Closeness and Turnout in Runoff Elections

Evidence from Hungary

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Abstract

This study aims at contributing to the literature on the effect of political competition on voting turnout. I test the Downsian Closeness Hypothesis (DCH) using data on runoffs elections in Hungary. This research design allows for estimating the effect of expected closeness using the variation of margins in the first round races to avoid the endogeneity problem inherent in ex post measures of closeness. A simple statistical model of turnout in a runoff election is described and estimated in terms of a Generalized Linear Model (GLM), recognizing that the dependent variable is a fraction. The findings of the paper are consistent with the DCH: increases in margins between two parties in the first round significantly decrease turnout in the second, even when turnout in the first round is controlled for. This is in line with the theoretical considerations of the DCH but contrary to a large part of the existing empirical literature. The estimates of closeness are substantially greater than in previous papers and exhibits stability across models. In particular the estimates of the GLM are remarkably similar to those obtained with standard linear models, suggesting that the effect of closeness is quite well approximated by the latter modeling approach.

Keywords: Turnout, Majority Runoff Systems, Rational Choice, Hungary

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1. Introduction

Understanding the determinants of voting turnout has been one of the most important enterprises of political science. On one hand, electoral participation is generally thought of as key element in the workings of political systems. On the other hand, the literature on turnout has been controversial both in terms of theoretical and empirical results. In particular, one of the trademarks of rational choice theories of voting, the relation between closeness and turnout has received a peculiar attention.

The theoretical foundation of the causal link between election closeness and turnout goes back as far as Downs (1957). He was the first to suggest that voting decision reflects a rational calculation of expected utilities depending on the voting decision. In the classic framework developed further by Riker and Ordeshook (1968), the underlying cost and benefits associated with voting are captured in the following equation:

\[ R = PB - C + D \]  

where \( R \) is the expected utility of voting, \( P \) is the probability of casting a decisive vote, \( B \) is the benefit of the preferred candidate being the winner, \( C \) is the costs of voting and \( D \) is the utility of voting regardless of the outcome, often labeled as “civic duty”. The model predicts that only those people will show up in the Election Day for whom

\[ PB + D > C \]  

A notable implication of this theory is that voters should be more likely to go to the ballots when they think they have more chance to influence the results (i.e. they have more chance to cast the decisive vote). This conjecture about the effect of the \( P \) term of the equations above has become a famous and controversial one, usually referred to as the Downsian Closeness Hypothesis (DCH) (Matsusaka and Palda, 1993).

The merits of this model have been challenged on different grounds. On theoretical grounds, a number of papers questioned the so called decision theoretic approach for excluding the strategic aspects of voting from the model (Mueller, 1989). Game theoretic accounts of electoral participation such as in Ledyard (1981, 1984), Palfrey and Rosenthal (1983, 1985) Feddersen and Pesendorfer (1996, 1999) and more recently Feddersen and Sandroni (2002) and Coate and Conlin (2004) argued that the probability of casting a decisive vote should be modeled as endogenous variable, i.e. the equilibrium outcome of a game\(^1\). In fact, in such models the equilibrium level of turnout is usually predicted to be much lower than observed

\(^1\) A good review of strategic models of turnout can be in Feddersen (2004)
participation. Thus many critics of rational choice approach concluded that these models are either inconsistent or at odds with the data.

The other reason why the Paradox of voting is still subject to research is on one hand the consequence of mixed empirical results (Indridason, 2008), and also the difficulty of establishing a causal relationship between election closeness and turnout. As for previous empirical results, in two excellent reviews of the literature on electoral participation both Blais (2000) and Geys (2006) conclude the evidence for the effect of closeness on turnout is at best weak. Even more puzzling are the results of studies that test the hypothesis on micro data. Typically these papers (Matsusaka and Palda, 1993, 1999; Blais, 2000) have found no significant effect of closeness on turnout. For a more extensive review of the literature see Blais (2000), Mueller (2003) and Geys (2006).

On the other hand, there are four major concerns about the way the relationship has been tested. First, the closeness of electoral competition and turnout are determined at the same time. Thus it can be argued that each of the previous studies that used actual election results to “proxy” the expected closeness of the same elections “encounter[ed] a serious problem of endogeneity” (Fauvelle-Aymar and Francois, 2006, p. 473.). Second, it is also argued that the effect of closeness should be estimated using “within variation” of the same electorate. The reason for that is that the ceteris paribus effect is more plausible when the same groups of voters are exposed to different political environment (Grofman, 1993). Third, in the standard setup it is problematic to separate the effect of perceived closeness from the mobilization effort of parties (Cox and Munger, 1998; Shachar and Nalebuff, 1999). Finally, previous research has completely ignored potentially important non-linearity implied by theoretical models. Ex ante, it is quite likely that the marginal effect of changes in expected closeness is not constant, rather it affects turnout to a different extent in elections that are diverse in terms of voting cost and expected closeness in the first place.

In this study I am going to test the link between expected closeness and turnout in a way that mitigates much of the methodological flaws present in existing literature. The approach taken here will be similar to that of Kirchgassner and Meyer Zu Himmern (1997). Fauvelle-Aymar and Francois (2006) and Indridason (2008) in that I use data on two-round elections² (Hungary, 2002 and 2006) to find causal links between expected closeness and actual turnout. However, I contribute to their approach by using panel data on elections and also by introducing non-linear models to account for non-constant effects of turnout.

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² Fauvelle-Aymar and Francois (2006) used data on French general elections, which also have two rounds. The significance of two-round elections will be shown later.
The Hungarian elections in 2002 and 2006 provide an “ideal setting” to test the effect of closeness on turnout for three reasons. First, two-round elections allow for proxying expected closeness of the runoff by actual closeness in the first round, similarly to the case of France (as in Fauvelle-Aymar and Francois, 2006). Second, defining the closeness of an election is more straightforward in this case than in the French case, since in 2002 and 2006 basically only two parties competed for single-seat constituencies—a rare situation in two-round elections. For the same reasons I can test hypotheses in a panel context (i.e. to use two waves of elections for the same constituencies) which is likely to ensure more precise estimates and the identification of the effects from variation within constituencies. Third, the fact that in Hungary runoff elections take place only one week after the first round, practically exclude the possibility of mobilization effects, simply for the lack of time for parties.

The results presented in this paper support the 50 years old theoretical insight: voters who live in constituencies where the political competition is expected to be close are in fact more likely to vote. Results are robust to the specification of the model: the effect of closeness stays roughly the same in linear and non-linear models. Also, the size of the electorate is found to decrease turnout significantly, also in line with the DCH. Finally, some of the results suggest that the effect of expected closeness might depend on voting costs which gives a rationale to model turnout in a non-linear way.

The remainder of the paper is organized as follows. Section 2 provides some details about the electoral system of Hungary and in particular describes the general elections of 2002 and 2006. Section 3 discusses the empirical strategy, while Section 4 provides the estimation results. In section 5 some concluding comments are made.

2. The Hungarian general elections in 2002 and 2006

In the following section I provide some information of the Hungarian electoral system and the elections of 2002 and 2006. In doing so I will focus on those aspects that render these elections appropriate for the purposes of this study. For a detailed description of the Hungarian electoral system see Körösényi, Török and Tóth (2007).

2.1. The Hungarian Electoral System

In this section I rely heavily on Körösényi, Török and Tóth (2007). The electoral system of Hungary is usually referred to as “mixed” as it contains elements of both majoritarian and proportional. Votes are mapped to mandates according to these two principles and three
branches. Voters have two votes: one may be cast for candidates in the single seat constituencies, and the other on a regional party list. As for the first vote, the mandates are distributed in a majoritarian system; i.e the “first past the post” gets the seat. As for the party lists, seats are distributed roughly proportionally to the votes. An important element of the system is the national, or “compensation” seats: these are distributed according to the number of votes cast on parties in constituencies where they lost.

I confine myself here to the detailed description of the single-seat constituencies only, since only those are relevant for the purpose of this paper purposes. The election of the MPs from single seat constituencies comprises of two rounds except when one of the candidates gains the absolute majority of the votes in the first round already. In the case of single seat constituencies coalitions and mutual withdrawal of candidates between allied parties often proves decisive. In the second round, the race is often decided by the third strongest candidate who may step back in favor of one of the other two. Of course, for that a group of voters that can be persuaded is very much needed (Benoit, 2001).

One peculiarity of the Hungarian system is that voters face very different incentives to show up in the two rounds. In the first round, each of the two votes counts: even if one votes for a candidate that loses her constituency, her vote will be channeled to the so called “compensation list”, which in turn, earns seats to the preferred party of the give voter in the parliament³. However, in the runoff, a vote “counts” only if it helps a given party to win the single seat constituency. Thus, in the first round people may find it rational to vote even in constituencies, where they expect a large margin of victory; whereas the same logic does it apply to the runoff.

2.2. **The General Elections of 2002 and 2006**

Now, I sketch some of the tendencies and communalities appearing in the two elections analyzed in the paper. I focus on two key phenomena: the concentration of the party system and growing awareness in voting strategies.

The single most important similarity of the General Elections of 2002 and 2006 was that by that type the Hungarian party structure essentially transformed into a two-party competition between Fidesz (Alliance of Young Democrats, or Right) and MSZP (Hungarian Socialist Party, Left) (Szoboszlai, 2003). The concentration of the party structure had been

³ An important caveat should be made here: the votes cast on parties who gain less than 5% of the multi-member list are actually lost.
spectacularly growing since the fall of the socialist system: this is underpinned by the decline and then stagnation in the number of effective parties and growth of the share of votes cast on the two major parties. Of course this does not mean that we can speak of a classic two-party system: both Fidesz and MSZP were in a great need of finding potential allies to form coalitional governments. However, we can speak of a quasi-two party system following Körösényi, Török and Tóth (2007) as the two strongest parties together gained the 83 and 85% of the votes in 2002 and 2006, respectively.

In particular, MSZP entered a close alliance with SZDSZ (Alliance of Free Democrats) an eventually small liberal party with which MSZP governed the country in a coalition between 1994 and 1998. This resulted in mutual withdrawal of candidates in the favor of each other in both 2002 and 2006. On the other hand, in 2002 FIDESZ established a similar agreement with MDF (Hungarian Democratic Forum), their coalitional partner between 1998 and 2002 and the proposed joint candidates in the single seat constituencies. This alliance was broken in 2006 when MDF decided to have its own independent candidates.

The close competition between the two major parties brought about an unforeseen mobilization of the voters: the 2002 election produced an average turnout of 70%, the highest since ’89 with a still greater participation in the second round. In 2006 turnout declined to 67% in the first round and 64% in the second, still being the second largest historically. These figures show that by the 2000’s the Hungarian electorate “learnt” that the second round often proves decisive in the final results of the elections.

In short, in the second round only the candidates of the two major parties (or party alliances) had any chance to win. That is, the expected closeness of the election can well be thought of as the difference in the votes candidates of the two large parties got in the first round.

2.3. Closeness and turnout in Hungary – A look at the data

In this section I provide a preliminary look at the data on the Hungarian general elections of 2002 and 2006. Also, I give some details of measurement issues and the definitions of the main variables of interest.

The data on election results was downloaded from a website (www.vokscentrum.hu) which collects data on Hungarian elections. The dataset contains constituency level information of elections taking part after 1989. I used information on the number of eligible voters, the

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4 The SZDSZ won 22 and 17% of the seats in 1990 and 1994, respectively.
5 The data was downloaded in December, 2010.
number of valid votes and the number of votes cast for the major parties in the two rounds of the two elections.

Turnout, the dependent variable in the empirical analysis is defined as the ratio of the number of valid votes and the number of eligible voters in a constituency. This measure was preferred to the number of votes as it is easier to interpret the estimates in such a framework. As the number of eligible voters intuitively will not change between the two rounds I use the figures reported for the first round.

Closeness is more problematic. First, it is ambiguous which parties to compare in terms of the number of votes. As I have mentioned above, in the second round in 2002 as well as 2006, a vast majority of the constituencies was won by either Fidesz or MSZP. Exceptions are: one independent victory in 2006 and a couple of withdrawals in favor of SZDSZ by MSZP. Thus, I define closeness as the percentage difference between votes cast for the two parties who gained the most votes in the first round. As an alternative specification, percentage difference between “party blocs” is considered, i.e. the percentage difference between the vote share of the right (FIDESZ and MDF) and left (MSZP and SZDSZ). I publish the descriptive statistics of the variables I used in the analysis for the two elections in Tables 1 and 2.

In Table 1 I report descriptive statistics of constituency level turnout. One can immediately see that around two-thirds of the electorate got out to vote in both 2002 and 2006. Turnout increased between the two rounds in 2002 (presumably due to the closer race in the national contest and the unexpected loss of the Fidesz in the first round) and declined in 2006. Also, one can observe that the variation of turnout in different constituencies was considerable in each of the election rounds.

<table>
<thead>
<tr>
<th>Year</th>
<th>1st round Average</th>
<th>Standard deviation</th>
<th>2nd round Average</th>
<th>Standard deviation</th>
<th>Change in turnout Average</th>
<th>Standard deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>69.7%</td>
<td>5.7%</td>
<td>72.9%</td>
<td>4.3%</td>
<td>3.8%</td>
<td>2.8%</td>
</tr>
<tr>
<td>2006</td>
<td>67.0%</td>
<td>5.3%</td>
<td>63.9%</td>
<td>5.1%</td>
<td>-3.6%</td>
<td>2.0%</td>
</tr>
<tr>
<td>Average</td>
<td>68.3%</td>
<td>5.5%</td>
<td>68.4%</td>
<td>4.7%</td>
<td>0.1%</td>
<td>2.4%</td>
</tr>
</tbody>
</table>

Table 2 shows vote shares of the two major parties, Fidesz and MSZP in the single-seat constituencies as well as the margin of victory. The figures are striking: the average shares of votes gained by two major parties were extremely close in both years. Looking at margins in

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6 The majority of the studies on turnout use this measure, and some papers (such as Indridason, 2008) confirm that results are robust in terms of the definition of the dependent variable.
the constituency levels reveals that in no less than 33 contests the margin of victory were less than 1%. Figure 1 shows the distribution of margins in a histogram.

<table>
<thead>
<tr>
<th>Year</th>
<th>1st round results and margins in 2002 and 2006</th>
<th>FIDESZ</th>
<th>MSZP</th>
<th>Margin of victory</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Average</td>
<td>Standard deviation</td>
<td>Average</td>
</tr>
<tr>
<td>2002</td>
<td>0%</td>
<td>39.5%</td>
<td>8.5%</td>
<td>41.7%</td>
</tr>
<tr>
<td>2006</td>
<td>0%</td>
<td>42.3%</td>
<td>8.3%</td>
<td>42.3%</td>
</tr>
</tbody>
</table>

A natural starting point for the empirical analysis of the effect of closeness on turnout is to check the correlation between 1st round closeness and change in turnout between the two rounds (as in Indridason, 2008). One would expect a negative relation between expected margin and change in turnout in the data.

**Figure 1: The distribution of margins**

Figure 2 provides a clear confirmation of this hypothesis. There is a clear negative relationship between the margin of victory in the first round and the change in turnout in both elections. One can immediately observe that there is a shift in the distribution of turnout change with participation increased in 2002 and declined in 2006 but the slope of the relation seems to be rather similar. This suggests that the effect of expected closeness was roughly the same in the two elections and consequently it makes sense to pool the two years.
3. Estimation strategy

In this section I set up the framework of the empirical analysis. First, I build a simple statistical model of electoral participation à la Riker and Ordeshook (1968). Then, I discuss the specification of the empirical model and estimation issues.

3.1. A statistical model of runoff elections

In this section I lay out a simple statistical model of voter turnout of which Downsian predictions can be derived. My goal is not to come up with a new model of electoral participation, instead to formalize the decision-theoretical approach in a way that can take the nature of uncertainty of voting costs into account. Also, one should be careful in the interpretation of such a model: I do not claim here that the model presented offers a full explanation of turnout. Nevertheless, the structure presented here may be useful in explaining differential effects of political competition on turnout.

Let us consider a two-round election in with each member of the electorate makes her decision about participation according to the Riker and Ordershook (1968) framework. That is, person $i$ votes if and only if $P^*B_i + D_i > C_i$, where $D_i$ and $C_i$ denote benefits and costs of voting irrespective of the outcome, $B_i$ the differential utility associated with the favored
outcome of voter \( i \) and \( P^e \) is the expected probability of being pivotal in the constituency in question. To simplify notation let \( c_i \equiv C_i - D_i \) denote the net costs of voting. Also, without loss of generality let us normalize \( B_i = 1 \). Then, we can rewrite the condition of turnout as \( P^e > c_i \). That is, individual \( i \) will vote if and only if the expected utility from influencing the election is greater than the net cost of voting.

I first focus on turnout in the second round. In this case we can assume that individuals form their expectation of the closeness of the second round on the basis of the first round results, that is \( P^e \) is the closeness of the first round. Also, I assume that the net cost of voting that individuals face is distributed normally with mean \( \bar{c} \) and variance \( \sigma^2 \).

Now, observe that the probability that a randomly chosen voter shows up in a given constituency in the second round is

\[
\Pr(c_i < P^e) = P\left( \frac{c_i - \bar{c}}{\sigma} < \frac{P^e - \bar{c}}{\sigma} \right) = \Phi\left( \frac{P^e - \bar{c}}{\sigma} \right), \tag{3}
\]

Where \( \Phi \) is the standard normal CDF. If we take a frequentist interpretation of probability we can interpret this probability as the actual ratio of people going to the ballots. But then we already have a formula for turnout in the second round given by Equation 3.

As for the first round, I assume that the expected closeness of the election in the constituency level does not vary across districts. This assumption sounds quite unrealistic but there are two rather strong arguments in favor of it. First, it can be argued that first round closeness is actually very hard to predict. In Hungary there exist no pre-election polls in the constituency level and the presence of small parties is likely to cause strategic voting, which in turn makes results even less predictable. Second, it can be argued that as a result of compensation lists, the motive to “influence the results” may not be applicable in the classical sense. In the first round, even the votes cast for the losing parties “count” to the national level race, so the standard formulation of the expected benefit of voting is not likely to influence turnout at this point. In contrast, in the second round, a vote only counts if it actually decides the race for the single-seat district\(^7\).

This means that we can conclude that in a given election, differences between turnout levels across constituencies are only due to differences in the net cost that voters face in each of the

\(^7\) This assumption is needed to exclude the possibility that some unobservables factors drive first round closeness. However, this rather strong assumption is tested statistically when the fixed and random effects estimators are compared (see Table 3).
districts. Using this insight, we can proxy the costs of voting with the turnout in the first round.

### 3.3. Model specification and estimation strategy

There are two ways of casting the empirical model. First, following the existing literature, one can ignore the nonlinearity implied by the statistical model and specify some linear equation relating closeness and turnout including some control variables. This is the approach suggested by Barzel and Silberberg (1973). In a panel data setup this implies the following equation:

\[
\text{Turnout}_{i,t} = \alpha_i + \mu_t + \beta \text{Closeness}_{i,t} + \delta \text{Turnout}_{i,t} + \lambda X_{i,t} + \epsilon_{i,t}
\]

(4)

Index \(i\) denotes constituencies and \(t = 1, 2\) denotes which year the election took place. The term \(\mu_t\) is a dummy variable that is meant to capture different intercepts (i.e. average change in turnout) for the two election years. On the other hand, \(\alpha_i\)s are constituency effects—whether they should be treated as fixed or random is an open question at this point and is to be decided using specification tests.

Estimation in such a setup is straightforward. One can either estimate the coefficients of the model using random effects FGLS (assuming the strict exogeneity of individual effects), or use the within estimator to get rid of unobserved heterogeneity upfront. The viability of the exogeneity assumption can be tested by a Hausman specification test (see Woolridge, 2002).

An alternative specification is also considered to account for the nonlinearity of the model of turnout. In such a setup, the dependent variable is turnout in the 2nd round and I explicitly model it as a random variable constrained between 0 and 1. Therefore, the conditional expectation of turnout is formulated as a Probit function and the regression equation is written up in terms of a Generalized Linear Model (GLM) (see for example Cameron and Trivedi, 2005).

\[
\text{Turnout}_{i,t} = \Phi(\alpha_i + \mu_t + \delta \text{Turnout}_{i,t} + \beta \text{Closeness}_{i,t} + \gamma X_{i,t}) + \epsilon_{i,t}
\]

(5)

where \(\Phi\) is the standard normal CDF.

This model was introduced to the applied econometrics literature by Papke and Woolridge (1996, 2008) under the name of fractional probit. To my knowledge this paper is the first to
use this framework in the analysis of voter turnout, acknowledging that turnout is actually a limited dependent variable.\footnote{To my knowledge the only paper that applies fractional probit in the political science literature has been Gardeazabal, J. (2010).}

In a panel setting, fractional probit model can be estimated by pooled Bernoulli Quasi Maximum Likelihood (QMLE), or the Generalized Estimating Equation\footnote{GEE is a generalized population averaged panel model in which the conditional mean is modeled in some non-linear fashion. See details in Cameron and Trivedi (2005)} (GEE) (Papke and Woolridge 2008). These models differ in the way they specify the nature of unobserved heterogeneity. Notably, the QMLE procedure makes use of the assumption that the unobserved heterogeneity is exogenous, while the GEE framework allows for correlated random effects (individual heterogeneity that might be correlated with the time-means of variables).

In both setups, the effect of closeness can be estimated and it will correspond to the P-term in the empirical model if two additional assumptions are satisfied. First, we have to rule out indirect effects of closeness through mobilization and campaigning. To be sure, there is a theoretical possibility that parties try to mobilize voters in constituencies where the race is expected to be close. However, similarly to the case of France, in Hungary the time between the two rounds is only two weeks so I agree with Indridason (2008) who points out that in such a setting the importance of mobilization should be at most limited. Also, to my knowledge there is no existing constituency level data which could be used to proxy campaign effects so I would not be able to separate mobilization effects from the total effect of expected closeness anyway.

Second, the assumption that voting costs are invariant across the two rounds should also be satisfied. This assumption is less straightforward, as in principle, the two rounds of the same election could be fundamentally different. For example, a large margin of victory in the \textit{national level} is likely to deter turnout as it reduces the stake of the second round. Nevertheless, we can still maintain the assumption that the relative costs of voting across constituencies will remain the same as the time between the two rounds is so short. Then, introducing a year fixed effect will control for changes in the costs of voting that affect each constituencies in the same way.

I also include two additional variables to control for factors that could affect changes in turnout between rounds. First, I include the vote share of parties other than MSZP, FIDESZ as I suspect that perceived closeness of the race would affect the behavior of their supporters.
differently. Typically, small parties were not present in the runoffs (at least not with a significant chance to win), therefore one could expect that a large part of the supporters of small parties are likely to stay at home in the second round. Second, I include the size of the electorate, i.e. the number of eligible voters. A majority of studies report that turnout is generally lower in larger constituencies (Geys, 2006). This could be interpreted as evidence supporting the Riker-Ordeshook model, as the probability of being pivotal is greater when the number of eligible voters is small.

As a test of robustness I estimated some of the regressions with an alternative proxy for closeness. In that specification I took the difference between “party blocks” and used it to capture the margin of victory in a more robust way. With this approach I allow for the possibility that people who voted for a small party in the first round showed up in the runoff and gave their votes for the larger ally of their preferred party. However, the estimates do not differ from those in the basic specification, thus I do not report them here.

4. Estimation results

I present the first set of results in Table 3. The two columns show the estimated coefficients of equation 4 by random effects GLS (RE) and fixed effect between estimators. Apparently, the point estimates are rather similar to each other in the two cases: using the Hausman specification test I cannot reject the null that there is no systematic difference between the estimated coefficients. Thus, we can maintain the exogeneity of the individual effects and thus claim that the random effect estimator is consistent and efficient.

The results confirm the Downsian Closeness Hypothesis: closer results in the first rounds are associated with higher turnout in the runoff. In particular, a 10% point decrease in the relative margin of the victory of the party which got the most of the votes in the first round is expected to increase turnout in the runoff by 2%. This estimate is substantially larger than that reported by Indridason (2008).

In line with theory (but contrary to most of the earlier studies) the effect of the size of the electorate is found to be negative and significant as well. That is, holding other factors fixed, in smaller constituencies turnout was higher. This result is particularly convincing, as in
contrast with the margin of victory, the variation of the size of the electorate between the two elections is definitely exogenous.\textsuperscript{10}

Also, turnout is found to be lower in the runoff in districts where more people voted for small parties in the first round. A reason for this is that the benefit of voting was lower for people who knew that their preferred party was out of the race.

<table>
<thead>
<tr>
<th>Table 3: The effect of closeness on turnout (linear models)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dependent variable: Runoff turnout</td>
</tr>
<tr>
<td>RE FE</td>
</tr>
<tr>
<td>----------------------------------------------------------</td>
</tr>
<tr>
<td>Turnout 1st round</td>
</tr>
<tr>
<td>0.797*** 0.820***</td>
</tr>
<tr>
<td>[0.029] [0.105]</td>
</tr>
<tr>
<td>Eligible voter (log)</td>
</tr>
<tr>
<td>-0.016** -0.139**</td>
</tr>
<tr>
<td>[0.008] [0.058]</td>
</tr>
<tr>
<td>Margin of victory</td>
</tr>
<tr>
<td>-0.204*** -0.232***</td>
</tr>
<tr>
<td>[0.040] [0.056]</td>
</tr>
<tr>
<td>Votes for small parties</td>
</tr>
<tr>
<td>-0.045*** -0.035</td>
</tr>
<tr>
<td>[0.017] [0.022]</td>
</tr>
<tr>
<td>2006</td>
</tr>
<tr>
<td>-0.081*** -0.081***</td>
</tr>
<tr>
<td>[0.002] [0.003]</td>
</tr>
<tr>
<td>Constant</td>
</tr>
<tr>
<td>0.371*** 1.678***</td>
</tr>
<tr>
<td>[0.082] [0.615]</td>
</tr>
<tr>
<td>Observations</td>
</tr>
<tr>
<td>241 241</td>
</tr>
<tr>
<td>R-squared</td>
</tr>
<tr>
<td>0.967 0.969</td>
</tr>
<tr>
<td>Number of constituencies</td>
</tr>
<tr>
<td>138 138</td>
</tr>
</tbody>
</table>

Robust standard errors in brackets, *** p<0.01, ** p<0.05, * p<0.1

I report the fractional probit estimates in Table 4. Apparently, the point estimates of the marginal effects are quite similar to the coefficients of the linear models. Each of the coefficients is significant at the 5\% level and the magnitudes of the estimates are roughly the same as the corresponding ones in Table 3. This suggests that the linear specification is a good approximation around the mean of the explanatory variables. Summarizing the results of Tables 3 and 4 it should be pointed out that the relation between closeness and turnout is remarkably stable, both with regards to functional form and to the specification of unobserved heterogeneity.

However, based on the statistical model of turnout, I suspect that the partial effect of closeness should vary across constituencies with different baseline characteristics (i.e. constituencies which behaved differently in the first round). A way to investigate these differences is to look at the marginal effect of closeness at some points of interest and check

\textsuperscript{10} An alternative explanation is that variation in the number of eligible voters is due to people who changed their place of residence. Then, in constituencies with large inflows turnout could decrease because new arrivals are less likely to vote.
whether they in fact differ from each other. In particular I calculated the partial effect of the margin of victory at twelve different points, for the combination of three “interesting values” of first round closeness and for values of the margin of victory. The values of first round turnout used are 60%, 70% and 80%; and the values of margin are 1%, 0.1% and 0.01%. The other RHS variables are set to their mean, and the election year is set to 2006.

Table 4: The effect of closeness on turnout (fractional probit models)

<table>
<thead>
<tr>
<th>Dependent variable: Runoff turnout</th>
<th>GLM</th>
<th>GEE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turnout 1st round</td>
<td>0.825***</td>
<td>0.824***</td>
</tr>
<tr>
<td></td>
<td>[0.022]</td>
<td>[0.025]</td>
</tr>
<tr>
<td>Eligible voter (log)</td>
<td>-0.016**</td>
<td>-0.018**</td>
</tr>
<tr>
<td></td>
<td>[0.007]</td>
<td>[0.008]</td>
</tr>
<tr>
<td>Margin of victory</td>
<td>-0.200***</td>
<td>-0.213***</td>
</tr>
<tr>
<td></td>
<td>[0.039]</td>
<td>[0.038]</td>
</tr>
<tr>
<td>Votes for small parties</td>
<td>-0.049***</td>
<td>-0.042***</td>
</tr>
<tr>
<td></td>
<td>[0.016]</td>
<td>[0.016]</td>
</tr>
<tr>
<td>2006</td>
<td>-0.081***</td>
<td>-0.081***</td>
</tr>
<tr>
<td></td>
<td>[0.002]</td>
<td>[0.002]</td>
</tr>
<tr>
<td>Observations</td>
<td>241</td>
<td>241</td>
</tr>
<tr>
<td>Number of constituencies</td>
<td>138</td>
<td>138</td>
</tr>
</tbody>
</table>

Reported coefficients are marginal effects at the mean of each LHS variables
Robust standard errors in brackets *** p<0.01, ** p<0.05, * p<0.1

Table 5 reports the marginal effect of closeness at various combinations of closeness and turnout. Apparently, closeness has a roughly linear effect, i.e. the marginal effect is the same across various level of the margin of victory. On the other hand, one can observe that the marginal effects decrease in first round turnout. The intuition behind this result is that in district in which participation was large even in the fist round, the perceived closeness of the election played a minor part as compared to constituencies where few voters showed up in the first round of the election. Of course, the differences between the estimates in Table 5 are modest, thus it would be a mistake to consider them as firm evidence for the decreasing impact of closeness.

All in all, even if there are non-linearities in the effect of expected closeness the linear approximation seems to work pretty well in this case: this follows from the similarity of the results in Table 3 and Table 4. To put it in a different way, even though the non-linear model seems more appropriate a priori, we do not really learn anything new when estimating it instead of the linear approximation.
Table 5: The marginal effect of closeness at "typical points"

<table>
<thead>
<tr>
<th>Turnout first round</th>
<th>Margin of victory</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.01%</td>
</tr>
<tr>
<td>60%</td>
<td>-0.236</td>
</tr>
<tr>
<td></td>
<td>[0.042]</td>
</tr>
<tr>
<td>70%</td>
<td>-0.218</td>
</tr>
<tr>
<td></td>
<td>[0.038]</td>
</tr>
<tr>
<td>80%</td>
<td>-0.191</td>
</tr>
<tr>
<td></td>
<td>[0.033]</td>
</tr>
</tbody>
</table>

Top entries are marginal effects of margin from the GEE model
Robust standard errors in brackets

5. Conclusion

In this study I presented an empirical analysis of the effect of expected closeness on turnout. In a summary of the existing theoretical approaches to electoral participation I pointed out why testing this relationship is of crucial importance to rational choice theories of voting behavior. Also, in a critical survey of existing empirical evidence, I showed the main points of controversies regarding aggregate level studies of turnout and introduced an empirical framework in which much of the flaws in previous research could be mitigated.

The paper contributes to the empirical literature on electoral participation in three aspects. First, to my knowledge this is the first paper that models district level heterogeneity explicitly, making use of panel data. As a consequence of that, the effect of expected closeness can be identified from within variation in constituencies in the case of linear models, solving a problem pointed out by Grofman (1993). Second, for the first time in the literature in turnout, I explicitly model turnout as a limited dependent variable, and use an estimation method (fractional probit) that is well suited for such a problem. Third, in a substantive sense this paper provides empirical evidence about the Downsian Closeness Hypothesis in an *ex ante* frame work. To my knowledge, apart of French elections analyzed by Fauvelle-Aymar and Francois (2006) and Indridason (2008), Hungarian elections are the only ones to be analyzed in such a way.

My hypotheses were that expected closeness of runoff elections in single seat constituencies proxied by the closeness of the first round race increases turnout. Making use of similarities of the Hungarian general elections of 2002 and 2006 I used panel data to test hypotheses. The results presented in the study are consistent with the DCH. In particular, constituencies experiencing a close contest in the first round saw greater participation in the runoff. Quantitatively, holding everything constant, a 5% percent in crease in the margin of victory in the first round is expected to decrease turnout in the runoff by 1%. This estimate is large in
the context of previous results: Indridason (2008) estimated a 0.5% decrease in turnout as an effect of such a change. The study also contains some evidence that the effect of expected closeness might be contingent on the costs of voting. Examining marginal effect estimated in the non-linear model suggests that the effect of closeness was smaller in those districts where turnout was already high in the first round.

A problem not addressed in this paper is that any aggregate level study of turnout is potentially subject to the problem of ecological fallacy (Matsusaka and Palda, 1993). It should be emphasized that providing bulletproof evidence on the determinants of voting behavior would require a solid micro-foundation both theoretically and in terms of the empirical model used. Consequently, making use of runoff elections to rule out the endogeneity of closeness as an explanatory variable is just a first step towards a fully convincing model of electoral participation. The final step would be to assess the effect of closeness in a two-round setup in a way in which the micro-foundation of the perception of the expected benefits of voting are modeled explicitly. However, the robustness of the results presented here might convince students of voting behavior that the quest for the understanding the relationship between closeness and turnout is worth to be continued.

References


