the more likely a strategic vote becomes.

What factors determine these expectations? Since voting behavior is no different from any other behavior in that it is not only situational but also dispositional determined I am going to distinguish between dispositional and situational criteria of how voters generate expectations about the probability that their vote is not wasted on her most preferred party. Electoral institutions pre-structure a voter's decision situation. Situational criteria are determined by those specific institutional incentives that make the use of the wasted-vote strategy at the electoral district level *a priori* more or less likely. Dispositional criteria have to do with intrapersonal motivations and capabilities to comprehend these situational criteria and how voters employ them in their decision-making process. Moreover, they have also to do with the use of appropriate decision heuristics provided by party elites or the media. For this paper, however, I take these individual-level determinants as a starting point and try to predict the causal effects of situational criteria. I will argue that situational criteria systematically moderate a voter's expectation formation process and, therefore, make predictable the frequency of voters who employ the wasted-vote strategy across a wide range of seat allocation systems.

### ***Situational Criteria that undermine or enhance the Duvergerian logic in practice***

The Leys-Sartori conjecture (Cox 1997; Leys 1959; Sartori 1968) is the starting point of how situational criteria influence voters' expectations whether or not a vote for their most preferred party is wasted. It posits that the higher the district magnitude, the less likely voters

are to avoid wasting their vote for smaller parties and, hence, less strategic voting is expected to occur in that district. In order for this to work, the corollary at the individual level is that a voter's expected probability that her vote is wasted should be smaller the larger the district magnitude gets.

The predicted consequences about the frequency of strategic voting given that the district magnitude varies have never been tested comparatively. The notion of district magnitude according to Leys (1959) and Sartori (1968) constitutes a universal characteristic, i.e., contextual effects do not matter. The hypothesized causal effect of district magnitude on the frequency of strategic voting neither depends on a particular type of electoral or seat-allocation system nor is it a country-specific characteristic. It seems a bit simplistic to reduce all conceivable situational factors to be channeled through the size of the district magnitude. The electoral systems literature has meanwhile accumulated various institutional characteristics that possibly undermine (or strengthen) the wasted-vote logic. As a consequence more (or less) strategic voting should be observed at the electoral district level than otherwise expected. Such characteristics are typically called “supradistrict factors” (Taagepera and Shugart, 1989: 112) because they are sought to compensate or correct the mechanical effect stemming from the size of the district magnitude.

Consequently I will distinguish *local seat-allocation* (LSA) systems from *supradistrict seat-allocation* (SSA) systems. In local seat-allocation systems, seats are allocated only within the primary electoral district while in supradistrict seat-allocation systems, there are additional situational criteria beyond the pure vote-to-seat conversion at the primary electoral district that define how seats are allocated. In terms of district magnitude two types of local seat-allocation systems can be distinguished: There are systems with varying district magnitude greater than one. I call them *multi-member district* (MMD) systems. Consequently seat allocation systems in which every district has to elect one Member of Parliament are called *single-member district* (SMD) systems. Compared to the benchmark level of strategic voting

set out by local seat-allocation systems, various situational factors are expected to diminish or enhance the incentives for voters to avoid wasting the vote and vote strategically. In supradistrict seat-allocation systems we should, therefore, expect the Duvergerian logic to operate differently. I will argue that the expected probability that a vote for the most preferred party is wasted (and therefore the risk to cast a strategic vote) does systematically differ at the district level causing predictable patterns of strategic voting across types of seat allocation systems.

In the following I will draw attention to four situational criteria that are presumably consequential for the expected probability that a vote for the most preferred party is wasted to differ and, therefore, determine the amount of strategic voting to occur at the district level: the possibility of gaining compensatory seats, the existence of a national threshold to get representation, or the use of particular seat-allocation systems such as alternative vote and mixed electoral systems.<sup>2</sup> I will argue that the first three criteria undermine the Duvergerian logic while the incentives to vote strategically in the SMD tier of mixed systems will be strengthened compared to what we would otherwise expect in SMD districts.

The first criteria is the possibility of an additional distribution of seats, so-called compensatory or remainder seats, that are based on regional or national party vote totals. The possibility, particularly for small parties to gain additional seats in secondary electoral districts on the regional or national level, clearly undermines the wasted-vote logic if some version of a PR rule is used. The expected probability that a small party might gain representation is perceived to be higher because a vote might not be wasted after all if there is another distribution of seats that helps to garner compensatory or remainder seats for such a party. A good example for an electoral system with an additional seats allocation at the

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<sup>2</sup> There are further situational criteria that undermine the wasted-vote logic – at least theoretically. Voters might get motivated to waste their votes through provisions that entail even parties that fail to gain representation with additional bonuses short of representation, like blackmail potential (e.g. run-off elections in Hungary), financial reimbursement of campaign costs (e.g. in Germany) or rules of ranking the party (higher) on the ballot for the next election (e.g. in Chile). However, the impact of these situational criteria is presumably too small to be examined systematically within the confines of conventional survey research.

regional level is Belgium (although this characteristic was abandoned for the latest election in 2003). After a first distribution of seats in primary electoral districts, any remaining seats are allocated within secondary districts that are comprised of the Belgian provinces (Cox 1997: 48-49, Fitzmaurice 1996: 96-99). I will call such systems *adjusted multi-member district* (adjusted MMD) systems.

Second, there are systems employing certain vote total preconditions that parties have to fulfill in order to participate in the seat allocation stage. The existence of a national threshold in multi-member district systems that parties have to surmount provides an incentive that undermines the wasted-vote logic. Sweden is a well-known example for an electoral system with such a situational criterion. To make this incentive transparent, take a small party supporter in a “pure” MMD system without a national threshold. Even in a large district she will try to avoid wasting her vote if she perceives the chances of her party to gain a seat as so low that the expected utility from voting for a different party that is expected to gain at least a seat is higher. Now suppose the electoral system employs a national threshold that has to be reached as a precondition in order to participate at the seat allocation stage. The very same supporter of this small party - even in a small district - will now expect that the probability of her party to win any seats, although not in her local district, is much higher than before. Even in a small district a supporter of a small party might not waste her vote after all because every vote effectively helps the party towards reaching the preconditions to participate in the seat allocation stage and to be able to win a seat in another primary district.<sup>3</sup> National thresholds as preconditions lead voters to not expect their votes to be wasted on marginal parties according to this reasoning. Thus electoral systems with such a national vote total precondition provide essentially the same incentives undermining the wasted-vote logic

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<sup>3</sup> There are the usual incentives to avoid wasting the vote on marginal parties, if the national level is the primary electoral district. Following the above logic there are no further ways to help a marginal party to gain additional seats. The higher the threshold is, presumably, the lower the expected probability that a marginal party might gain representation and, hence, the higher the voter’s proclivity to cast a strategic vote.

as electoral systems that allow for the possibility to win compensatory seats. Therefore, I also call such electoral systems adjusted MMD systems.

Third, if a country employs an alternative vote system, like Australia, small party supporters still have an incentive to rank their preferred party first even in a single-member district undermining the wasted-vote logic because they always can rank a viable party second. If no party wins on the first count, their vote is not wasted for the second count. This logic is also similar to having a distribution of additional seats, since a vote might not be wasted if there is a second distribution to allocate votes to remaining seats. Even if the expectation is that there is a winner on the first count, there is still the potential to blackmail large parties. Thus, every vote for a small party is not simply wasted but enhances the blackmailing power of such a party. Although there are incentives to vote strategically even in such an electoral system, I expect that the incentives channeled through the district magnitude to be rather weak. Strategic voting in such a system does not only require information about voters' first preferences as in multi-member systems but also about the distribution of voters' second and third preferences (Cox 1997: 92-95; Dummett, 1984: 210-230).

The discussion of the previous three situational criteria shows that there is reason to expect the existence of certain incentives that undermine the Duvergerian logic in practice. The forth situational criterion, however, provides an incentive to strengthen the Duvergerian logic - making it easier for voters to cast a strategic vote. Mixed electoral systems provide voters with a particular strategic environment because these systems combine majoritarian and proportional representation principles. While in compensatory mixed systems (Germany and New Zealand), majoritarian and PR seat allocation systems are linked in order to let the latter compensate for the disproportionality of the former. In non-compensatory systems (Hungary, Japan and Mexico), there is no such seat linkage (Shugart and Wattenberg 2001). Even if one focuses only on the votes cast in the single-member districts because only there we could expect the Duvergerian logic to operate at the district-level, the wasted-vote logic is

obviously contaminated (Cox and Schoppa 2002, Ferrara and Herron 2005, Herron 2000: 61-64, Herron and Nishikawa, 2001, Gschwend et al. 2003) by the fact that even small parties field candidates and get SMD votes although they have no chance of winning a seat. More importantly, however, because parties compete for votes at the same time on the PR tier at the (provincial or) national level, voters are not likely to perceive the campaigns in both tiers independently.<sup>4</sup> Given how election campaigns enfold, the national-level and, hence, the nature of the race for the PR seats is likely to be perceived more important than a SMD race, particularly in compensatory but also in non-compensatory mixed systems despite the “real” importance of electoral institutions.<sup>5</sup> Voters’ might change their critical referent from a party frame to a coalition frame, particularly if alternative coalition governments are identifiable before the election. This should facilitate strategic voting (Gschwend 2004). In order to enhance the chances of a majority for a preferred coalition, a strategic SMD vote of a small party supporter for a viable candidate of a coalition partner is not likely to produce strong cognitive dissonances in the first place. The utilities voters would derive from voting for parties that form their most-preferred coalition, presumably, do not differ much. We should be able to observe more strategic voting in the majoritarian tier of mixed electoral systems than otherwise expected in SMD systems because the perceived costs of a strategic vote in the

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<sup>4</sup> Some voters might be able to form independent preference orders for their SMD as well as list vote race and simply vote for the most-preferred one among the viable candidates in the SMD race. There is no measure in the CSES data to adequately control for this. For most voters, however, candidate and party preference orders are likely to depend on one another. Following a party label heuristic (Gschwend 2004), voters could infer their candidate preferences simply from their party preference order. Thus, most often it does not make a difference. So when does it actually make a difference? Voters have to systematically desert their most preferred party and cast their vote for a local candidate that is expected to do better than the respective party candidate of their most preferred party – for no other than personal reasons. Although possible it is hard to imagine why mere personal characteristics (independent from the ones that explain partisan preferences) should be systematically higher for candidates of particular parties and systematically lower for other party candidates. Previous research identified the potential for personal votes to be particularly high in New Zealand and, particularly low in Germany (Blais et al. 2004; Gschwend 2004; Karp et al. 2002; Moser and Scheiner 2005; Pappi and Thurner 2002). No question: there will be always personal votes. However, if personal votes in New Zealand were systematically behind the observed frequencies of strategic voting potentially biasing the results of this paper, than we should find on average higher numbers there than in Germany because the institutional context is the same. This is not the case, though.

<sup>5</sup> Given that the threshold a party has to overcome in mixed systems is pretty low, potential strategic voters following the Duvergerian logic on the list vote cannot systematically studied with the CSES data because voters are not asked to rate every party on the ballot. Typically the vote shares of parties one has voters’ preferences for are not threatened the threshold.

SMD tier can be partly offset by a sincere vote for “her” party in the PR tier. Since the SMD vote in compensatory mixed systems is less important than in non-compensatory mixed systems, the perceived costs are probably even lower. For instance, in Germany a strategic SMD vote of a small party supporter does not harm the overall seat share in parliament for this party (Pappi and Thurner 2002, Klingemann and Wessels 2001). Thus, strategic SMD votes in compensatory mixed systems become essentially costless.<sup>6</sup>

Summing up, local seat allocation systems provide a benchmark following the Duvergerian logic of how much strategic voting is expected at the electoral district-level particularly given the size of a particular district. Thus, I expect on average more strategic voting in SMD than in MMD systems (Hypothesis 1). In supradistrict seat-allocation systems, situational criteria systematically undermine or enhance the Duvergerian logic in practice. If, on the one hand, seat allocation systems allow for the possibility to win seats above and beyond the ones allocated at the primary electoral district level as in adjusted multi-member district systems or permit to rank order preferences as in an alternative vote system, the incentives for voters to follow a wasted-vote strategy are potentially diminished. Hence in such supradistrict seat allocation (i.e. in adjusted MMD and alternative vote) systems I expect to find on average less strategic voting of this type than in local seat-allocation (LSA) systems (Hypothesis 2). These supradistrict factors might lead voters to expect that a vote for a marginal party might not be wasted after all. Given that one always can rank a viable party (candidate) second in alternative vote systems, I expect to find less strategic voting in alternative vote systems than in adjusted MMD systems (Hypothesis 3).

On the other hand, there are supradistrict factors that motivate voters to think about viable government coalitions when casting their votes, for instance, when the translation of votes into seats is at least partially done by a PR seat-allocation system as in mixed electoral

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<sup>6</sup> Furthermore, the Duvergerian logic is only one rational to deviate from their most preferred party. Electoral systems, where the focus is on the national level, provide additional incentives to vote strategically that do not get channeled through the district magnitude. Thus, a strategic vote in such systems can be the result of various strategies. It does not necessarily depend on the district magnitude alone and will be not considered here.

systems. A strategic vote for a viable candidate of the coalition partner in the majoritarian tier is likely to produce fewer dissonances than in SMD systems without a second PR tier. Hence in the SMD tier of mixed electoral systems I expect to find on average more strategic voting following a wasted-vote strategy than in all other seat-allocation systems<sup>7</sup> (Hypothesis 4). These supradistrict factors might lead voters to greatly reduce the costs that typically come along with casting a strategic vote – more so in compensatory than in non-compensatory mixed systems (Hypothesis 5). Consequently, hypotheses 1 to 5 yield a hierarchy of expected frequencies of strategic voters trying to avoid wasting their votes at the district level that are associated with various seat allocation systems. The expected hierarchy is summarized in panel (a) of figure 1.

[Figure 1 about here]

Now, controlling for district magnitude ( $M$ ) one can assess whether those estimated differences across types of electoral systems can be attributed to the hypothesized situational criteria that undermine or facilitate the Duvergerian logic in practice. If those situational criteria have an impact on voters expectation formation process than the predicted frequency of strategic voting should be consistent with the ranking presented in panel (b) when comparing electoral systems with the same district magnitude ( $M = 1$ ). Moreover there are two types of seat allocation systems with varying district magnitude ( $M > 1$ ), MMD and adjusted MMD systems. Given the hypothesized workings of compensatory seats or national thresholds for an individual's expectation formation process, the frequency of strategic voting following the wasted vote logic should be on average higher in MMD systems of a given district magnitude than in a comparable district in adjusted MMD systems (Hypothesis 6) as presented in panel (c). If those situational criteria, however, do not operate as expected above and beyond the incentives that get channeled through the district magnitude, than -- after controlling for

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<sup>7</sup> This should hold particularly for SMDs under any seat allocation system.

district magnitude -- there should be no systematic difference observable across electoral systems.

### ***Data and Measurement***

The Leys-Sartori conjecture does not predict how much strategic voting we should expect in a primary electoral district with a given magnitude. It simply formulates a tendency that the higher the district magnitude, the less likely voters are motivated to avoid wasting their vote and, therefore, the lower the frequency of strategic voting in that district. My argument is that in order to form expectations about the amount of strategic voting that is going on at the primary electoral district we have to take the complexity provided through the institutional context more seriously. Instead of the district magnitude, as previous research has done, we must primarily take into account the variance of rules by which votes are translated into seats. This might be particularly important in order to predict the number of strategic voters in various electoral systems if the district magnitude is low.

Typically, the significance of the Leys-Sartori conjecture and more generally, the significance of Duverger's famous propositions are mainly discussed in the electoral systems literature in terms of its consequences for the (effective) number of parties that has to be expected given certain electoral institutions. Strategic voting following the Duvergerian logic -- to avoid wasting the vote -- is the hypothesized mechanism at the individual level that explicates why only a few parties are viable in a given electoral district even if many more are competing for seats. Thus, contrary to the literature about electoral systems this study does not merely focus on the consequences of strategic voting but tries to address the incentives motivating a strategic vote more directly.

Since, presumably, many features of electoral rules have an impact on the nature of the district race and therefore on strategic voting, some studies in this literature looking more

closely at strategic voting use district-level rather than national-level data (e.g. Cox 1997, Cox and Shugart 1996, Herron and Nishikawa, 2001). Nevertheless, employing district-level data is only an indirect way to assess an individual-level phenomenon like strategic voting. Heroic assumptions about voters' preferences as well as the well-known problems of an ecological fallacy plague the process of making inferences based on such a research design. Moreover, different strategic voting patterns might even cancel out in the aggregate and are therefore lost from any analysis geared at this level of observation. Particularly relevant for studying strategic voting is that we are able to measure (sincere) preferences of a given respondent directly and compare them to her stated voting behavior. This is a great advantage compared to all studies that look only at aggregated election results (Cox 1997, Monroe and Rose 2002) because one does not need to make any additional assumption about voters' preferences in order to distinguish strategic voting from other voting behavior.

The Comparative Study of Electoral Systems (CSES) project is an almost ideal data set to analyze these questions. It is a cross-national project with election studies across countries with great variance of their electoral institutions that also provides comparable individual-level data. In each participant country's election study, a common module of public opinion survey questions is included. These data contain among other things questions about turnout, vote choice as well as candidate and party evaluations. Moreover, systematic information about characteristics of the primary electoral districts as well as the electoral system at large is merged to the individual data. Thus, the CSES data is especially suitable to study the effects of electoral institutions on citizens' attitudes and behavior since the electoral systems of the participating countries do vary considerably.<sup>8</sup>

The comparative literature about strategic voting and electoral systems traditionally speaks to the (primary electoral) district level. I will choose the same level of observation in

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<sup>8</sup> I use the CSES module 1 that was released on August 4<sup>th</sup>, 2003. To the best of my knowledge this is already by far the largest data set used in a single study to estimate strategic voting comparatively. After all the fixes I consider Module 1 (contrary to Module 2) now to be quite reliable. Module 1 represent a broad sample of electoral systems and, fortunately, the seat-allocation rules of the participating countries vary a great deal.

order to assess the consequences of varying district magnitude on the frequency of strategic voting. The hypothesized causal process of varying district magnitude in this literature (e.g. Cox 1997) should operate here. Thus, my dependent variable is the fraction of all voters per electoral district who cast a strategic vote. In order to construct this variable I need to derive voters' preference rankings of parties that actually field lists or candidates in a particular primary district, i.e., *after* elite coordination took place that might have reduced the number of available options on the ballot.<sup>9</sup> Party preferences are measured by standard 10-point party like/dislike scales and ranked accordingly for each respondent. In mixed systems I take the SMD vote as relevant vote choice for my research question since only in the majoritarian tier one expects an impact of the district magnitude.<sup>10</sup> According to my conceptualization, a strategic vote following the Duvergerian logic is a vote for a less preferred party if the expected utility that this party gains at least a seat in their district is higher than the expected utility that their most preferred party does gain a seat in their district. Unfortunately, it cannot be directly assessed how individuals weigh their preferences against their expectations, particularly since in most countries the CSES module was administered as part of a post-election study. Consistent with prior research (e.g., Gschwend 2004; Karp et al. 2002: 8) I therefore assume that on average voters get it right, i.e., they expect a party to gain a seat if the party actually ends up winning a seat the district.

Consequently, my dependent variable is the proportion of respondents per electoral district who cast their vote for a less preferred party if that party is expected to win a seat while their most preferred party is not. This group of strategic voters is most likely to follow the Duvergerian logic to avoid wasting their vote.<sup>11</sup> The advantage to operationalize strategic

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<sup>9</sup> This also accounts for the complications that even within the same country voters do not necessarily have the same choice-set (Shikano 2003) – e.g., because of elite coordination – and that their vote choices might be menu dependent (Kedar 2005). If the workings of the Leys-Sartori conjecture is merely a product of elite coordination, voters have not even the chance to vote for marginal parties since they would not even contest the election.

<sup>10</sup> In order to do that I assume that party and candidate preferences coincide for voters who do not vote for the candidate of their most preferred party but for a more viable candidate. See also footnote 4.

<sup>11</sup> If respondents most prefer two parties at the same time while one party is expected to gain a seat and the other party is not I will count such a vote for the party that is expected to gain a seat on Election Day as a strategic

voting this way is that it disentangles strategic voters following a wasted-vote strategy from voting behavior that can be interpreted as a result of other strategies (Blais et al. 2004, Gschwend 2004). Thus the frequencies of strategic voting are not falsely magnified as if we would take, for instance, simply every deviation from someone's most preferred party as a strategic vote. In order to construct a measure of which party gained seats in a given electoral district I had to compile this information separately from country specific data sources and merge it to the CSES data.<sup>12</sup> The group of non-strategic voters is comprised of all other voters, e.g., sincere voters or voters of a party that is on the ballot in a respective electoral district but not being evaluated on the corresponding party likes/dislikes scale.

Table A1 in the appendix provides an overview about the resulting percentage of strategic voting per election study that passed a data consistency check. Thus, first, I had to delete countries without any parliamentary vote-choice variable (Belarus, Chile, Lithuania, Peru 2000) in the CSES data module, and where district level information (Taiwan, Korea, Russia, Ukraine and Thailand) is not yet available<sup>13</sup>. Second, although providing some face validity for my dependent variable, I deleted the data of both pure PR systems (Israel, the Netherlands). As expected, in both countries there are no strategic voters following the wasted-vote logic and, hence, no variation that can be modeled.

The key independent variable following Duverger, Leys-Sartori and Cox is the district magnitude. How exactly can one describe the simple relationship between the district magnitude and the propensity that a voter considers voting strategically following the wasted-vote logic? So far no agreement about the correct functional form is reached. In the comparative electoral system literature some scholars assume a simple linear relationship (e.g., Cox and Shugart, 1996; Cox 1997) while others argue (Monroe and Rose, 2002;

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vote since not including expectations in their decision calculus could have resulted in a vote for a party with a lower expected utility.

<sup>12</sup> This information is not part of the official CSES data but will be made available for download in addition to the replication data set.

<sup>13</sup> Nevertheless I included data from the Spanish legislative election in 2000 although the percentages of strategic voting across these districts seem to be rather low.

Taagepera and Shugart, 1989) that this relationship has to be non-linear. I, again, tried both versions and since the results are not statistically distinguishable from one another I report the analysis with the district magnitude measured by the size of it.

### ***Frequency of Strategic Voting and Rules of Seat Allocation***

In order to take a look at the expected frequencies of strategic voting across various seat-allocation systems, I create a set of dummy variables, scoring one if the electoral district belongs to a country that employs a particular seat-allocation rule and zero otherwise. Thus, I create a dummy for SMD systems (Canada, UK, USA), multi-member district systems (Hong Kong, Peru, Portugal, Spain, Switzerland) and adjusted multi-member district systems (Belgium, Czech Republic, Denmark, Iceland, Norway, Poland, Romania, Slovenia, Sweden), alternative vote systems (Australia) as well as for compensatory (Germany, New Zealand) and non-compensatory mixed systems (Hungary, Japan, Mexico) that are incorporated in the CSES (module 1) data.<sup>14</sup>

Since the fraction of strategic voting per district is calculated over a different number of grouped individuals, I employ a generalized linear model (GLM) with a logit link to appropriately model this type of fractional response data while making sure that the model predictions are bounded between zero and one.

To facilitate interpretation of the estimated coefficient for each type of seat allocation system and to compare the results with the summarized hypotheses in figure 1, the GLM estimation results are presented graphically in figure 2 together with their corresponding robust (Huber-White) 95% confidence intervals.

[Figure 2 about here]

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<sup>14</sup> Conceptually - in accordance with the comparative electoral system literature - I assume that the relevant processes that constrain a respondent's behavior to cast a strategic vote at the electoral district-level are similar enough to be comparable across electoral districts (within a seat-allocation system).

The estimation results show that there is quite some variation of strategic voting across various seat-allocation systems. As hypothesized we can expect to find most strategic voting at the SMD-tier of compensatory mixed systems (9.7%) followed by non-compensatory mixed systems (6.3%) and “pure” SMD systems (4.9%). The next systems, MMD (3% and AV (3.2%), are the only building blocks of this hierarchy, which cannot be statistically distinguished from one another. The least amount of voters following the wasted-vote strategy can be found in adjusted MMD systems (1.4%). Consequently, with the exception of the frequency of strategic voting in Australian districts (Australia being the only country that fits this category) the predicted hierarchy is consistent with the hypothesized hierarchy of figure 1(a).

Moreover, we can compare the predicted level of strategic voting across various institutional settings as long as only one seat is allocated, i.e. when the effects of district magnitude are controlled for. Compared to the predicted ranking of electoral systems in figure 1(b), the results are consistent with the hypothesized effects of various situational criteria. Given particular institutional rules -- such as in alternative vote systems that allow voters to rank their options on the ballot -- that are expected to undermine the wasted-vote logic in practice we observe significantly less strategic voting compared to the baseline set out by SMD systems.

When the translation of votes into seats are partially done by PR-tier as in mixed electoral systems, however, the results indicate that voters seem to have stronger incentives for strategic voting at the nominal vote in mixed electoral systems than in SMD systems. Presumably voters can still vote for their most preferred party on the PR tier in mixed electoral systems, and, given that expected coalition formations facilitate coordination on the SMD tier, this makes casting strategic vote particular easy. This might be interpreted as another piece of evidence for the existence of contamination or interaction effect. Apparently,

at least in mixed electoral systems various seat-allocation rules influence one another. Voters do not see their candidate and party vote as independent from one another.

The results further indicate that the level of strategic voting is also significantly higher in compensatory than in non-compensatory mixed systems, presumably arising from the seat linkage with the election outcome in the second tier. Thus, in addition to the possibility of having a PR seat allocation tier, what seems to matter for the frequency of strategic voting is the mere existence of an institutional corrective that compensates for the disproportionality of the SMD tier seat allocation. It presumably does reduce the costs to cast a strategic vote particular when comparing compensatory mixed electoral systems with all other seat-allocation systems.

The cumulative evidence brought to bear in testing the first five hypotheses does support the idea that there is a latent dimension of propensity to cast a strategic vote following the wasted-vote logic on which various seat-allocation systems can be placed. Nevertheless, the impact of electoral institutions on how voters form expectations whether or not supporting a party at the polls and make their vote count rather than merely counted is at least twofold. Besides particular rules that define how exactly votes are translated into seats, the size of an electoral district, the district magnitude, channels incentives that systematically mediate voters' expectation formation process. Up to this point nothing is said about the impact of the district magnitude on the frequency of strategic voting. Therefore I will refine my estimation strategy in the next step. In addition to estimating intercepts that represent the predicted frequency of strategic voting of each type of seat allocation system (as in figure 2) I also estimate slope coefficients that represent the expected decrease of strategic voting depending on the size of the district magnitude within electoral districts of a given seat-allocation system. There are only two slopes to estimate since there are only two types of seat-allocation systems where the district magnitude is not constant: MMD and adjusted MMD systems. To estimate a coefficient for each type of seat allocation system I exclude the constant. The GLM

estimation results, together with robust (Huber-White) standard errors and their corresponding 95 % confidence intervals are summarized in table 1.

[Table 1 about here]

If there were any systematic influence that gets channeled through the district magnitude, we would expect that this effect should show up precisely in these seat-allocation systems where the district magnitude is not constant. Thus both intercept and slope coefficients of MMD and adjusted MMD systems are of particular interest.<sup>15</sup> The results demonstrate that for MMD systems the variation in district magnitude does not seem to matter much. For adjusted MMD systems we obtain quite the opposite result. The expected reduction of strategic voting does seem to depend on the district magnitude. Maybe these non-findings for MMD systems are a consequence of party elite coordination. We know that party elites try to strategically coordinate their entry beforehand. This yields to a reduction of available options on the ballot. Successful elite coordination might more or less preempt strategic behavior of voters. Furthermore, such coordination on the elite level seems to be more likely in systems where the institutional consequences can be easier predicted such as in MMD systems as opposed to adjusted MMD systems. Thus elite coordination effects could explain that there seems to be not district magnitude effect in MMD systems but in adjusted MMD systems.

Finally, a more thorough test of hypothesis 6 would be to compare the level of strategic voting between MMD and adjusted MMD systems in electoral districts of the same magnitude. Despite the differences of the system-specific constants, one might ask whether the predicted level of strategic voting of these systems is still different even for electoral districts with a large magnitude? To provide evidence for the remaining hypothesis I simulated the expected frequency of strategic voting depending on the size of the district

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<sup>15</sup> The remaining coefficients are the very same from which the estimates of figure 1 are constructed applying the inverse link function.

magnitude based on the estimation results reported in table 1. Figure 3 summarizes these simulations. The lower line represents the predicted level of strategic voting for electoral districts in adjusted MMD systems. The upper line consequently represents the corresponding predictions for electoral districts in “pure” MMD systems. Every simulation is accompanied with their 95 % confidence interval based on robust (Huber-White) standard errors.

[Figure 3 about here]

Since it is problematic to simulate hypothetical scenarios that are too far away from the data I only predict the frequency of strategic voting following the wasted-vote strategy for districts with district magnitudes that are actually represented in the data. For these predictions I used the coefficients of the above table. The range of the district magnitude of primary electoral districts is a bit wider for MMD systems than for adjusted MMD systems. Most importantly, though, this graph illustrates that even across the entire range of actual (observed) district magnitudes, the predicted frequency of strategic voting is higher in “pure” MMD than in adjusted MMD systems as hypothesized. For districts with a district magnitude greater than 12 or, to put it differently, in about 15% of all districts within such seat-allocation systems, the confidence intervals between these systems do not overlap.

## Conclusion

The workings of electoral laws not only have profound and well-known consequences for party systems, the type of government, and the nature of representation in general. They also have an impact on the way people make decisions in the voting booth. Some voters anticipate the outcome of an election because they form expectations about it and act accordingly. The ways these expectations play out seem to differ systematically across various electoral

systems. Thus, my general finding is that the impact of electoral systems is less universal across different contexts than we previously thought it is. This conclusion is echoed and also well supported by recent comparative work (e.g. Birch 2003). Nevertheless the challenges for a given polity stay the same: voters wasting their votes cannot determine the composition of parliament. The institutional mechanisms that make someone's vote count rather than to be wasted might provide - but also potentially undermine – the legitimacy of the electoral process. The district magnitude is not the prime shaper of strategic voting; while the variances of vote-to-seat conversion mechanisms across electoral systems deserve more scrutiny in future research. The presented evidence suggests that voters systematically avoid wasting their votes depending on the incentives provided by a given seat-allocation system even in districts of the same magnitude.

The expected frequency of strategic voting at the district level is related to the district magnitude in adjusted MMD systems but not across “pure” MMD systems. On the one hand it could be that one has to think more precisely about the effects of various thresholds on the district, regional and national level that might systematically undermine the Duvergerian logic to avoid wasting a vote on a small party. On the other hand, not only voters but particularly political parties are also likely to adjust their behavior according to the incentives by the electoral system and do not field candidates or a party list if they are not likely to win at least one seat. This might already eliminate or pre-empt possible wasted-vote calculations on the voters' side and makes it particularly hard to find a significant effect for the district magnitude.

Some voters compromise their preferences in order to make their votes count. This paper provides a hierarchy of electoral systems based on an implicit continuum of risk to waste a vote that helps to predict the share of strategic voters. The results of this study are clear: There is meaningful variation in the frequency of strategic voting following the wasted-vote strategy on the district level above and beyond the levels that can be attributed to

incentives that get channeled through the district magnitude. For the SMD vote in compensatory mixed systems, one can expect the highest share of voters that follow the wasted-vote strategy while there are apparently almost no incentives for voters in an alternative vote system to deviate from their most preferred party in order to cast a vote for a party that is expected to do better at the polls. The simulated predictions for seat allocation systems where the district magnitude varies made transparent that in MMD systems one can expect on average more strategic voters following a wasted-vote strategy than in adjusted MMD systems of the same district magnitude. The difference in strategic voting increases with the size of the district.

Since this study looks more closely at the individual-level consequences of institutional rules than previous work has done, the presented results might also inform other literatures that only deal indirectly with individual-level behavior while looking at aggregate level outcomes. Most prominently, relationships between the size of the district magnitude and the (effective) number of parties in a given polity might not travel as easy through different institutional contexts as the current literature on party and electoral systems suggests. Moreover, since the incentives that get channeled through the district magnitude are not constant across various seat allocation systems, electoral engineers might suddenly have a much greater toolbox at hand to fine-tune institutional systems to better fit socio-political realities.

## Appendix

**Table A1:** Frequency of Strategic Voting averaged by Country

<i>System of Seat Allocation</i>	<i>Country (Year)</i>	<i>Frequency of Strategic Voting</i>	<i>No. of Districts in Analysis</i>
Mixed System (compensatory)	Germany (1998)	10.3	314
	New Zealand (1996)	10.5	65
Mixed System (non-compensatory)	Hungary (1998)	2.0	130
	Japan (1996)	6.2	143
	Mexico (2000)	4.6	52
	Mexico (1997)	11.1	96
Alternative Vote System	Australia (1996)	3.3	148
Adjusted Multi-Member District (MMD) System	Belgium (1999)	1.1	20
	Czech Republic (1996)	0.1	8
	Denmark (1998)	2.8	17
	Island (1999)	1.8	8
	Norway (1997)	1.2	19
	Poland (1997)	5.5	51
	Romania (1996)	3.3	39
	Slovenia (1996)	2.2	8
	Sweden (1998)	0.8	29
Multi-Member District (MMD) System	Hong Kong (2000)	0.5	5
	Hong Kong (1998)	5.2	5
	Peru (2001)	3.3	10
	Portugal (2002)	4.9	15
	Spain (2000)	0.7	46
	Spain (1996)	5.2	44
	Switzerland (1999)	3.2	22
Single-Member District (SMD) System	Canada (1997)	5.3	243
	UK (1998)	7.2	207
	USA (1996)	0.02	205
N (total)			1949

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Figure 1: A Hierarchy Predicting the Share of Strategic Voters following the Wasted-Vote Strategy across Seat-Allocation Systems.

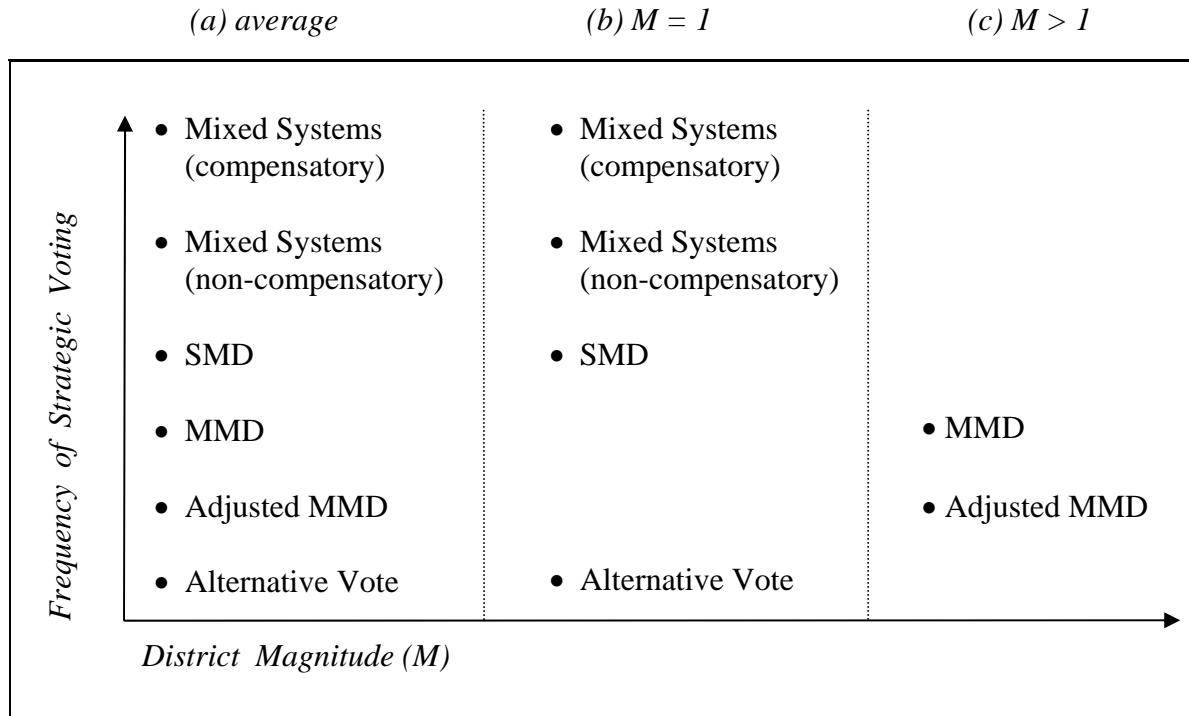


Figure 2: Estimated District-Level Frequency of Strategic Voting across Systems of Seat Allocation

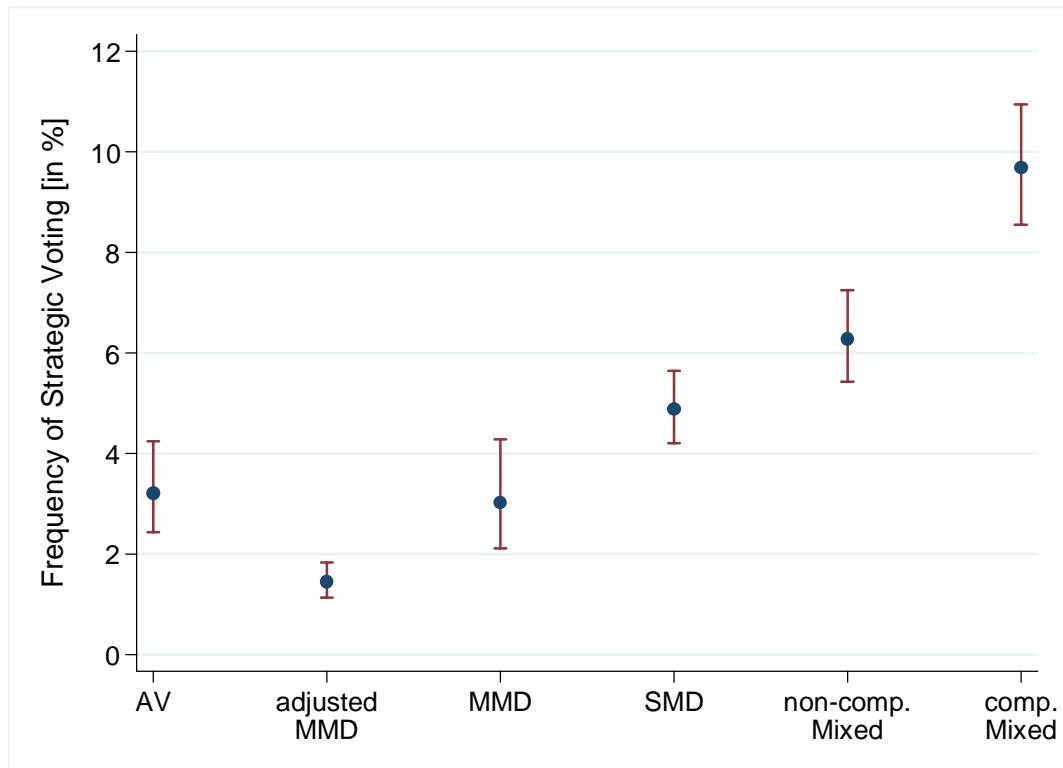


Table 1: Estimated Frequency of Strategic Voting across Systems of Seat Allocation conditional on District Magnitude

<i>Independent Variables</i>		<i>Dependent Variable</i>			
		Probability of Strategic Voting			
		Coef.	Std. Err.	95% CI	
LSA	SMD	-2.971	0.079	-3.125	-2.816
	MMD (intercept)	-3.137	0.252	-3.631	-2.642
	MMD - District Magnitude (slope)	-0.025	0.025	-0.074	0.024
SSA	Adjusted MMD (intercept)	-2.964	0.226	-3.408	-2.520
	Adjusted MMD - District Magnitude (slope)	-0.119	0.022	-0.162	-0.076
	Alternative Vote	-3.404	0.147	-3.693	-3.116
	Mixed (non-compensatory)	-2.703	0.079	-2.857	-2.549
	Mixed (compensatory)	-2.233	0.070	-2.370	-2.096
		N	1949		
		Deviance	2475		

Figure 3: Estimated impact of the District Magnitude on the Frequency of Strategic Voting for MMD and adjusted MMD systems

