

The effect of institutional and party system factors on turnout in Finnish
parliamentary elections, 1962–2007: a district-level analysis

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ABSTRACT

We examine the link between voter turnout and institutional features of electoral systems such as the threshold of exclusion and proportionality, and other empirical factors such as competition and the effective number of parties, i.e. factors that previous literature has suggested will probably be closely linked to district magnitude. As in Blais and Arts (2004) and Grofman and Selb (forthcoming), we find a complicated pattern of interrelationships in which the link between party constellation and turnout is mediated by other factors, and is not strongly monotonic.

Introduction

In the study of electoral participation, the various factors affecting turnout at the macro level are usually categorized into institutional setting, party system and socio-economic environment (e.g. Blais, 2000; Blais & Dobrzynska, 1998; Geys, 2006; Powell, 1980). Of the institutional-level variables, along with factors raising turnout such as weekend voting, compulsory voting, and concurrent elections, and factors lowering turnout such as onerous voter registration requirements, electoral system rules appear to have a strong impact on turnout (e.g., Geys, 2006). In particular, proportional representation (PR) systems are, on average, found to have a higher turnout than majority or plurality systems. There is however a possibility of overestimating electoral system effects when cross-sectional analyses are performed because of the difficulty of controlling for all the relevant cultural and social factors. More problematic still is the fact that the literature has failed to ascertain the exact mechanisms accounting for the apparently strong electoral system effects on voter participation.

In sum, the mobilizing effect of PR seems to be strongly connected to number of parties either directly or indirectly, through the link between high district magnitude and higher number of parties: high district magnitude decreases the *threshold of exclusion*¹ and thus can be expected to increase proportionality and, concomitantly, the expected number of parties. At a national level of aggregation, although turnout is higher in countries that use PR than in countries that do not, most empirical studies however report a negative impact of the number of parties on turnout (for review, see Blais & Aarts, 2006). Because Blais and Arts are the first to clearly highlight the theoretical importance of this finding for rational choice theories of turnout, Grofman and Selb (forthcoming) refer to lack of a clear positive relationship between turnout and the number of parties as the ‘Blais-Arts turnout puzzle’. In their forthcoming paper following up on a suggestion of Blais and Arts to revisit the turnout-number of parties link by looking at district-specific data, Grofman and Selb present analyses based on district-level data from Spain and Switzerland, and again find a negative or null link between turnout and effective number of parties, at least once the number of parties is higher than two. To account for this theoretically troubling district-level finding, they examine the relationship between turnout and various other aspects of

party and electoral systems, e.g., competitiveness, proportionality, and district magnitude. In the two countries they examine, a lack of or even negative relationship between turnout and ENP is accounted for the fact that, at the district level, rather surprisingly, the effective number of parties is not positively linked to either the degree of proportionality or the level of competition, despite the fact that both of these latter variables are themselves positively linked to turnout.

In studying the effects of political competition, Grofman and Selb used a recently developed index (Grofman & Selb, 2009) to assess the degree of political competition in elections at the district level. The novelty of the index lies in its applicability in both plurality and proportional systems. In the empirical part of their paper, Grofman and Selb (2009) demonstrated that a high level of competition, as the way they measured it, was strongly related to turnout differences across districts, as well as to turnout variability within districts in Switzerland over the past four decades. A highly competitive environment was assumed to have a positive impact on turnout because, on the one hand, parties have stronger incentives to mobilize voters and, on the other hand, voters perceive that their votes are more likely to affect the outcome (ibid., 292). In their more recent study, Grofman and Selb (forthcoming) however found that high levels of political competition only fostered high turnout across single-member districts in Switzerland, whereas political competition was not connected to turnout across Swiss multi-member districts or across Spanish single- and multimember districts.

In this study, we test some of the ideas of Grofman and Selb (2009, forthcoming) in the Finnish context. In particular, we will attempt to establish the impact on district-level turnout across space and time of (1) the number of parties and (2) the degree of political competition.² Relatedly, we assess the relative impact of party system fragmentation and degree of political competition on turnout, bearing in mind that these variables are not necessarily strongly linked to each other and thus may produce independent effects on turnout. Moreover, since turnout is related to other institutional-level variables besides the number of parties and political competition, e.g., district magnitude/effective threshold, and electoral proportionality, our analyses will also take these variables into account. A further

question we consider is to what extent the number of parties and levels of political competition can account for growing differences in turnout between districts in Finland over the past decades. Here we will begin by testing a hypothesis connected to suggestions by Grofman (2009), namely that, as turnout levels fall, the degree of variation in turnout levels across districts will rise.

We will be examining turnout variability both between districts and within districts. The study carries out spatial and temporal analysis of turnout involving 13 parliamentary elections between 1962 and 2007 across 14 electoral districts in Finland.³ In Finland, relatively large spatial and temporal differences can be discerned both in terms of turnout and party system variables at the district level. It is therefore reasonable to attempt to account for patterns of turnout by analyzing cross-sectional time-series data.

In the next section, we discuss the expected connections between institutional and party system features in theoretical terms, with a focus on their links to instrumental incentives for turnout. Before turning to the actual data analysis, we briefly describe the Finnish electoral context. Then we look at a hypothesis based on the ideas presented by Grofman (2009) which link changes in cross-district variance in turnout to changes in overall turnout. Next, we turn to the research design for the main part of the study and then to the tests of our hypotheses. We look first at the simple bivariate relationships between turnout and four key variables: district magnitude (here represented by the *threshold of exclusion*, which is roughly inverse to district magnitude), proportionality, competitiveness, and effective number of parties, and then examine the impact of each of these variables on between-district and within-district variation in turnout. Our concluding discussion reviews some implications of our results, and offers suggestions for further research.

Institutional and party factors affecting turnout: theoretical perspectives

There are at least four main hypotheses linking institutional and party factors to turnout. The first two look at wasted votes, proportionality, and political competition. Blais & Carty (1987) have suggested that fewer votes are wasted under proportional systems in the sense

of going for parties that fail to gain representation, and there is thus higher expected proportionality in correspondence between votes and seats under systems that satisfy the PR principle. Consequently, we might assume that voters feel more efficacious when PR is used, and hence have a more incentives to vote. Moreover, since proportionality might be expected to rise with district magnitude, and so should the number of parties, we would expect that the number of parties to correlate with turnout.

The second, related, hypothesis suggests that we might expect district magnitude to increase competitiveness in the sense of narrow gaps between the quotients necessary to win the k th and the $(k+1)$ th seat, or between last winner and first loser, or between first loser and second loser. This in turn might increase voters' sense under PR than under plurality that their vote could play a pivotal role in the election. Along these lines, a correlation between increased number of parties and increased competition has been posited suggesting that, due to increased competition, the more political parties we have, the higher the turnout, all other things being equal. As will be shown later, the connection between number of parties and competition is however not that straightforward.

The next two hypotheses assign a prominent and even more direct role to the number of parties contesting/winning seats in a district in accounting for the observed close connection between electoral rule choice and turnout. In these two hypotheses, the number of parties acts as a mediating factor on voter participation. The third hypothesis looks at the relationship between number of parties expected to contest the election and the likelihood that voters will have a desirable option open to them that will motivate them to vote. *Ceteris paribus*, the higher the number of parties, the wider the range of choices open to voters (Cox 1997, 1999). Since we would expect more parties under PR systems (Taagepera & Shugart, 1989), then we would also expect that voters in PR systems would have higher propensity to have a party option open to them to which they were ideologically close. Consequently, where there are many parties contesting, *ceteris paribus*, voters are supposed to be more willing to bear the costs of voting in expectation of gaining representation for a party whose views they strongly support.

A fourth hypothesis relates to the nature of the party campaigning incentives under different electoral rules. Under PR, at least for moderately sized districts, there will be few constituencies where parties have no chance of gaining representation. More generally, it would seem that a party's incentives to campaign everywhere might go up with district magnitude, as their chances of gaining representation increase which is in marked contrast to single seat elections held under plurality in the U.S. and elsewhere where many districts are completely safe for one party. This observation would seem to suggest that the overall level and visibility of campaigning should be higher under PR than under plurality. This effect may increase voter turnout and partly account for the electoral system-turnout connection.

As aforementioned hypotheses demonstrate, the various institutional-level variables affecting turnout are strongly interrelated, and the challenge is thus to understand the causal links between them. District magnitude (m), which refers to the number of seats assigned to an electoral district, is usually considered to be farthest back in the causal chain. This substantial institutional feature is normally treated as a variable with an exogenous effect on voting behavior. In particular, the size of electoral districts, in conjunction with the electoral rule in use, by setting the threshold for party entry via the threshold of exclusion, can shape the structure of party systems by affecting the incentives for party competition as measured by the effective number of parties at the level of votes, the effective number of parties at the level of seats, and the number of seat-winning parties. In the same fashion, district magnitude can be expected to affect levels of proportionality (Lijphart, 1999, 150-153; Ordeshook & Shevetsova, 1994, 105-107; Taagepera & Shugart, 1989, 112-125). Proportional electoral systems with large multi-member districts permit a high degree of proportionality between vote and seat shares, and also a larger number of parties stand the chance of winning seats.

Since both number of parties and proportionality are assumed to foster turnout, this suggests a causal chain along the lines of

$D \rightarrow C \rightarrow B \rightarrow A$

where D = district magnitude; C = proportionality; B = effective number of parties; A = turnout. As Taagepera and Shugart (1989) remark, there may however be an interaction between the number of parties which contest a district and the proportionality of results that mitigates against the expected monotonic relationship between m and proportionality. As they observe, if, as m increases, more parties run than win, then proportionality is diminished. In fact, at the aggregate cross-national level, they find that the expected effect of increasing proportionality as m grows appears to be largely offset by the increase in the number of parties as m grows, so that, after a certain district size, proportionality stays almost constant. Thus the direct causal structure posited here is too simple to be realistic, since it fails to take into account interaction effects.

It is also difficult to place the degree of competition in a causal sequence. Firstly, as suggested by Cox (1999), and empirically shown in the context of Swiss parliamentary elections by Grofman and Selb (2009), the closeness of competition between parties is lower on average in districts with lower magnitude, i.e. districts with higher threshold of exclusion. Secondly, while it could be expected that a higher effective number of parties competing for votes in a district increases the political competition in the district, the empirical results by Grofman and Selb (forthcoming) concerning Spain and Switzerland are inconsistent, and suggest that we should not expect a linear relationship between number of parties and competition.

Institutional context

The elections for the unicameral Finnish parliament with 200 representatives are held every fourth year.⁴ The electoral system used in Finland could be called open-list preferential voting (e.g. Marsh, 1985, 365). Whereas in many list PR systems in Western Europe voters may also indicate their favored candidate within their favorite party, it is compulsory to vote for a candidate in Finland (Reynolds et al., 2005, 84). The number of seats won by each party is based on the total number of votes gained by its candidates. The candidates representing each party are elected according to the number of individual votes they have received (ibid.). The elections are proportional in the sense that each party, party alliance,

constituency association or joined list win seats in relation to the votes cast compared with the votes for other groups. The votes are counted by according to the d'Hondt method, which appears to have a tendency to favor large parties (Ollila & Paloheimo, 2007, 357).

For the parliamentary elections, Finland is divided into 15 electoral districts. The number of representatives elected in each district is based on the number of citizens residing there six months prior to the elections. There is substantial variation between the districts in the numbers of representatives elected, ranging from one (Åland) to 34 (Uusimaa) (Statistics Finland 2007). Changes in the number of seats allocated to individual multimember districts have occurred to accommodate shifts in the population (impacting on levels of disproportionality and party system fragmentation across the districts). Most notably, the number of small districts has grown. In 1962, the smallest district had 9 seats while the other 13 districts were distributed fairly evenly from 10 and 20 seats. In 2007, the 4 smallest districts had between 6 and 9 seats, and the largest district had increased its number of seats from 20 to 34.⁵

The effect of overall level of turnout on turnout variability

Finland is a particularly interesting case for district-level analysis due to the fact that overall turnout has experienced a relatively steady decline. In Finland, national turnout has dropped by more than 17 percentage points over the past 45 years: from 85.1 per cent in 1962 down to 67.9 per cent in 2007. Grofman (2009) shows, mathematically, that the gap between the upper and lower bounds on the difference between the average turnout level of the group of voters with above median turnout and the group of voters with below median turnout must narrow as turnout rises. The key intuition in Grofman (2009) is that, more generally, as turnout falls, *ceteris paribus*, turnout differences between groups are likely to be accentuated. We take this insight and apply it to districts, rather than to groups of voters, and we test it with aggregate data rather than survey data.

The relatively low aggregate-level turnout we now find in Finland suggests that the mathematical constraints on the district-level differences in participation are substantially

lower than they had been in the past, when turnout was much higher. The hypothesis we propose is that, *ceteris paribus*, as turnout falls, then the variation in turnout levels across districts will rise. We measure variation in turnout both as the gap between turnout in the district with highest turnout and the district with lowest turnout and as the standard deviation of district level turnout to test this hypothesis.

Turning first to differences between districts with the highest and lowest turnout, we find that the gap between minimum and maximum turnout rates among districts averaged 5.1 percentage points for the period 1962–1983 but increased to 8.5 percentage points for the period 1987–2007. There is a statistically significant difference between the mean scores. Relatedly, the standard deviations of the district level variation in mean turnout during these two periods have risen: from an average of 1.6 for the first period to 2.5 for the second. The difference between the mean scores for the two periods is also here statistically significant. Figure 1 shows the relationship between mean turnout and the size of this gap for each election year during the period. While there are a few years which violate the expected pattern, it is visually clear from this figure that there is a fairly strong association between overall turnout and differences in turnout rates across districts. Indeed, we find an OLS line with equation: $y = -2.38x + 92.00$ ($R^2 = 0.62$, $N = 13$, $p < .01$).

FIGURE 1 ABOUT HERE

Research design

Between 1962 and 2007, 13 elections have occurred, mostly every four years. The data set used in this study covers 14 districts and 13 elections, for a total of 182 observations. Because of multicollinearity issues, we focus on bivariate relationships, but ones that pool time-series and cross-sectional data.

District turnout is used as the dependent variable. It is measured simply as the number of voters divided by the number of eligible voters living in each district. Enfranchised citizens living abroad are omitted from the calculation of turnout.

Four independent variables are hypothesized to influence district turnout. *The threshold of exclusion* is included in the statistical models instead of district magnitude simply for the sake of reducing the influence of outliers on parameter estimations. For d'Hondt, the threshold of exclusion is the inverse of the district magnitude plus one ($T^E = 1/(m + 1)$). As noted earlier, this variable represents the percentage of the vote that a party must gain to win a seat under the most unfavorable circumstances.

Disproportionality is gauged using the index of distortion which summarizes the deviations of seat shares from vote shares of the different parties ($D^{th} = \sum |v_i - s_i|$) (e.g. Loosemore & Hanby, 1971). *Effective number of parties* is the relative strength of parties based on their vote shares ($N^{eff} = 1/\sum p_i^2$). The effective number of parties is frequently used to measure the fragmentation of party systems. The vote shares of all contesting parties at the district level are taken into account when the index values are calculated.

The *Grofman-Selb index of competition* (Grofman & Selb, 2009, forthcoming) is based on the magnitude of the *minimum* changes in vote shares needed to change seat allocations. First, for individual parties, the index uses information on the threshold of exclusion and how large is the minimum possible share of the votes required for seat transfers between parties in terms of either gains or losses ($c_i = \max[(T^E - x_i^G), (T^E - x_i^L)] / T^E$). Second, a composite index across parties is calculated as the weighted sum of the competition index values for each party, where the weights are the vote shares of each of the parties ($C = \sum v_i \times c_i$). Thus, the higher the index value, the more likely it is that small changes in vote share would change how seats were allocated among parties.

A fifth variable is also used as a control, namely *time*. As shown in Figure 1, national turnout exhibits an overall downward trend over the period at hand. Although turnout does not fall uniformly, there is a very strong negative correlation between time and national

turnout in Finland. A time trend variable (*linear trend*) is included as an additional regressor in order to detrend the data and purge the models from residual autocorrelation. The linear trend variable is coded 1 for the first time observation, 2 for the second, and so forth. By including a time trend variable in the statistical models, the independent variables can be viewed as accounting for the variation in the dependent variable around the trend. In many districts the time trend variable is highly correlated with the explanatory variables, so that failure to detrend the data could lead to spurious correlations.

Random-intercept models are fitted in which the party system variables are modeled as a combination of (1) their mean values across time for each electoral district and (2) election-specific values for each district and election. In the statistical models, the mean values account for between-district variability, and the election-specific values account for within-district variability (or the election-specific deviation from the cluster mean). Estimates are not obtained in separate regression models for between-subject variation (differences between districts) and within-subject variation (changes within electoral districts). Instead, the models we use simultaneously provide estimates for both between-subject and within-subject effects (see Rabe-Hesketh & Skrondal, 2008, 114-122). The rationale behind including the cluster mean as a separate covariate is to more directly investigate whether the between district and within district effects are different. We would note, however, that if separate models for between- and within-subject effects are fitted, fairly similar estimates are produced.

Empirical analysis

This section examines empirically the variance in turnout both between and within electoral districts in Finland 1962–2007. We will first look at the simple bivariate relationship between district-level turnout and the threshold of exclusion, disproportionality, the effective number of parties and political competition, respectively. Then we will show models that incorporate variability within districts as well, though still conducting our analysis at the bivariate level because of the high collinearity among several of our key variables. Data on party shares at the district level for the period of 1962–1979 were

obtained from official election reports.⁶ Data for the period of 1983–2007 were collected from a statistical online database provided by Statistics Finland (<http://www.stat.fi/>).

Table 1 shows the simple bivariate relationship between each variable and district turnout. The bivariate correlation tests (Spearman) are run separately for each election so as to control for period effects which may not be detected when we analyze the data pooled across time and districts. This however includes a cost as our estimates are less robust due to the small number of cases. We also have plotted scatter diagrams for index of competition (Figure 2) and effective number of parties (Figure 3) to check for possible non-linear patterns (using locally weighted regression lines).

TABLE 1 ABOUT HERE

FIGURE 2 ABOUT HERE

FIGURE 3 ABOUT HERE

The bivariate results shown in Table 1 suggest that the impact on turnout of some of our independent variables is not consistent over time, complicating any simple story we might tell about how each of these variables affects our dependent variable. For example, for political competition, no clear patterns across time can be detected. In only a couple of elections is there a strong, and in each instance positive, relationship between the degree of competition and turnout. The scatter plots in Figure 2 do not show a recursive non-linear relationship. While the threshold of exclusion, which is an inverse function of district magnitude and thus should be expected to have a negative relationship with turnout, exhibits the expected negative correlation with turnout for all the elections, this correlation rises to the level of statistical significance only in the two most recent elections. Turning now to proportionality, we note that earlier work has found a growing relationship between the mean deviation from proportionality⁷ and district magnitude as the differences in seat

size among the districts have grown (Ollila & Paloheimo, 2007, 358-361). In our data we find, as expected, that disproportionality is consistently negatively linked to turnout but, even though the magnitude of the correlation does appear to be generally increasing, there is a lack of clear pattern in terms of which years this relationship rises to the level of statistical significance except for saying that significance obtains only for years in the more recent decades.

Inconsistency in relationship to turnout also manifests itself for the independent variable of main focus in this study, the number of parties, i.e. a variable that has been posited to have both strong direct and strong indirect effects on voter turnout. At the beginning of the period under investigation, we find a negative relationship between effective number of parties and turnout at the district level. Then, in a series of elections, the relationship weakens to the point of disappearance. According to the scatter plots in Figure 3, the relationship appears to be U-shaped. Interestingly, as of 1995, a strong positive relationship appears, rising to statistical significance in 2003 and 2007.

While we will not, for space reasons, consider all the interrelationships among our variables, a brief comment is called for about the link between district magnitude, m , and the level of party system fragmentation. The substantial variation in district magnitude in Finland gives rise to considerable potential differences across districts in the ability of parties to gain seats in parliament. Looking across time, a consistent pattern cannot however be detected. In particular, the correlation between electoral district magnitude, m , and the level of party system fragmentation has only recently (as of the 1990s) become statistically significant, with larger districts giving rise to a larger number of parties (correlations omitted). Still, the mechanical effects of the electoral system at the district level may be becoming more evident as the differences in magnitude between the districts have increased over the past decades. The growing strength of the link between effective number of parties and turnout in Finland may thus be mirroring the growing strength in the link between district magnitude and effective number of parties in that country.

Table 2 shows the maximum-likelihood estimation results for equations seeking to account for the effect of various factors on variation in district-level turnout. As discussed in the

previous section, many of the independent variables we use are correlated with one another, and therefore need to be modeled separately due to multicollinearity. The regression coefficient represents the increase in district turnout (percentage points) for a 1 unit increase in the independent variable. Even though the variables are expressed as decimal fractions (see descriptive statistics in Appendix), the empirical estimates can be interpreted straightforwardly. A 1 unit increase in the threshold of exclusion represents a one percentage point change in that variable. Similarly, a 1 unit increase in proportionality represents a one percentage point change in that variable while a 1 unit change in the index of political competition represents a 0.01 point change in that variable since this index runs between 0 and 1.0.

TABLE 2 ABOUT HERE

First, the threshold of exclusion is not closely related to district turnout in our model, since neither of the effects for this variable reach statistical significance, although the negative coefficient for the election-specific value ($\beta = -.317$) hints that turnout within a district is more likely to increase if the number of seats increases. Second, turnout tends to be depressed as a function of disproportionality.

The coefficient for the election-specific disproportionality value is $-.116$ (which is significant at p less than $.05$). This means that for every percentage point deviation between vote and seat shares turnout decreases on average 0.116 percentage points, controlling for the cluster mean. Turnout is thus lower in smaller districts where the degree of disproportionality is higher (i.e. difference between vote and seat shares of parties aggregated at the district level). The effect of disproportionality is however not that large when we consider that the differences between minimum and maximum index values within districts vary between 6 and 19 percentage points, with a mean gap of 10 points. More concretely, turnout is predicted to be on average 2.3 percent higher in the district with the highest mean ($D^{lh} = 18.1$) than in the district with the lowest mean ($D^{lh} = 7.8$). The coefficient for the cluster mean variable is $-.227$ (significant at the $.06$ level), which can be interpreted in the same way as mentioned.

Thus, the actual level of (dis)proportionality between vote and seat shares is a more closely connected to district turnout than the number of seats allocated within a district. Larger district magnitudes (here measured as lower thresholds of exclusion) do not automatically generate incentives for higher turnout. District magnitude and proportionality are correlated, but number of seats has, at best, an indirect effect on turnout: within-district changes in district magnitude only appear to affect turnout as they operate to increase proportionality.

The index of political competition, devised by Grofman and Selb (2009), appears not to be a strongly related to within-district variation in turnout as the coefficient is small in magnitude and statistically insignificant. Nevertheless, it does work at the aggregate level in predicting mean district turnout fairly well ($\beta=0.324$).⁸ From the regression model, we would get the turnout gap between the most and least competitive electoral district at about 3 per cent. Also, at the aggregate level (but not at the within-district level) the political competition mean is correlated with the disproportionality mean in that the more disproportional a district is, the less politically competitive it is. The inability of the index of competition to predict within-district changes in turnout may be due to a limited variation in that variable within most districts. Upon closer scrutiny, minor increases and decreases in levels of competition occur between pairs of election within districts (0.1 points on average) and these fluctuations exhibit no trend. In only three districts there appears to be a sufficiently strong and positive relationship between competition and turnout.

Finally, we turn to the variable which is at the heart of the Blais-Aarts puzzle, the level of multipartism, as measured using the effective number of parties. Our district level findings lend only limited support to the hypothesis that turnout increases with the number of parties. Both the between-cluster effect (.144) and the within-cluster effect (.369) are positive, but they do not reach conventional significance levels, and ability of this variable to account for overall variation in turnout is relatively small. In addition, the differences between the districts in terms of the number of parties are not that large. The most fragmented district has, on average, less than two 'effective' parties more than the least fragmented one. Within-district changes have also been limited: the districts with the

largest variability have either seen an increase or decrease of about 1.5 ‘effective’ parties over time.

Conclusions

In seeking to use district level data to account for the Blais-Aarts puzzle that PR systems had higher turnout than non-PR systems, and yet, looked at cross-nationally and cross-sectionally, turnout did not rise with an increase in the (effective) number of parties, Grofman and Selb (forthcoming) revealed that assumptions on its mechanisms usually suggested to account for turnout seemed to be relatively weak. In particular, despite the fact that the (effective) number of parties was posited to be a key intermediating variable in affecting turnout, when they looked at district-level data both cross-sectionally and longitudinally, they found that this variable simply did not work in the expected way. Moreover, when studied at the district level, other key variables such as proportionality also lacked a monotonic link to turnout. Their results also suggested that context can matter in that we may get different results for different countries depending upon the exact nature of their party systems, and the details of their electoral arrangements.

Our results are in line with Grofman and Selb (ibid.), and mostly contributes to deepen the puzzle. In particular, our district level findings lend only limited support to the hypothesis that turnout increases with the number of parties, and we show that the links to turnout with other key variables (e.g., proportionality or district magnitude) vary over time in their strength, or, as with political competition, work for accounting for cross-district but not within-district turnout variation. It does, however, appear that proximate variables such as degree of proportionality are more closely connected to turnout than institutional features of electoral systems such as the threshold of exclusion whose effects are expected to be more indirect.

The most obvious follow-up to our analyses is of two kinds. Firstly, it would be desirable to try to tease out multivariate relationships in our data despite the high degree of multicollinearity. Secondly, it would be important to conduct district-level analyses on yet

more countries to see whether the country-level variations we and Grofman and Selb (forthcoming) call attention can be encompassed in some more general model of the factors affecting turnout.

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Tables and figures

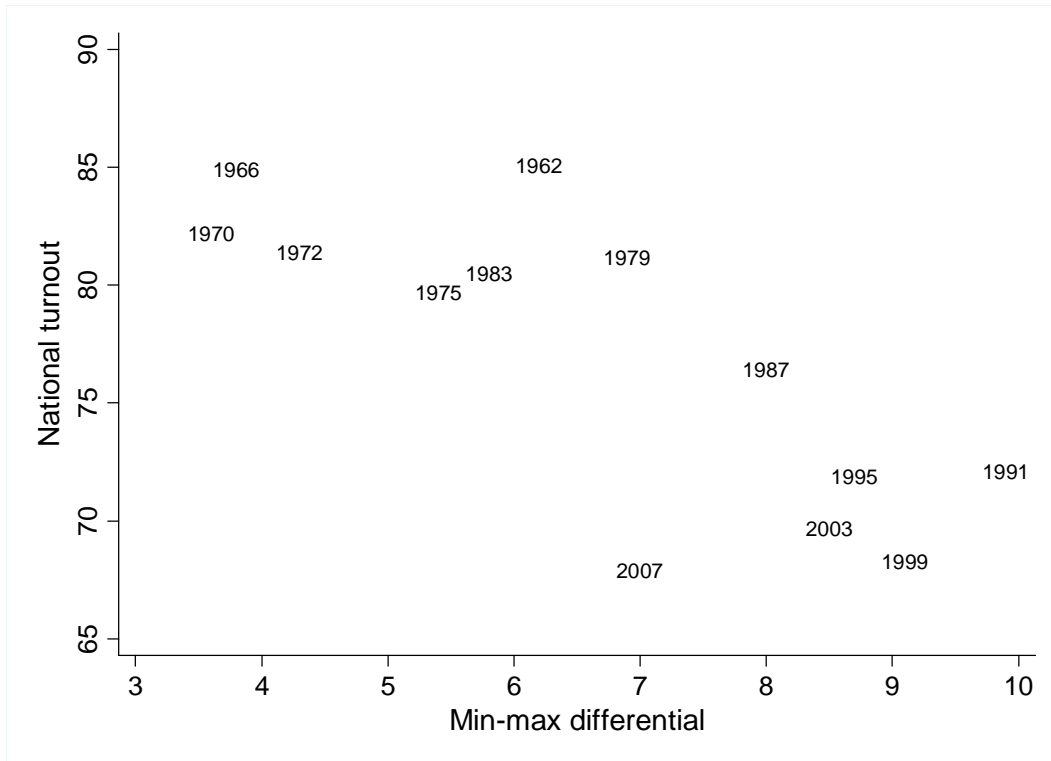


Figure 1 National turnout in the Finnish parliamentary elections of 1962–2007 and differential between minimum and maximum turnout across Finnish electoral districts. Regression (OLS) equation: $y = 92.00 - 2.38x$ ($R^2 = 0.618$, $N = 13$, $p < .01$)

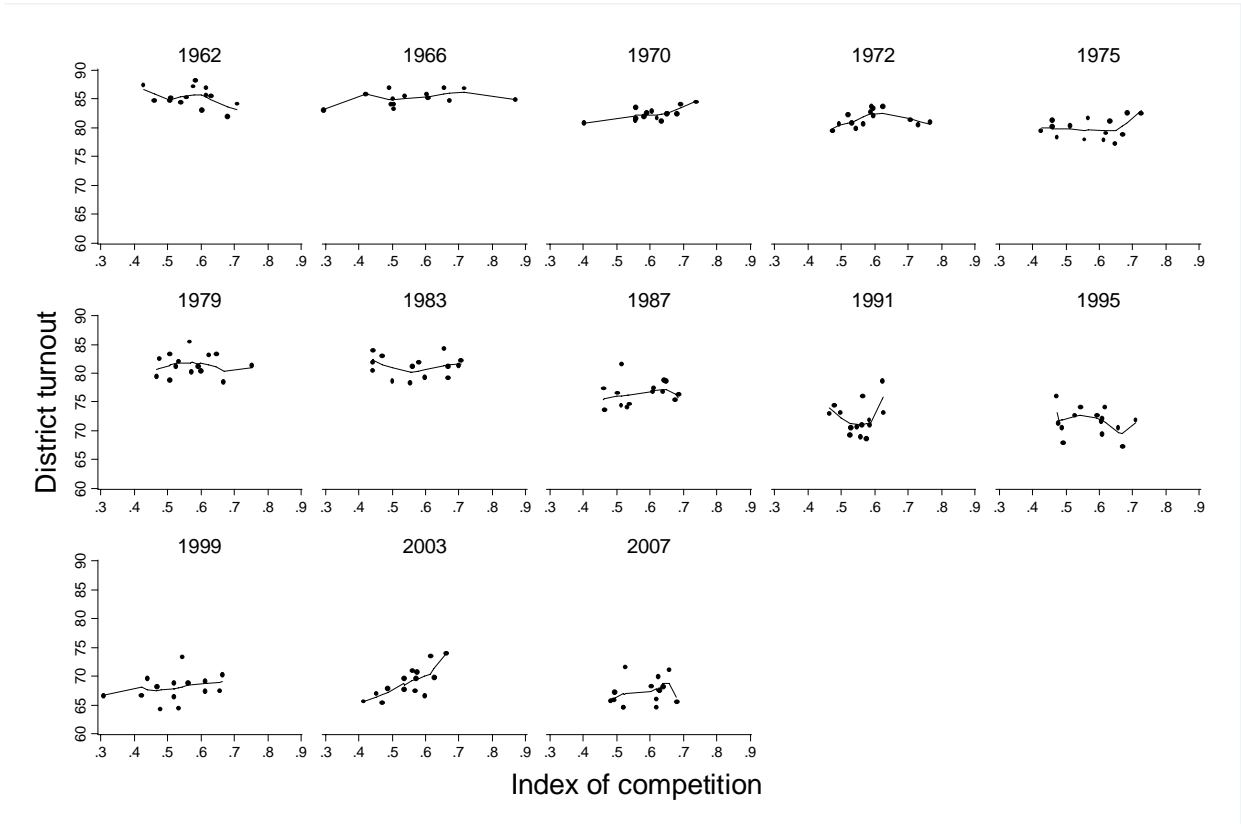


Figure 2 District turnout and index of competition by election year. Lines represent locally weighted regression fits (lowest curves).

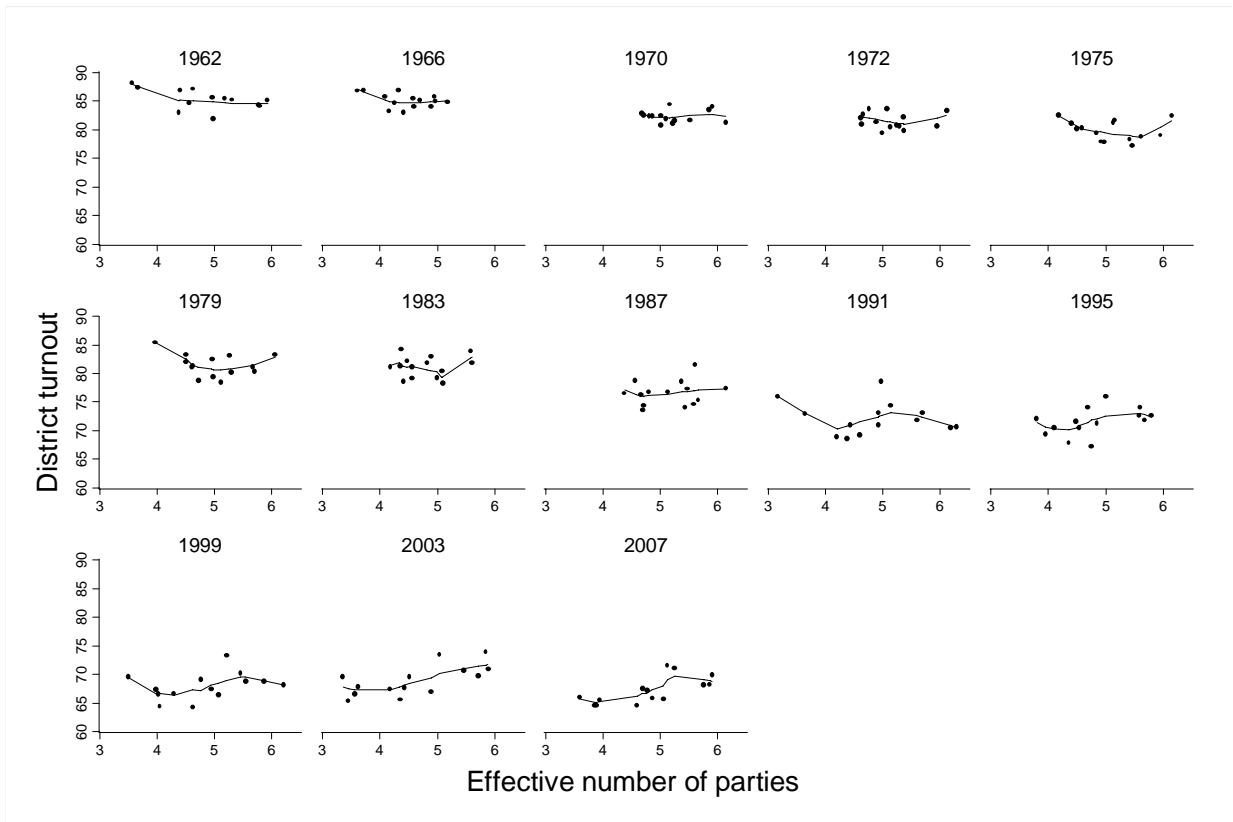


Figure 3 District turnout and effective number of parties by election year.

Table 1 Bivariate correlations (Spearman's rho) between electoral and party system variables and district turnout in the Finnish parliamentary elections 1962–2007.

Year	N	District turnout			
		T ^E	D ^{lh}	N ^{eff}	C
1962	14	−0.06	−0.23	−0.45	−0.24
1966	14	−0.16	−0.28	−0.30	0.25
1970	14	0.00	0.05	−0.14	0.59*
1972	14	−0.06	0.06	−0.24	0.36
1975	14	−0.10	−0.08	−0.26	0.15
1979	14	0.04	−0.56*	−0.29	0.01
1983	14	−0.04	0.05	−0.03	0.03
1987	14	−0.10	−0.75**	0.17	0.24
1991	14	−0.19	−0.53	0.05	0.12
1995	14	−0.51	−0.57*	0.51	−0.24
1999	14	−0.40	−0.25	0.35	0.40
2003	14	−0.71**	−0.37	0.71**	0.71**
2007	14	−0.67**	−0.44	0.76**	0.33

Notes: T^E = threshold of exclusion, D^{lh} = disproportionality (Loosemore-Hanby index), N^{eff} = Effective number of parties, C = index of political competition (Grofman-Selb index).

* p < .05, ** p < .01.

Table 2 Maximum likelihood random-effects estimates for district turnout in the Finnish parliamentary elections of 1962–2007.

	model 1	model 2	model 3	model 4
Fixed part				
Threshold of exclusion				
Election-specific value	-.317(.219)		—	—
District mean	.068(.271)	—	—	—
Disproportionality				
Election-specific value	—	-.116(.045)*	—	—
District mean	—	-.227(.121)(*)	—	—
Effective number of parties				
Election-specific value	—	—	.317(.394)	—
District mean	—	—	.196(.879)	—
Index of competition				
Election-specific value	—	—	—	.022(.020)
District mean	—	—	—	.324(.148)*
Linear trend	-1.605(.048)**	-1.607(.045)**	-1.623(.044)**	-1.623(.044)**
Constant	.901(.013)**	.922(.013)**	.859(.039)**	.687(.084)**
Random part				
$\sqrt{\psi}$.013(.003)	.010(.003)	.014(.003)	.012(.003)
$\sqrt{\theta}$.022(.001)	.022(.001)	.022(.001)	.022(.001)
ρ	.254(.095)	.175(.077)	.283(.095)	.214(.085)
Log likelihood	423.530	427.333	421.908	424.312
Number of observations	182	182	182	182
Number of groups	14	14	14	14

Notes: maximum-likelihood estimates are reported with standard errors in parenthesis. $\sqrt{\psi}$ is the between-subject standard deviation, $\sqrt{\theta}$ is the within-subject standard deviation and ρ is the estimated intra-class correlation coefficient. The random effects are highly significant ($p < 0.0001$) in each of the four models.

** $p < .01$, * $p < .05$, (*) $p < .10$.

Appendix

Table 3 Descriptive statistics of the variables used.

Variable	Election-specific value (N = 182)				District mean (N = 14)			
	Min	Max	Mean	Std. dev.	Min	Max	Mean	Std. dev.
District turnout	.642	.882	.770	.067	—	—	—	—
Threshold of exclusion	.029	.143	.074	.025	.038	.119	.073	.025
Disproportionality	.047	.279	.114	.042	.078	.181	.114	.030
Eff. number of parties	.031	.064	.049	.007	.039	.057	.045	.005
Index of competition	.294	.870	.570	.087	.529	.619	.570	.025
Linear trend	.010	.130	.070	.038	—	—	—	—

Notes: all variables are expressed in decimal fractions.

Notes

¹ The threshold of exclusion (Loosemore & Hanby, 1971) is the largest vote share a party can receive and still be denied a seat under a worst case scenario.

² Many electoral system effects (e.g., Duverger's mechanical effect) are best examined at the district or constituency level at the level where seats are initially allocated, although some effects (e.g., measuring the amount of partisan bias in the system in translating votes into seats) require us to aggregate results across the entire set of districts. One of the most important developments in the electoral systems field is the increased availability of district level data sets, and such data is critical to the further development of both theory and empirical research on the effects of electoral laws (Amorim-Neto & Cox, 1997, 168; Benoit, 2001; Cox & Shugart, 1991; Taagepera & Shugart, 1989, 213-214; Taagepera & Shugart, 1993, 456).

³ The constituency of Ahvenanmaa (or the Åland Islands) is an interesting case as it is the only single-member district (SMD) in Finland. It, however needs to be excluded from the analysis because its electoral context differs so substantially from that of the mainland in that no national parties operate in the Åland Islands.

⁴ The section describing the electoral system in Finland is mainly based on information provided by the Ministry of Justice Finland (see <http://www.vaalit.fi/15491.htm>).

⁵ Between-district comparison shows that variance in district magnitude has increased over time due largely to increases in the size of certain districts. The electoral districts of Uusimaa (from 17 to 34 seats) and Pirkanmaa (from 12 to 18 seats) stand out in terms of having gained a significant number of additional seats. While other districts, especially Etelä-Savo (from 11 to 6 seats), Satakunta (from 14 to 9 seats) and Pohjois-Karjala (from 10 to 6 seats) have suffered a considerable reduction in the number of seats, these changes have had a lesser impact on the overall variance of the distribution of district magnitudes.

⁶ A major part of the data has been kindly provided by Maria Maunula (University of Turku).

⁷ Mean deviation from proportionality in each district is counted as follows. First the vote share of each parliamentary party is subtracted from its proportion of seats in each district. Mean deviation from proportionality is a mean of absolute values of these subtractions (Ollila & Paloheimo, 2007, 358).

⁸ This estimate should, however, be treated with caution since the mean values are not so widely scattered; the district means are distributed over a 0.09 interval (whereas the election-specific values are found over a 0.57 interval).