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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? Traditionally the literature about electoral systems argues that the size of the district magnitude determines the amount of strategic voting. I argue, however, that different electoral systems provide incentives that potentially undermine or facilitate the Duvergerian logic in practice. Contrary to the literature the results indicate that the impact of the district magnitude on the frequency of strategic voting in a given polity is *conditional* on the type of seat allocation system that defines how votes get translated into parliamentary seats.

Introduction

Do electoral systems matter? The political consequences of electoral laws fall in two distinct categories. They encompass direct as well as indirect effects. The particular rules how votes are generated into legislative seats have a direct impact on the number and the type of parties in a given polity. This has profound and notorious consequences for the type of government and the nature of representation in general. It is well-known 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 than the differences in the way votes are translated into seats may be a crucial determinant deciding who will govern and who has to stay put.

What is the impact of electoral rules, though, on the way people make decisions in the voting booth? Do voters actually care about that? Do voters in some sense constrain their vote-choice because they anticipate the outcome of an election and include these expectations in their decision calculus? If voters are systematically drawn away from their most preferred party, just because they realize that supporting a marginal party might be equivalent to wasting their vote given a particular electoral institution, than we speak of an indirect effect. Duverger's (1954) "psychological effects" are the prime example for these types of effects. In order to avoid wasting their votes, voters cast a *strategic* vote for viable party (or candidate)[1] although they most prefer another one. Duverger suggested that this logic should not apply to PR systems, since even marginal parties can expect to gain seats in such a system.

Contrary to Duverger's propositions, though, Leys (1959) and Sartori (1968) expect significant amounts of strategic voting even in PR systems – the more, of course, the smaller the district magnitude is, i.e., the less seats are awarded at the electoral district. The Leys-Sartori conjecture posits that the various electoral institutions can be arrayed along a single

[1] 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.

dimension defined by the district magnitude and predicts that the smaller the district magnitude the more strategic voting should we expect at the primary district level, i.e., at the level of the smallest geographic unit in which seats are allocated.

Contrary to this literature I argue that different electoral systems provide incentives that potentially undermine or exaggerate the Duvergerian logic in practice and therefore distort systematically the relationship the literature citing Duverger, Leys and Sartori would expect between the levels of strategic voting in an electoral district and its district magnitude. The aim of this paper is to provide a hierarchy of electoral systems that helps to predict the share of strategic voters following the wasted-vote strategy using data of the first module of the Comparative Study of Electoral Systems (CSES) project. The advantages for Comparativists to use this unique data source are that we not only have comparable individual-level data but also systematic information about the electoral systems, particularly about the corresponding seat-allocation rules that determine how votes get actually translated into seats. Fortunately the seat-allocation rules of the participating countries vary a great deal. Hence one can assess its impact on the way people make up their mind in the voting booth in a comparative setting. Since the literature traditionally speaks to the primary district level I will first provide some microfundations as a set of assumptions of how those electoral rules play out in an individual's decision-making process.

A Comparative Look at Strategic Voting - Some Microfundations

No matter whether you believe in Columbia, Michigan or 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). 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 take not merely the utility into account that a voter derives from voting for her

most preferred party (U_{pref}) 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. It is far from clear how voters actually weight their expectations against their preferences. It is quite likely that different voters employ different decision rules. Nevertheless, the approach I am following here is to assume that a voter's decision rule is to vote for that party that maximizes her expected utility from voting.

Lets denote the probability that a voter expects her most preferred party to be viable to win a seat by p_{pref}. Thus the expected utility, EU(pref), that her most preferred party is competitive as a viable alternative to gain a seat combines the traditional utility component weighted by the voters expectation. Thus $EU(pref) = p_{pref} \cdot U_{pref}$. This also implies that with probability 1- p_{pref} no gain will be realized from voting for her most preferred party. If the voter is not sure whether her most preferred party is competitive than she might cast a vote for a less preferred party that is expected to be competitive (i.e., p = 1). This is called a *strategic vote* because the voter in such a situation does not vote for her most preferred party. Since the voter expects her strategic choice to be viable she will on the one hand derive the utility (U_{strat}) from voting strategically for that party. Given that a strategic choice cannot be the voter's most preferred option on gets $U_{strat} < U_{pref}$. On the other hand, voting *not* for someone's most preferred party might induce cognitive dissonance (Festinger 1957) that imposes additional costs (c) to the voter because of that unpleasant feeling that comes along with it. The expected utility of a strategic vote depends on the gain and the costs of a strategic vote. Thus $EU(strat) = U_{strat} - c$.

What is needed for a cognitive dissonance to arouse? There has to be an "aversive event" (Cooper and Fazio 1984: 232) that the voter expects to happen when casting a strategic vote in order to lead to the arousal of cognitive dissonance. Such an "aversive event" could be that a strategic vote is perceived as a thread to voter's self-esteem or as a vote against the voter's self interest. In general perceived cognitive dissonance is expected to have behavioral

consequences not merely when various cognitions stay in logical contrast to one another but when the perceived consequences of their decision are important to the voter but nonetheless unfavorable. Voters, of course, at the same time are motivated to avoid that unpleasant feeling that comes along with cognitive dissonance. When can we expect a voter to deviate from her most preferred party? Formally a voter casts a strategic vote if $EU(strat) > EU(pref)$, i.e., if

$$U_{strat} - c > p_{pref} \cdot U_{pref} \qquad (1)$$

or equivalently, if

$$\frac{1}{p_{pref}} \cdot (U_{strat} - c) > U_{pref} \qquad (2)$$

Why should voters ever consider bearing the costs of a strategic vote, though? One suggestion (Cooper and Fazio 1984: 236-237) that might apply to the decision-making process in the voting booth is that voters could justify their strategic vote by attributing the responsibility of their action – not voting for their most preferred party – to the specific decision-making situation thereby *a priori* reducing the costs of a strategic vote. The specific decision-making situation is mainly pre-structured by the electoral rules that translate votes into parliamentary power. Some voters are likely to perceive the nature of the electoral system as in some sense coercive because it might not leave them with much maneuvering room. Take for instance a supporter of a small party. She might feel that her decision-making process is constraint by the electoral rules because in voting for "her" party she might expect to waste her vote.

Given the utility and the costs that are expected to come with a strategic vote as opposed to a sincere vote, the crucial factor in equation (2) for voters whether to desert or to stick with their most preferred party is the expected probability whether their most preferred party will win a seat in their electoral district. The left part of this equation could be interpreted as the *risk of casting a strategic vote*. Holding utilities and costs constant, equation

(2) shows that the lower the expected probability, i.e., the more uncertain the voter is whether her 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 (psychological) and situational (mechanical) criteria of how voters generate expectations about the probability that their vote is not wasted on her most preferred party. Dispositional criteria have on the one hand to do with intrapersonal motivations and capabilities to comprehend these situational criteria and employ them in their decision-making process and on the other hand they have to do with the use of appropriate decision heuristics. Party elites or the media are likely to provide voters with cues and - as "cognitive misers" (Fiske and Taylor, 1991) – voters could simply rely on various heuristics to simplify their decision-making process (Gschwend 2001, 22-27). Assuming that on average dispositional criteria do not bias the impact of situational criteria on an individual's decision-making process on the primary district level I am going to focus on situational criteria that operate at the primary district level and have an impact the proclivity to vote strategically. Situational criteria are derived from the logic of electoral institutions.

Situational Criteria that undermine or facilitate the Duvergerian logic in practice

The Leys-Sartori conjecture becomes relevant for the discussion of situational criteria that influence voters' expectations about the probability that their vote is not wasted on her most preferred party. 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. To put it differently, the large the district magnitude the higher the probability for a hypothetical voter that her most preferred party is viable. According to equation (2), the higher the expected probability p_{pref} the less likely is a voter to deviate from her most preferred party. Thus, the 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 to my knowledge never been tested comparatively. The notion of district magnitude according to Leys (1959) and Sartori (1968) constitutes an universal characteristic, i.e., it does neither depend on a particular type of electoral or seat-allocation system nor is it a county-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 the wasted-vote logic. Such characteristics are typically called "supradistrict factors" (Taagepera and Shugart, 1989: 112) that compensate or correct the mechanical effect stemming from the size of the district magnitude. In the following I will draw attention to five situational criteria that are presumably consequential for strategic voting to occur on the district level.

The first criteria is the possibility of an additional distribution of seats, so-called compensatory or reminder seats, that are based on regional or nationwide 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. Following the notation in equation (2) p_{pref} is perceived to be higher because a vote for a small party might not be wasted after all, if there is another distribution of seats that helps to garner a compensatory or reminder seat for such a party. A good example for an electoral system with this characteristic is Belgium (although this characteristic is 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 them *locally adjusted* multi-member district (locally adjusted MMD) systems.

Second, the existence of national thresholds provides further incentives contrary to the wasted-vote logic (unless the primary electoral district is on the national level, of course). A

supporter of a small party - even in a small district - will expect that the probability of her party to win a seat (although not in her district) is higher if there is a national threshold that has to be overcome than without one. Thus, even in a small district a supporter of a small party might not waste her vote after all if she cast her vote for this party. National thresholds provide according to this reasoning similar incentives for voters not to expect wasting their votes on marginal parties as in electoral systems with the possibility to get additional seats. I, therefore, call such systems also locally adjusted MMD systems, if seats are otherwise only distributed locally. If the primary electoral district is on the national level, however, than there are incentives to avoid wasting the vote on marginal parties since, following the above logic there are no further possibilities to help a marginal party to gain additional seats. The higher the threshold, presumably, the lower the expected probability p_{pref} of a voter that a marginal party might gain representation and, hence, the higher her proclivity to cast a strategic vote. This logic gets watered down a bit, because 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, 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).

Third, in electoral systems where the primary electoral district is the national level, so-called national multi-member district (MMD) systems, the wasted-vote logic should be tamed – just mechanically and as expected because many parties actually can expect to gain representation. Israel and the Netherlands are examples for such electoral systems. There are other incentives to vote strategically, though, which do not get channeled through the (large) magnitude of the primary (national) district potentially attenuating the frequency of strategic voting. With only one national district voters might change their critical referent from a party frame to a coalition frame. The crucial question no longer is whether a voter's most preferred party wins a seat. Instead voters might be motivated to deviate from their most preferred party

in order to enhance the chances of a majority for a preferred coalition. This can yield to a systematic desertion of small parties as well as large parties (Thurner et al, 2002). Thus, I expect that the frequency of strategic voting does primarily not depend on the district magnitude of national MMD systems.

Forth, mixed electoral systems, like Germany, New Zealand, Hungary, Mexico or Japan, provide voters with the possibility to cast two votes simultaneously, using different rules - a *candidate vote* in the single-member district tier and a *party vote* in a multi-member district tier. Even if one focuses only on the votes cast in single-member districts, the wasted-vote logic is contaminated (Cox and Schoppa 2002, Ferrara and Herron 2005, Herron 2000, particularly 61-64, Herron and Nishikawa, 2001, Gschwend et al. 2003) by the fact that even small parties field candidates although they have no chance of winning a seat. Since these parties compete for party votes at the same time on the multi-member district tier at (provincial or) national level, voters are not likely to perceive the campaigns in both tiers independently. Rather a local party candidate might just be recognized as a representative of that party, not simply independently of it. Given that their primary focus is on the national-level and therefore the vote of the MMD tier becomes more important, as in the case of national MMD systems, voters might change their critical referent from a party frame to a coalition frame. In order to enhance the chances of a majority for a preferred coalition a strategic candidate vote of a small party supporter for the candidate of a major coalition partner is not likely to produce strong cognitive dissonances. It is rather easy since the perceived costs of a strategic vote on the SMD tier can be essentially offset by a sincere vote for “her” party on the multi-member district tier. For instance, in Germany a strategic candidate vote of a small party supporter does not harm the overall seat share in parliament for this party (Pappi and Thurner 2002). Thus, strategic candidate votes in mixed systems are

essentially costless.[2] This logic should be less compelling the higher the (provincial or) national threshold is in order to qualify for the multi-member district tier seat distribution according to the party vote totals. Thus, following again the notation in equation (2) p_{pref} is still perceived to be low for a marginal party to gain a seat on the candidate vote if there is a high threshold for the multi-member district tier seat distribution. Consequently, the higher the national threshold, the less strategic voting should be observable in mixed systems.

Fifth, 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 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 reminding 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 (candidate) 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 (Dummett, 1984:210-230), I expect that the incentives channeled through the district magnitude to be rather weak – analogous to national MMD systems employing low national thresholds.

Summing up, I expect the Duvergerian logic to operate at the district level across various electoral systems, just as the Leys-Sartori conjecture posits, if the seat allocation is only made within the primary electoral district that does not encompass the whole country. I will call these systems *local seat-allocation* (LSA) systems as opposed to *supradistrict seat-allocation* (SDSA) systems. In terms of district magnitude two types of LSA systems can be distinguished: There are systems with varying district magnitude greater than one. I call them

[2] Furthermore, the Duvergerian logic is only one rational to deviate from their most preferred party. Electoral systems where to 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.

local multi-member district (local MMD) systems. Consequently seat allocation systems in which every district has to elect one member of parliament are called *single-member district* (SMD) systems. Although, the Duvergerian logic might operate at the district level across various systems, this logic should be less compelling in systems with additional incentives that lead voters to expect that a vote for their most preferred party – even if it is a marginal one – might not be wasted after all. Particularly in small to middle-sized districts I expect to see variation across the frequency of strategic voting following the wasted vote strategy on the district level while these differences become less important the more seats are allocated at the district level. Electoral systems that provide possibilities particularly for small parties on the (regional or) national level to gain or loose additional seats (e.g. through national thresholds) or to cast several votes (or rank parties) for the same segment (tier) at the same time. Thus, I expect more strategic voting following the wasted-vote strategy in districts of local MMD systems (or LSA systems in general) than in districts of equal magnitude in locally adjusted systems. Nevertheless, the particular rules to allocate compensatory seats are not likely to be designed that luxurious that every small party supporter can expect that her most preferred party will eventually gain representation anyway. This is, however, essentially the case in national MMD systems with low national thresholds like in Israel or in the Netherlands or in Australia, where a vote for a marginal party is not wasted after all if there is a second count. Thus I still expect the incentives for strategic voting to be stronger in locally adjusted MMD system such that voters' expectation about the probability that their vote will be wasted is systematically higher than in national MMD or alternative vote systems.

In the following I want to stipulate five hypotheses that are going to be tested in the next section:

1) The frequency of strategic voting in locally adjusted MMD and local MMD systems should depend on the district magnitude. The higher the district magnitude the lower the observed level of strategic voting.

2) The frequency of strategic voting following the wasted vote logic should be higher in a district of a given magnitude in LSA systems than in a comparable district of locally adjusted MMD systems. The difference should diminish, though, the higher the district magnitude gets.

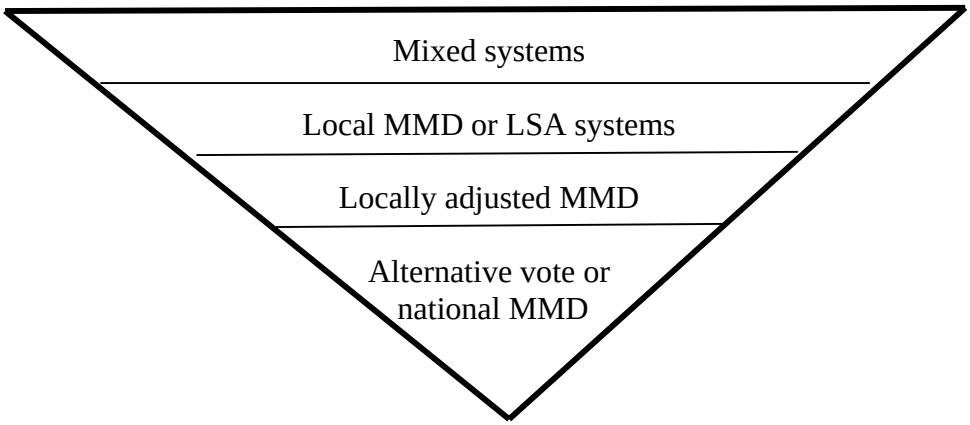
3) The frequency of strategic voting following the wasted vote logic should be higher in mixed systems than in SMD systems (or in LSA systems, in general).

4) The frequency of strategic voting following the wasted vote logic should be higher in locally adjusted MMD than in alternative vote systems.

5) The frequency of strategic voting following the wasted vote logic should be higher in locally adjusted MMD systems with small district size than in national MMD systems (given similar national thresholds).

Hypotheses 2 to 5 yields a hierarchy of expected frequencies of strategic voters trying to avoid wasting their votes at the district level across various electoral systems.

Figure 1: A Hierarchy of Electoral Systems to predict the Share of Strategic Voters following the Wasted-Vote Strategy



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 apart from the district magnitude we have to account for 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 is 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 on the individual level that "explains" 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 on 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 (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. Thus, on theoretical grounds, if we are interested in pinning down effects of electoral institutions on voting behavior, the individual level is the preferred level of observation to carry out any analysis about strategic voting. Moreover we need to introduce variance in the electoral institutions in order to compare its effects on voting behavior. Particularly relevant for studying strategic voting is that we are able to measure (sincere) preferences of a given respondent directly and compare it 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 a 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 (module 1) 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. [3]

Since 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 order to assess the consequences of varying district magnitude on the frequency of strategic voting. Thus, my dependent variable is the frequency of strategic voting per electoral district. In order to construct this variable I need to derive preference rankings of

[3] I use the CSES module 1 that was released on August 4th, 2003.

the parties that actually field lists or candidates in a particular primary district. This also accounts for the complications that even within the same country voters do not necessarily have the same choice-set (Shikano 2003). Thus, their vote choices are menu dependent (Kedar 2002). Party preferences are measured by standard 10-point party likes/dislike scales and ranked accordingly for each respondent. In mixed systems I take the candidate vote as relevant vote choice for my research question since only here one expects an impact of the district magnitude. According to my conceptualization a strategic vote following the Duvergerian logic is a vote for a party that is not most preferred but expected to be more viable. Unfortunately, an individual's expectation cannot be assessed directly, particularly since in most countries the CSES module was administered as part of a post-election study. Assuming that on average voters expect a party to be more viable than their most preferred party when the former one ends up with a higher vote share than their most preferred party (Gschwend 2001; Karp et al. 2002: 8), my dependent variable is the percentage of votes cast at the electoral district level for a party with a higher expected vote share instead of a vote for someone's most preferred party. This group of strategic voters is likely to follow the Duvergerian logic avoiding to waste a their vote.[4] The advantage to define strategic voting this way is that it does disentangle strategic voters following a wasted-vote strategy from voting behavior that can be interpreted as a result of other strategies. Thus the frequencies of strategic voting are not falsely magnified if we, for instance, define simply every deviation from someone's most preferred party as a strategic vote. One drawback is, though, that the estimate of the frequency of strategic voting in national MMD systems will be too high since small party supporters could also cast their vote for a party that they expect to be more

[4] If respondents most prefer two parties at the same time I will count such a vote for the party that is expected to do better on Election Day as a strategic vote since not including expectations in their decision calculus could have resulted in a vote for the party that is expected to do worse.

successful in order to make one type of coalition government more likely. This strategy for PR systems is known as *strategic sequencing* (Cox 1997: 194-196).[5]

Table A1 in the appendix provides an overview about the percentages of strategic voters across the election studies of parliamentary elections that have all the information available and passed a data consistency check. The exclude category is comprised of the percentage of non-strategic (sincere voters and others[6]) voters. Thus, first, I had to delete countries with only presidential elections (Chile, Lithuania) and where district level information is not yet available (Belarus, Taiwan, Korea, Russia, Ukraine and Thailand). Second, after further inspection of the frequencies I deleted the data from Peru 2000 elections, since no vote choice variable is available. 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.

The key independent variable following Duverger and Leys-Sartori is the district magnitude. What exactly is the relationship between the district magnitude and the propensity that a voter considers voting for a different party than her most preferred one? 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; Taagepera and Shugart, 1989) that this relationship has to be non-linear. I, again, tried both versions and since the results are almost identical I report the analysis with the district magnitude simply 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 electoral systems employing various seat-allocation rules I create a set of dummy variables, scoring one if the

[5] I replicated my entire analysis with counting every vote that deviates from someone's most preferred party as a strategic vote with qualitative similar results.

[6] The 'other' category is, for instance, comprised of voters of a party that is not being evaluated on the corresponding party likes/dislikes scale.

electoral district belongs to a country that employs a particular seat-allocation rule and zero otherwise. Thus, I create a dummy for SMD (Canada, UK, USA), local MMD (Switzerland, Spain, Peru, Portugal, Slovenia), locally adjusted MMD (Belgium, Czech Republic, Hong Kong, Denmark, Island, Norway, Sweden, Poland, Romania), national MMD (Israel, the Netherlands), alternative (Australia) and for mixed (Germany, Hungary, Japan, New Zealand, Mexico) systems that are incorporated in the CSES (module 1) data.

Since the frequency of strategic voting per district is calculated over a different number individuals, estimation a least square regression model is fine but every observation has to be weighted inversely proportional to its variance in order to make the assumption of a constant error variance more believable. In this case the weights are the number of respondents per electoral district that gave rise to the observation of the frequency of strategic voting in an electoral district. The estimation results of a weighted least (WLS) regression of the frequency of strategic voting on the set of dummies, excluding the constant, are presented the following table 1. Note all estimates are accompanied with robust (Huber-White) standard errors and their corresponding 95 % confidence interval.

Table 1: Estimated Frequency of Strategic Voting across various Systems of Seat Allocation Rules

		Dependent Variable Frequency of Strategic Voting			
Independent Variables		Coef.	Std. Err.	95% CI	
LSA	SMD	9.10	0.46	8.20	10.00
	Local MMD	9.55	0.79	8.00	11.10
	Local MMD - District Magnitude	---			
SDSA	Locally adjusted	7.18	0.40	6.40	7.96
	Locally adjusted - District Magnitude	---			
	National MMD	9.81	1.81	6.26	13.36
	Alternative	5.50	0.58	4.37	6.63
	Mixed	12.55	0.50	11.56	13.53
	N	1951			
	R-squared	0.57			
	Root MSE	8.41			

More than half of the variance of the frequency of strategic voting at the primary district level is accounted for by the variance across various systems of seat allocation rules. First thing to note is that on average the frequency of strategic voting does not differ systematically within LSA systems. Thus it seems reasonable to collapse SMD and local MMD system into one category. Table 1 shows that one can expect in SMD systems on average 9.1 % of all voters following the wasted-vote strategy in order to avoid wasting their vote on a smaller party while around 9.5 % do so on average in local MMD systems.

Second, these results also make transparent that the expected frequency of strategic voting differs considerably across SDSA systems. In Australia, on average, only about 5.5 % cast a strategic vote per district while in locally adjusted MMD systems this number is significantly higher as expected in hypothesis 4. Interestingly, looking at the estimate for mixed systems, in the SMD-tier of mixed electoral systems the share of strategic voters is significantly higher than in SMD systems (or in LSA systems in general) without a second tier supporting hypothesis 3. Two explanations come to mind. First, these are merely country- or election-specific effects. Maybe German voters in 1998, for instance, are simply more inclined to vote strategically than voters in the US in 1996. Second, and theoretically certainly more illuminating, there are stronger incentives for strategic voting on the candidate vote in mixed electoral systems than in SMD systems, presumably arising from the second tier. Thus, this might be interpreted as another piece of evidence for the existence of contamination or interaction effect. Apparently, 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.

Nevertheless, nothing is said yet about the impact of the district magnitude on the frequency of strategic voting. Therefore I will refine my estimation strategy and also include two further variables that measure the impact of district magnitude on two types of seat-allocation systems where the district magnitude varies within such a type: Local and locally

adjusted MMD systems. The WLS estimation results, together with robust (Huber-White) standard errors and their corresponding 95 % confidence intervals are summarized in table 2.

Table 2: Estimated Frequency of Strategic Voting across various Systems of Seat Allocation accounting for Variance in District Magnitude

		Dependent Variable Frequency of Strategic Voting			
Independent Variables		Coef.	Std. Err.	95% CI	
LSA	SMD	9.10	0.46	8.20	10.00
	Local MMD (constant)	9.59	1.09	7.46	11.73
	Local MMD - District Magnitude	0.00	0.06	-0.12	0.11
SDSA	Locally adjusted (constant)	8.70	0.72	7.29	10.12
	Locally adjusted - District Magnitude	-0.12	0.04	-0.21	-0.03
	National MMD	9.81	1.81	6.25	13.36
	Alternative	5.50	0.58	4.37	6.63
	Mixed	12.55	0.50	11.56	13.53
	N	1951			
	R-squared	0.57			
	Root MSE	8.39			

First, contrary to hypothesis 1 district magnitude does not seem to nontrivially reduce the frequency of strategic voting in electoral systems where the seat allocation is done merely on the local level. If there were any systematic influence that gets channeled through the district magnitude we would expect that this effect shows up precisely in these systems without any incentives that undermine the wasted-vote logic. For the expected frequency reduction of strategic voting per district magnitude in locally adjusted MMD systems one gets a small but nevertheless nontrivial estimate. On can expect not more than about two tenth of a percentage point less strategic voting for every additional seat that is distributed in an average district in locally adjusted MMD systems.

Second, this estimation strategy allows us to directly compare the expected frequency of strategic voting across various electoral systems and various seat-allocation rules of primary electoral districts where only one seats is allocated. Again, for primary districts of magnitude one there is no systematic difference within LSA systems. On average on can

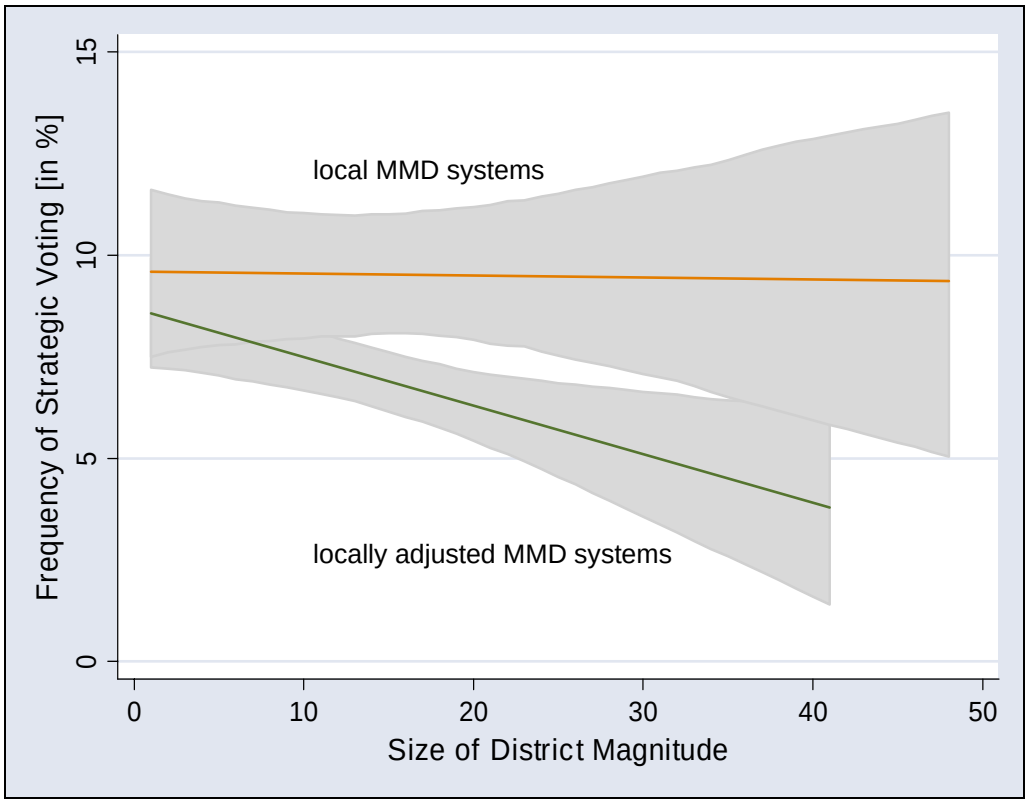
expect about 9.6 % (= 9.59 – .003) strategic voters following the wasted-vote logic in local MMD systems while about a half percentage point less in SMD systems. Within SDSA systems on can expect in single-member districts of locally adjusted MMD systems about 8.6 % (= 8.70 - .12) strategic voters per district. This is significantly higher than the predicted corresponding frequency in alternative vote systems (Australia being the only country that fits this category), again, supporting hypothesis 4 and, moreover, is significantly lower than the predicted corresponding frequency in mixed systems supporting hypothesis 3.

Third, there is, unfortunately, no systematic difference of the frequency of strategic voting following the wasted vote logic in national MMD systems than in locally adjusted MMD systems rejecting hypothesis 5. Since there are only two districts among all observations that stem from national MMD systems (the Netherlands and Israel) there might be a "small N problem" behind the large confidence intervals. Further iterations will include data from additional elections. If we would only take the respective value for Israel (6.2%, see table A1) than hypothesis 5 still holds up to a district margin of 14. Beyond that, in accordance with this hypothesis, the frequency of strategic voting in locally adjusted MMD does not get smaller than the respective value for Israel. Thus a locally adjusted MMD system with district size 15 and higher does provide essentially no more or less incentives to deviate from someone's most preferred party in order to avoid wasting their votes than a national MMD system (given that the national thresholds of the considered national MMD systems are reasonably small).

Nevertheless, given the differences of the system-specific constants on might ask, whether the expected frequency of these systems is still different even for districts with a large magnitude? To provide evidence for the remaining hypotheses I simulated the expected frequency of strategic voting depending on the size of the district magnitude based on the estimation results above. The following graph summarizes these results. The lower regression line represents the simulated expected frequencies for locally adjusted and the upper line the

corresponding one for local MMD systems. Every simulation is accompanied with their 95 % confidence interval based on robust (Huber-White) standard errors.

Figure 2: Estimated impact of the District Magnitude on the Frequency of Strategic Voting for local and locally adjusted MMD systems



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.[7] The range of the district magnitude of primary electoral districts is a bid wider for local MMD systems than for locally adjusted MMD systems. Most importantly, though, this graph makes transparent that even across the entire range of actual (observed) district magnitudes, the frequency of strategic voting is on average higher in LSA

[7] The analysis is carried out using Stata 8.1 and in order to simulated predicted probabilities I employed Clarify 2.1 (Tomz et al, 2003; King et al., 2000).

than in locally adjusted MMD systems. For districts with a magnitude between 13 and about 35 this difference is significantly different supporting the hypothesis 2.

Conclusion

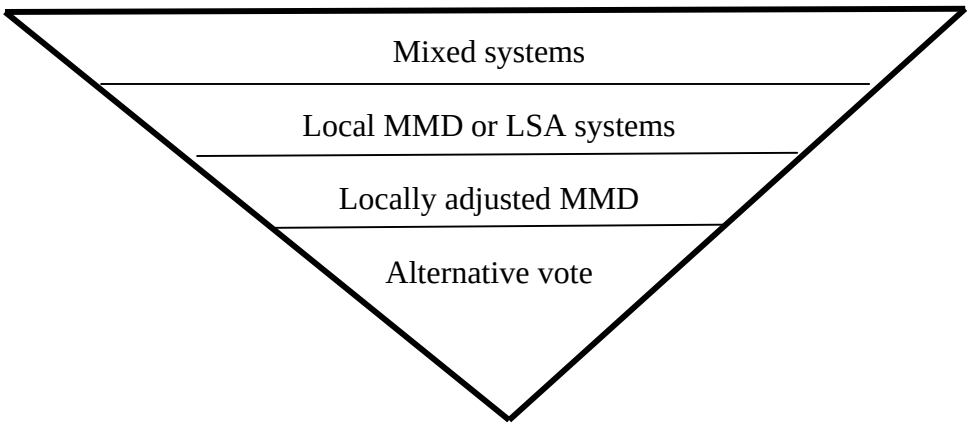
The workings of electoral laws have not only profound and well-known consequences for the party system, the type of government and the nature of representation in general. It also has an impact on the way people make decisions in then voting booth. Some voters anticipate the outcome of an election because they form expectations about it and act accordingly. The way these expectations play out seem to differ systematically across various electoral systems. Since voting behavior is not only situational but also dispositional determined I distinguished situational and dispositional criteria of how voters generate expectations about the probability that their vote is not wasted on her most preferred party. Here I focused on the situational criteria that operate at the primary district level, possibly taming the incentives that get channeled through the district magnitude, that have an impact on the frequency of strategic voting.

As expected, the Leys-Sartori conjecture, predicting that the smaller the district magnitude the more strategic voting at the primary district level, does not hold. Particularly, the level of strategic voting at the district level is related to the district magnitude in locally adjusted MMD systems but not so across local 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.

The aim of this paper is to provide a hierarchy of electoral systems that helps to predict the share of strategic voters following the wasted vote strategy. The results are clear:

Figure 3: A observed Hierarchy of Electoral Systems to predict the Share of Strategic Voters following the Wasted-Vote Strategy



There is meaningful variation across 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. These results are summarized in the above figure. For the candidate vote in 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. LSA and locally adjusted systems take up middle positions while the simulated predictions made transparent that in locally adjusted systems one does not expect on average more strategic voters following a wasted-

vote strategy than in LSA systems. Particularly for a wide range of electoral districts (with a district magnitude between 13 and 35) as expected one, in fact, can find more strategic voting in local MMD systems than in locally adjusted MMD systems. The analysis made also clear that one needs to have more data on national MMD systems in order to systematically test hypothesis regarding the expected number of strategic voters or parliamentary parties in such systems.

The systematic differences resulting from the variation in the institutional context are generally more pronounced at the district level across electoral systems the smaller the particular district magnitude gets. Thus, contrary to the electoral systems literature the results of this paper indicate that the impact of the district magnitude on the frequency of strategic voting and therefore, more generally, on the (effective) number of parties in a given polity is *conditional* on the type of rules employed that translate votes into parliamentary seats. The incentives that get channeled through the district magnitude are not constant across various seat allocation systems. The differences across various electoral rules become less important in order to predict the share of strategic voters that have to be expected in a given polity the more seats are allocated at the district level.

Appendix

Table A1: Frequency of Strategic Voting by Election Study– CSES Module 1 across various Systems of Seat Allocation.

System of Seat Allocation	*CSES Election Studies*	*Percentage of Strategic Voting (Wasted-Vote)*
national MMD	Israel	6.2
	Netherlands	11.8
Mixed	Germany	16.2
	Hungary	3.2
	Japan	8.8
	Mexico ('00)	6.3
	Mexico ('97)	16.9
	New Zealand	15.3
Alternative vote	Australia	5.5
Locally adjusted MMD	Belgium	7.9
	Czech Republic	4.2
	Denmark	5.8
	Hong Kong ('00)	9.6
	Hong Kong ('98)	11.7
	Island	3.5
	Norway	5.5
	Poland	10.7
	Romania	14.1
	Sweden	3.2
Local MMD	Peru ('01)	9.0
	Portugal	12.0
	Slovenia	10.0
	Spain ('00)	1.5
	Spain ('96)	12.5
	Switzerland	13.1
SMD	Canada	8.1
	UK	9.2
	USA	8.8
Total (CSES Module 1)		9.3

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