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Disproportionality and voter turnout in new and old democracies

Aina Gallego*, Guillem Rico, Eva Anduiza

Universitat Autònoma de Barcelona, Departament de Ciència Política i DretPúblic, Edifici B-Campus UAB, 08193 Barcelona, Spain

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ABSTRACT

A long-standing puzzle in electoral research is why the disproportionality of electoral systems has a negative effect on voter participation in established democracies, but not in new democracies. We propose a learning theory of electoral system's effects, and test it in a cross-national analysis and by using Spain as a case study. Electoral disproportionality is unrelated to voter participation in early elections after democratization, but the relationship is increasingly visible as democracies grow older. The case study uncovers two mechanisms: small parties optimize their mobilization strategy only after the first democratic elections, and the difference in the turnout rates of small party supporters and large party supporters grows over time. Time is needed before the consequences of electoral systems are fully revealed. Importantly, the findings suggest that studies carried out just after an electoral system is created or reformed may provide downward biased estimates of their long-term consequences.

1. Introduction

The characteristics of the electoral system that determine the degree of correspondence between the share of the vote for political parties and the share of the seats they obtain are among the better established predictors of voter turnout in advanced industrial democracies (Jackman, 1987; Jackman and Miller, 1995; Blais and Carty, 1990). The more disproportional the electoral system, the lower voter turnout is. However, this finding is not consistent outside of established democracies. The relationship is weak when a large number of democracies is considered (Blais and Dobrzynska, 1998) and it does not hold in Latin America (Blais and Aarts, 2006; Fornos et al., 2004; Pérez-Liñán, 2001). This has led some scholars to conclude that "the nil findings reported in Latin America suggest that the patterns observed in the small set of established democracies may not be robust" (Blais and Aarts, 2006, 41).

Why does the electoral system affect voter turnout in advanced industrial democracies, but not in new democracies? Why would voters and parties be insensitive to the incentives and constraints provided by the electoral system in some places but not in others? One interpretation of this puzzle is that new democracies are fundamentally different than older ones and their parties and citizens are just less able or willing to understand the implications of the rules of the game for their strategic decisions. Secondly, it has been recently proposed that in some new democracies, such as the Dominican Republic, clientelistic networks help to boost turnout rates in small, rural districts. Since district size is related with disproportionality, this would help explain the lack of a link in some democracies (Jacobs and Spierings, 2010). However, we don't know to what extent this explanation may apply to other contexts.

We propose a different and more general solution to this puzzle which builds on the contention that the electoral system's effects are not immediately obvious for inexperienced actors. During the early years of a democracy, voters and parties are new players in a new game. They lack relevant information on the distribution of political preferences in the population and cannot properly incorporate the incentives provided by the electoral system into their decisions. As a result, there is no relationship between

* Corresponding author.
E-mail addresses: aina.gallego@uab.es, aina.gallego@uab.cat (A. Gallego), guillem.rico@uab.cat (G. Rico), eva.anduiza@uab.cat (E. Anduiza).

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electoral disproportionality and voter participation. Only after repeated interaction do the consequences of the electoral system become apparent, and as actors learn, they also adjust their behavior. Eventually, the rules of the game are learned and new democracies look just like old ones. In this paper, we argue that time is a crucial factor in letting electoral systems display their psychological effects.[1]

This developmental theory of electoral system effects is tested with a large N comparative analysis and with a study of Spain. We conclude that there are clear learning effects: as citizens and elites accumulate experience with the democratic process, they respond in a more predictable way to the electoral context. These findings have implications for the understanding of how and why institutional incentives matter for voting, as well as for the expected time that electoral reforms may take before they fully display their potential effects. The paper is structured in four sections. First, we present the theoretical arguments. Then, we outline the research design and the data. Next, we present the results of the analysis and finally the implications of the findings are discussed.

2. Disproportionality and turnout: learning to vote in new democracies

Electoral systems are the fundamental institutions that determine how votes are translated into seats (Taagepera and Shugart, 1989). The type of electoral system (PR, mixed member, plurality/majority), the electoral formula of seats allocation (d'Hondt, Saint-Laguë, largest reminders, etc.), district magnitude, the use of electoral thresholds, and other features of the system affect this translation. The concept of proportionality refers to the degree of correspondence between the share of the vote for the parties and the share of the seats they obtain. It summarizes the psychological and mechanical effect of several of these features and allows us to compare different systems along one dimension (Gallagher and Mitchell, 2005). Plurality and majority rules, as well as PR systems with small districts or high electoral thresholds, produce disproportional outcomes characterized by the fact that a significant number of the votes cast are wasted, as only the winning candidate or the largest parties obtain representation in each district.

Two main mechanisms have been proposed which explain why disproportionality depresses turnout: the first focuses on citizens and the second on political parties. On the demand side, disproportionality is expected to depress participation among supporters of parties with poor prospects of obtaining representation because their votes are unlikely to be translated into seats. In fact, research has found that disproportionality depresses political efficacy and voter turnout, particularly among supporters of small parties (Karp and Banducci, 2008). On the supply side, the electoral system affects political parties' mobilization strategies. The main argument is presented by Powell: "With proportional representation for the nation as a whole or from large districts, parties have incentives to mobilize everywhere. With single member districts some areas may be written off as hopeless" (Powell, 1986, 21). Whereas in PR systems with large districts, most votes count and district level-contests are competitive, highly disproportional systems see varying intensities of constituency-level competition, which produces lower national level turnout (Selb, 2009). Thus, in a disproportional system it is more likely that some districts are not competitive; this makes parties less likely to invest effort in mobilizing citizens, which ultimately reduces voter turnout.

The theories on the electoral system effects on voter turnout are typically expressed in static terms, and virtually all cross-national analyses use pooled cross-sectional designs that do not take the moderating effect of time into account.[2] This assumes either explicitly or implicitly that parties and voters are sophisticated and perfectly informed: political parties are rational actors with full knowledge and maximize their investment to optimize the number of seats obtained; citizens correctly process the information about the elections, evaluate the benefits and costs of voting to various candidates and take the action suggested by their analysis with the aim of influencing the outcome. For example Cox (1997) and Myerson and Weber (1993) explicitly assume in their work on strategic voting that voters know the expected constituency-wide breakdown of preferences with certainty. If both voters and parties are rational and fully informed about the consequences of electoral rules and the distribution of the votes, the effect of the electoral system should be immediately apparent after they are introduced.

Alternatively, the strength of the link between disproportionality and the vote might not be stable along a democracy's age. While political parties and, to a lesser extent, voters, are rational actors, the perfect information assumption is unrealistic. Knowledge about the public's preferences and the electoral system's effects given the distribution of votes is not available a priori. Admittedly, some features of the institutional system, such as the presence of compulsory voting or the degree of importance of an institution, are relatively simple to understand. They are usually common to the whole country, do not involve territorial variations, and are straightforward incentives to participation. Yet, the electoral system involves a set of rules (district magnitude and delimitation, electoral formula, electoral thresholds, ballot design) that are complicated to grasp and their political consequences, both mechanical and psychological, are not easy to anticipate. Even if some early polls are available, parties and voters in

[1] Duverger (1954) makes a distinction between mechanical and psychological effects of electoral laws. Mechanical effects refer to those introduced by the conversion of votes into seats. For instance, single member majoritarian systems have the mechanical effect of over-representing large parties and under-representing small parties. Psychological effects refer to how voters anticipate and react to those mechanical effects: in our example sympathizers of small parties are more likely to consider strategic voting (voting for a large party that is not their first preference but has a chance to get representation).

[2] Only one analysis takes the age of democracy into account and shows that PR only fosters voter turnout in countries that have a highly consolidated democratic system and in democracies which are 20 years or older (Endersby and Krieckhaus, 2008). However, they do not provide and test a clear rationale that explains these results.

the first elections do not have full information on the distribution of political preferences in the population, because it has not been revealed in previous elections. Getting acquainted with the effects of the electoral system through repeated interaction may be a prerequisite to understand its implications and to adjust the behavior to the incentives and constraints imposed by it. If this is the case, institutional variables such as the electoral system should not affect behavior straight away, but after a learning process has taken place.

There is widespread, if scattered, evidence in support of a learning model for both parties and voters. Past research has shown that politicians directly involved in the process of deciding which rules to apply, even though they have high stakes in the decisions, may fail to anticipate the eventual effects of electoral systems, with disastrous consequences for their own interests (Shvetsova, 2003; Andrews and Jackman, 2005). On the voters' side, an analysis of Canadian data (Blais and Bodet, 2006) finds that voters use the results of the previous election to estimate the chances of parties obtaining a seat in their constituency. This suggests that experience is critical for the formation of opinions on the likelihood that different parties will win seats. Supporters of small parties with little chance of obtaining representation will only realize that their vote is not translated into seats after they repeatedly have experienced the process. Even highly politically aware citizens, who are expected to learn quickly, need at least one election to be able to use the previous results as a cue to estimate if their vote is likely to be wasted or not. For the general electorate the process of making use of this cue may take various elections.

Furthermore, we know that both strategic voting and economic voting are the result of a learning process. Research in Eastern Europe shows that strategic voting is a two-step process in which voters first have to realize that their vote to a small party is wasted, and then have to adjust their decision (Duch and Palmer, 2002; Tavits and Annus, 2006). As a consequence, citizens vote strategically in elections only if they have been exposed to the electoral process for an extended period of time. In Eastern Europe, economic voting only develops as the link between government policy and economic outcomes such as unemployment and poor economic performance becomes more apparent, while in the early period of democratization, voters do not punish the incumbent government for poor past performance, which was less taken into account in the 1990s (Duch, 2002; Lewis-Beck and Stegmaier, 2008). Similarly, in an analysis of the relationship of subjective and economic performance between 1991 and 1995 in Eastern Germany, Anderson and O'Connor (2000) find that there is only congruence between both dimensions as citizens accumulate experience. Over time, economic perceptions and policy priorities more closely track objective economic performance. Tavits (2005) finds that electoral volatility is high right after electoral transitions and that time is needed to reduce the levels of volatility. This finding is particularly interesting as it is not the age of parties or other factors that help reduce volatility, but the simple passage of time (modeled curvilinearly), which suggests that past experience is a relevant factor when it comes to decide for whom to vote.

In sum, in the first elections after a transition to democracy, parties may not choose their optimal mobilization strategy. Though citizens may go *en masse* to the polls—early elections show relatively higher levels of electoral turnout (see Kostadinova, 2003; Magalhães, 2005)—they may fail to recognize situations in which their vote is wasted, the crucial argument for which proportionality is expected to affect turnout. If the effect of disproportionality is similar regardless of the experience with democracy, we would conclude that citizens and parties are rational actors with full information that could immediately adjust to the institutional incentives imposed by a new set of electoral rules. Alternatively, we defend a learning hypothesis according to which disproportionality matters more with the passage of time, as voters and parties learn about the distribution of preferences and how the system works and adapt their behavior to it. The impact of disproportionality is hypothesized to be smaller in the early period of democracy than in later elections, when it should be clearly negative.

3. Research design, variable operationalization and analyses

The hypothesis is tested following two research strategies, both longitudinal, aimed at examining whether disproportionality has an increasingly negative influence on turnout along time. We use two different measures of disproportionality. Firstly, the Least Squares Index of disproportionality (LSI) captures the disparity between the distribution of votes and the allocation of seats and ranges from 0 (perfect proportionality) to 100 (maximum disproportionality). This index is the squared root of the sum of the squared differences between the percent of votes for each political party (v_i), and the percent of seats obtained by each party (s_i), times 0.5:

$$LSI = \sqrt{0.5\sum_{i=1}^{n}(v_i - s_i)^2}$$

This index is highly correlated with other measures of disproportionality, such as the Loosemore-Handby index ($r = .98$) or the Rae index ($r = .91$) (Gallagher, 1991). It is a comprehensive measure of disproportionality which captures both the psychological and mechanical effects of electoral system, but the drawback is that the strategic actions of players are both in the left-hand side and the right-hand side of the equation. Therefore, we use median district magnitude (MDM) as an alternative measure of disproportionality. This construct also has problems, especially when computed at the national level (see, for example, Jacobs and Spierings, 2010). Most importantly, it does not allow us to distinguish between different situations in societies with only one, or more than one, electoral cleavage. For instance, we would give the same value ($M = 2$) to a district where two seats were to be distributed between two equal parties, which would produce no disproportionality, and to a district where these two seats were to be distributed among a very fragmented party system with a highly disproportional result.

The LSI of disproportionality data is taken from Gallagher and Mitchell (2005), a study which contains information for

a large number of elections held since 1945 worldwide. The data on MDM were obtained from the Quality of Government dataset as calculated by Golder (2005). The dataset was completed with voter turnout data from the International Institute for Democracy and Electoral Assistance (IDEA). This variable is defined as the percent of voters over the registered population. All election-years that were not qualified as free by Freedom House were excluded from the analysis. US presidential elections were excluded because of their special system, as were Botswana's because this country is a clear outlier in the erratic patterns of voter turnout (for example, in the first three elections turnout fluctuated from a high 69.4 to a low 26).

Countries with enforced compulsory voting are not included because under compulsory voting, the incentive structure for voting is fundamentally modified.[3] This left us with 457 elections from 53 countries at very heterogeneous stages of democratization (see countries and number of elections in the Appendix). The measure of experience with the electoral system is the number of elections after the establishment of democracy. The establishment of democracy is defined as the moment in which the first election with a strictly positive Polity IV score (Marshall et al., 2009) was celebrated, even if the score awarded by Freedom House was 2 (partially free).[4] In many cases the first democratic elections are not held under strictly free conditions, but even so they provide an opportunity for voters and parties to learn how the electoral system works. In countries where democracy was interrupted and then reestablished (e.g. Uruguay), the first election of the later period was coded as the first election, and so on.

In the case study we test if the effect of disproportionality on turnout changes at different stages of electoral experience in a single country with data at the constituency level and examine the micro-foundations of the evolution using both data on party mobilization and survey data. Spain is an ideal case because it is a recent, but now well-established democracy, with large differences in disproportionality levels across districts. Therefore, there is enough variation in both the time dimension and the key independent variable. It has a PR system with varying district magnitudes, ranging from 1 to 35, with an average of 6.7 seats.[5] Party systems are also different across different districts, ranging from two party systems to districts where five parties obtain representation. In small districts proportionality is very low and only one or two parties are elected, whereas in large districts proportionality is higher as more parties obtain representation. Since within each election, the political and economic circumstances are relatively homogenous across districts, this particular situation allows us to test if disproportionality has had an increasingly negative effect on turnout over time in a controlled setting. Moreover, unlike other cases such as Greece and Portugal, there have been no major changes in the electoral system in this period, and there is no turnout decline, which would confound the analysis. The data on disproportionality were self-calculated, based on official records of election results at the constituency level.

The case study is supplemented with an examination of the mechanisms that lead to an increase in the effect of disproportionality on voter turnout over time. The first mechanism focuses on the strategic actions of small parties, which can obtain representation in large districts but not in small ones. If they have imperfect information, they may not choose optimal mobilization strategies in the early elections, wasting mobilization efforts in small districts where their prospects of obtaining representation are dim. Over time, they are expected to adjust their mobilization strategies to concentrate efforts in competitive districts. To test if this mechanism is at play, we collected data on the electoral acts attended by the general secretary of the Communist Party/United Left[6] in the 1977, 1979, 1982, 2000, 2004 and 2008 elections. This has been the third largest nation-wide party in most of the period, but is strongly disadvantaged in small districts. It has consistently achieved representation in the parliament but with a large votes-seats differential. In Spain, official election campaigns last for two weeks. We have analyzed two large newspapers (El País and La Vanguardia) during the two weeks of election campaigning, for each of the three earliest (1977, 1979, 1982) and latest (2000, 2004, 2008) elections. We counted each meeting or event that the Communist Party or United Left organized in each of the 52 districts which involved the presence of the candidate that topped the list put out by the district of Madrid. This person was usually (but not always) the General Secretary of the party/coalition and the candidate to become prime minister if this party/coalition were to obtain enough votes. We have summed up these events and obtained a measure of the mobilization efforts of the party/coalition by district by election. Our expectation is that the decisions on where to celebrate meetings are uninformed in the early democratic period, but that the party increasingly concentrates mobilization efforts in large constituencies in later elections.

The second mechanism examined is if there has been change in the voting behavior of small party supporters. Using survey data from the early democratic period in 1979 and the latest 2008 elections, we analyze whether supporters of small parties were equally likely to vote in

[3] The countries with enforced compulsory voting according to IDEA are Argentina, Australia, Belgium, Chile, Cyprus, Greece (until 2000), Italy (until 1993), Netherlands (until 1967), Peru, Uruguay.

[4] The database is available upon request.

[5] It can be argued that the disproportionality of the electoral system is endogenous if larger, more proportional districts were drawn in areas where a larger number of cleavages and parties competed. However, this is unlikely in this case. Electoral districts were not newly drawn in the transition. Instead, the "provincias", administrative units defined in the non-democratic period, were used. While there is variation in the magnitude of the districts, and consequently in the disproportionality they produce, it is driven exclusively by population size (e.g. the provinces of Madrid and Barcelona have a larger population, and thus more seats, and thus less disproportionality) and could not be driven by expectations on the future number of parties. In other cases, there is indeed evidence that electoral system choice is endogenous to a society's political structure (Colomer, 2005; Boix, 1999). Thus, the pre-existing number of parties may influence the electoral system used. Still the implications of this are not obvious and do not invalidate our argument which is about the dynamics of electoral systems' effects.

[6] In 1986, the Communist Party formed a coalition called the United Left (Izquierda Unida) with other left-wing parties.

districts of different size in 1979, but they were significantly less likely to vote in small districts in 2008.

4. Results

4.1. Disproportionality and turnout in comparative perspective

The first analysis uses the cross-national database to test the hypothesis that disproportionality has an increasingly negative effect as democracies grow older. Our sample has been divided into two groups. Old democracies are the observations in countries where 10 or more elections have been celebrated. New democracies are the cases in which 9 or fewer elections have taken place.[7] The same country can be in the new democracies subgroup in the early democratic period and in the old democracy subgroup after it has celebrated 10 or more elections. Partitioning the sample allows us to rule out the possibility that old democracies are driving the results when observing if there is an increasing effect of disproportionality over time.

The logged LSI index of disproportionality and logged median district magnitude are included because exploratory analyses reveal that there are decreasing returns to proportionality. Additionally, both measures are heavily skewed to the left (LSI: skewness = 1.8, kurtosis = 6.6; MDM: skewness = 2.5, kurtosis = 8.1) and the logged transformation produces a variable that is approximately normally distributed (LSI: skewness = .3, kurtosis = 2.5; MDM: skewness = .6, kurtosis = 2.5). Table 1 displays the descriptive statistics of the variables:

Table 2 displays the results of OLS models with panel corrected standard errors and country fixed effects to control for unobserved heterogeneity across countries. Models 1, 2, 5, and 6 examine the relationship between the two measures of disproportionality separately for old and new democracies, unconditioned on the democracy's age. In models 3, 4, 7 and 8, which are restricted to new democracies, the hypothesis that there is an increasing effect of disproportionality over time is tested through interaction terms of the disproportionality variables and the number of elections celebrated. We expect the interaction terms to be negative in the case of the LSI and positive for MSM, suggesting that the impact of disproportionality emerges as voters and parties gain experience with the electoral process. Models 4 and 8 examine the same hypothesis with a different operationalization, including dummies for each two consecutive elections and their interactions with LSI and MDM respectively. The reference category is the first and second election. This allows us to examine whether the hypothesized different effects of disproportionality appear earlier or later in the democracy's life.

The results of our sample replicate those in the comparative literature. The LSI's time-unconditional coefficient is negative and statistically significant at conventional levels in old democracies (model 1) but not in new democracies (model 2). Similarly, the MDM[8] has a positive coefficient in established democracies (model 5) but not in new democracies (model 6) when the number of elections is not modeled.

Table 1
Descriptive statistics of the cross-sectional analysis.

Variable	Obs	Mean	Std. dev.	Min	Max
Voter turnout	457	75.39	12.30	28.42	97.60
Least squares index of disproportionality	457	5.88	5.36	0.26	32.46
Least squares index of dispr. +1 logged	457	1.68	0.69	0.23	3.51
Median district magnitude	315	18.31	36.72	1	150
Median district magnitude logged	315	1.69	1.49	1	5.01
Number of elections	457	7.63	3.10	1	10

The hypothesis that LSI has an increasingly negative effect in new democracies over time is clearly confirmed. In model 3 the interaction term is negative as expected, suggesting that the proportionality-turnout link is moderated by time. In model 4 all interaction terms are negative suggesting that disproportionality has a more negative effect on turnout in later elections as compared to the 1st and 2nd elections after democracy is established. Only the last interaction term is statistically significant at conventional levels, indicating that the negative effect is only different from zero after several elections have taken place. The country-election dyads in the group of 7th to 9th elections include such different cases as Austria (1966–1971), (Bolivia 1997–2002), Brazil (2002–2006), Dominica (2009), El Salvador (2006–2009), France (1968–1978), Germany (1972–1980), Israel (1969–1977), Jamaica (1993–2002), Japan (1967–1972), or Lesotho (1998–2002).

In model 7, the interaction of number of elections and MDM has the expected sign but does not reach conventional levels of statistical significance. In model 8, however, it can be seen that after the two initial elections, voter turnout is, on average, significantly larger in countries with large district magnitudes than in countries where the median district magnitude is small, thus confirming our hypothesis using this alternative measure of disproportionality. The weaker effects for district magnitude may be due to two reasons. Firstly, it may be a weaker overall predictor of voter turnout because it does not capture the effect of other drivers of disproportionality (e.g. number of cleavages), nor the psychological effects of the electoral system, and secondly, the number of cases is smaller which produces more uncertainty around the results.

In order to interpret the magnitude of the effects, Fig. 1 displays the estimated evolution of voter turnout by number of elections celebrated in countries in the first and fourth quartile of the LSI of disproportionality as calculated from model 3. In the early period, there is no significant

[7] Different cutoff points for new and old democracies, from 8 to 12 elections, have been examined. The results do not differ.

[8] The number of cases in these models is smaller because the dataset by Golder (2005) from which the data is taken contains a smaller number of observations. However, there is no reason to believe that learning takes place at a different speed in the cases for which data is missing.

Table 2
Disproportionality, median district magnitude and voter turnout in new and old democracies.

	Established	New democracies (<10 elections)			Established	New democracies (<10 elections)		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
LSI of disproportionality (log)	−3.10*** (0.93)	0.57 (1.33)	6.65*** (1.66)	3.90* (1.56)				
Median district magnitude (log)					3.09*** (0.61)	1.60 (1.48)	0.11 (1.69)	−2.95 (1.51)
Number of elections			1.49** (0.57)				−1.43** (0.55)	
LSI of disprop. (log)*No elections			−1.37*** (0.30)					
Median DM (log)*No elections							0.13 (0.19)	
3nd–4th elections				3.05 (3.90)				−13.79*** (1.87)
(Ref. 1st–2nd elections)								
5th–6th elections				−3.56 (4.45)				−13.95*** (3.21)
7th–9th elections				7.56 (4.19)				−16.81*** (3.12)
LSI (log)* 3rd–4th elections				−3.88 (2.10)				
LSI (log)* 5th–6th elections				−1.39 (2.12)				
LSI (log)* 7th–9th elections				−7.85*** (2.09)				
Median DM (log)* 3rd–4th								4.25*** (0.82)
Median DM (log)* 5th–6th								3.27** (1.09)
Median DM (log)* 7th–9th								3.44** (1.10)
Constant	88.82*** (1.85)	93.50*** (2.08)	86.96*** (3.13)	91.74*** (3.14)	79.75*** (1.84)	86.96*** (4.76)	100.29*** (5.44)	107.34*** (4.80)
R-Squared	0.762	0.715	0.746	0.758	0.810	0.669	0.701	0.738
Obs.	254	203	203	203	173	104	104	104

+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Panel corrected standard errors in parenthesis. Country fixed effects not shown.

Fig. 1. Voter turnout by LSI of disproportionality over time.

difference in predicted voter turnout rates in democracies with high and low levels of disproportionality. All have high levels of participation. Later on, a gap exists in the turnout rates of countries with high and low disproportionality.

These results, based on a large sample of electoral contests around the world, suggest that the negative effect of disproportionality on voter turnout emerges over time.

4.2. A closer look at the learning process: the case of Spain

Notwithstanding their value, cross-national analyses can only tell a part of the story. Disproportionality is only imperfectly measured at the national level. Just a handful of the countries in our sample use pure proportional systems with single national districts. When multiple districts are in place, as most often occurs, the level of disproportionality may vary substantially within the same country, giving rise to different incentives to abstain in different parts of the territory. Additionally, there may be unobserved sources of heterogeneity or some particular countries may drive the results. Case studies allow for better measures of disproportionality and for controlling for a number of variables that might affect the proportionality-turnout relationship in cross-national analyses. By focusing on a country's full electoral history, we can get a better grasp of the pace at which turnout responds to the effects of electoral rules.

Spain is a recent democracy where electoral rules have remained untouched since they were first implemented in the late 1970s, so we can track the process of learning throughout its entire electoral history, from the very beginning until the last 2008 election, the tenth since 1977. Although nominally within the PR family, the rules governing the election of the Congress of Deputies, the lower house of the Spanish parliament, display considerable majoritarian effects. This is mainly due to the combination of the application of the D'Hondt formula for the allocation of seats at the district level and the low average district magnitude. The D'Hondt formula is known

to privilege the representation of larger parties (Gallagher, 1991) and tends to produce an important proportion of wasted votes for small parties, particularly in smaller districts.

The 350 seats of Congress are distributed among 52 constituencies of highly variable population sizes. The fact that a minimum of two seats is automatically assigned to each district (with the only exception of the autonomous cities of Ceuta and Melilla, which are single-member constituencies) gives rise to a considerable degree of malapportionment, to the advantage of rural areas. District magnitudes range from two to three seats to over thirty, but the average is 6.7 seats per constituency, which is a low figure for a PR system in comparative terms. Overall, these provisions clearly work for the over-representation of the (two) largest parties and in detriment of minor state-wide parties, whose chances are confined to large-sized districts. Non-statewide parties such as the Basque and the Catalan nationalists have generally obtained a fair proportion of seats, provided they get substantial support in the limited number of districts where they run.

The disproportionality at the national level has decreased steadily since the first democratic elections, as voters learn to avoid wasting their votes and the number of electoral parties shrunk (see Table 3). On the other hand, the evolution of turnout does not show a distinct pattern. Yet disproportionality is highly variable at the constituency level, with the LSI typically ranging from just above five to over twenty points (over fifty in single-member districts). The Spanish electoral system thus places voters in rather different scenarios depending on the district where they cast their ballots.

To test our hypothesis, we estimated OLS models with panel-corrected standard errors and province fixed effects to account for unobserved heterogeneity across districts. In four of the models, year fixed effects are also included to account for differences across elections. In models 3 and 6, they are not included because time is modeled as a set of dummy variables for each two elections. Exposure to the consequences of the electoral system is measured by the number of elections that have occurred since the reestablishment of democracy. The effect of disproportionality and district size is examined in interaction with the number of elections celebrated. For each key independent variable (the LSI of disproportionality and district magnitude) we specify three different models. First, turnout is modeled as a linear function of the number of elections; second, the variable number of elections is logged, since the learning process may follow a curvilinear pattern: steep in the first few elections, and gradually slowing down afterwards. Thirdly, dummy variables for each two elections are included with the 1st and 2nd as the reference categories. Table 4 displays the results of the analyses.

Table 3
Disproportionality (LSI) and turnout in Spain (1977–2008).

Election	LSI	Turnout
1977	10.6	78.83
1979	10.5	68.04
1982	8.1	79.97
1986	7.3	70.49
1989	8.9	69.74
1993	6.8	76.44
1996	5.3	77.38
2000	6.1	68.71
2004	4.9	75.66
2008	4.9	73.85

Source: Spanish Ministry of the Interior.

The results are broadly consistent with our hypothesis. Disproportionality is negatively associated with turnout only after a number of elections have taken place. At the early period disproportionality is, if anything, positively associated with electoral participation.[9] The interaction terms of logged disproportionality and number of elections, both linear and logged, are negative as expected. Voter turnout is, on average, smaller in provinces with more disproportionality in the 3rd and 4th elections, compared to the two initial elections. After the 5th elections, some turnout gaps emerge between provinces as a function of their disproportionality level.

Similar results are replicated when using district magnitude as a measure of disproportionality. In the initial elections, an increase in the number of seats is associated with a decrease in voter turnout, which contradicts the usual expectations of the effect of this variable. While the size of the coefficient is large, it cannot be interpreted independently of the values of each of the interactive terms. The interactions of interest between the logged number of seats and the number of elections are all positive, but in model 4 they are not statistically significant at conventional levels. In model 6, it can be seen that the relevant differences again exist between the early democratic period and subsequent elections.

These results suggest that the hypothesized learning process takes place rather quickly after the initial democratic elections, as the effects of disproportionality, measured by the LSI or district magnitude, are mostly different when comparing very early elections with the rest.

Next, we turn to the analysis of the mobilization strategy of the third largest nation-wide party in the early and the late democratic period. The data collected are on campaign events in which the leader of the Communist Party, later Izquierda Unida, participated. Table 5 displays the number of visits to provinces classified as small (1 to 5 seats) where the possibilities of a third party to obtain representation are scarce, medium (6 to 8 seats), and large (9 to 35) where it should be easier for a small party to obtain representation. The column percentages are calculated to examine how the mobilization efforts were distributed across types of districts.

The large difference is between the first and the next elections. In the first elections the general secretary made six visits during the election campaign to small and

[9] This may be because in contexts where the consequences of the electoral system are not evident yet, other variables related to district magnitude may operate. In this case, small districts where those where the UCD, Prime Minister Suárez's party then in government, got its highest results and thus presumably were highly mobilized.

Table 4
Disproportionality and voter turnout in Spain.

	LSI of disproportionality			Number of seats		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
LSI of disproportionality (log)	0.08 (0.64)	0.45 (0.58)	2.32* (1.19)			
No. of seats (log)				−14.29*** (3.02)	−14.96*** (2.87)	−14.79*** (2.79)
Number of elections	−0.14 (0.26)			−0.84*** (0.14)		
LSI of dispr. (log)*no. elections	−0.18+ (0.11)					
Seats (log) * no. elections				0.17* (0.08)		
Log number of elections		0.02 (0.86)			−3.78*** (0.47)	
LSI (log)* log no. elections		−0.91** (0.35)				
Seats (log)* log no. elections					0.94*** (0.27)	
3nd–4th elections (ref. 1st–2nd elections)			7.09 (4.66)			−1.57 (6.18)
5th–6th elections			12.79* (5.25)			−4.09 (5.56)
7th–8th elections			6.75 (4.43)			−3.26 (5.45)
9th–10th elections			10.00* (4.35)			−1.85 (5.03)
LSI (log)*3rd–4th elections			−2.14+ (1.14)			
LSI (log)*5th–6th elections			−5.09** (1.56)			
LSI (log)*7th–8th elections			−2.62* (1.07)			
LSI (log)*9th–10th elections			−3.45** (1.11)			
Seats (log)*3rd–4th elections						1.63*** (0.49)
Seats (log)*5th–6th elections						2.08*** (0.49)
Seats (log)*7th–8th elections						1.77*** (0.49)
Seats (log)*9th–10th elections						1.77*** (0.49)
Constant	78.82*** (2.03)	77.18*** (1.89)	66.72*** (4.38)	98.82*** (4.40)	99.35*** (4.16)	99.13*** (4.03)
R-Squared	0.859	0.859	0.571	0.870	0.872	0.873
Obs.	520	520	520	520	520	520

+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Panel corrected standard errors in parenthesis. Province fixed effects in all models and year fixed effects in models 1, 2, 4, and 5 not shown.

Table 5
Campaign visits to provinces by the leader of the Communist Party.

		1977	1979	1982	2000	2004	2008
Small	No. provinces visited	6	2	3	2	2	2
(1/5 seats)	% Total visits	38	12	18	18	15	14
Medium	No. provinces visited	6	8	7	2	3	6
(6/8 seats)	% Total visits	38	47	41	18	23	43
Large	No. provinces visited	4	7	7	7	8	6
(9/35 seats)	% Total visits	25	41	41	64	62	43
Total	No. provinces visited	16	17	17	11	13	14
	% Visits	100	100	100	100	100	100

medium districts but only four to large districts, where the prospects of obtaining representation were better. However, the party learned quickly that this was not an optimal mobilization strategy. The number of small provinces visited in 1979 dropped sharply from six (out of 17 districts) to only two, while about half of the large districts were visited by the general secretary, seven (out of 13 districts) as opposed to four in the 1977 elections. The number of visits by size of the provinces has remained very stable during the rest of the democratic period, suggesting that the strategy adopted in 1979 is considered to be adequate by the Communist Party/United Left. In the five elections observed after 1977, the number of visits to small districts has remained stable at two or three per campaign, as opposed to six to eight to large provinces. In relative terms, in 2000 and 2004, two thirds of the provinces visited by the leader were to large districts.

Finally, survey data are used to examine whether supporters of small parties in small districts were equally likely to vote in the early period, but were less likely to vote in recent years. In order to test the hypothesis, we examine survey data at two distant points in time: 1979 (the second democratic election, the first after the approval of the constitution) and 2008 (the most recent general election at the time of writing).[10] For each race, we estimate a logit model of turnout as a function of (logged) district magnitude, a dummy variable identifying small party supporters, and the interaction between the two. Small parties are defined as all but the main forces at the constituency level.

[10] Data come from two nationally representative studies with large samples: the 1979 postelectoral survey undertaken by Data ($N = 5439$), and the 2008 election panel survey of the Centro de Investigaciones Sociológicas ($N = 6083$).

Table 6
Summary statistics of the variables in the survey analysis.

	Mean	Std. Dev.	Min	Max
1979				
Participation (voted = 1)	0.88	0.32	0	1
Female	0.50	0.50	0	1
Age in years	45.10	16.74	18	78
Education	1.28	0.79	0	3
District magnitude (seats)	13.64	11.31	3	33
Small party sympathizer	0.24	0.43	0	1
2008				
Participation (voted = 1)	0.95	0.22	0	1
Female	0.51	0.50	0	1
Age in years	47.82	17.68	18	93
Education	1.86	0.80	0	3
District magnitude (seats)	14.76	11.82	2	35
Small party sympathizer	0.15	0.36	0	1

Hence the analysis is restricted to respondents that explicitly feel sympathy toward a party.[11] Table 6 reports the descriptive statistics.

Given the codification of the main variables of interest, we expect the coefficient of small party sympathizers in 2008 to be negative and the interaction term with district magnitude to have a positive sign: this would mean that small party supporters participate at a lower rate than large party supporters in small constituencies, but that the difference between the two shrinks as the chances of obtaining representation increases with the size of the constituency. On the other hand, no significant effects should be visible in 1979. The models also include controls for respondents' gender, age (and its quadratic), and education level. As results remain substantively unchanged when other control variables – such as individual levels of political interest and political efficacy – are added into the models, we stick with the more parsimonious specification.

The results of the logit models are displayed in Table 7. The obtained estimates provide support for our expectations. In 1979, shortly after the establishment of democracy, the behavior of those feeling sympathetic to small parties did not significantly differ from that of large party supporters, and neither appears to be affected by district magnitude. By contrast, the effect of the electoral system on those more likely to cast a wasted vote is already visible in 2008, as indicated by the negative sign of the small party dummy and the positive sign of the interaction term – both statistically significant at conventional levels.

[11] Because the surveys' questionnaires do not include all and the same questions, different procedures had to be followed in order to identify party sympathizers in each study. For 1979 we relied on the feeling thermometers of the four main state-wide parties: the largest two options at that time (the UCD and the PSOE) and two smaller alternatives (the PCE and Coalición Democrática). Respondents are considered sympathizers of a party if they give it a mark higher than they give to any of the rest and if that mark is above 5 on the 0-to-10 scale. For 2008 we used a question asking respondents which party, if any, they regarded themselves to be close to. Large parties are defined as the two main statewide parties (the PSOE and the PP) and two parties with geographically concentrated bases of support (CiU in Catalonia, and the PNV in the Basque Country).

Table 7
Effect of district magnitude on the participation of small party sympathizers.

	1979 b/se	2008 b/se
District magnitude (log)	0.08 (0.09)	−0.02 (0.12)
Small party sympathizer	−0.12 (0.40)	−2.06*** (0.61)
District mag. * Small party sympathizer	−0.05 (0.16)	0.61* (0.26)
Female	−0.28* (0.12)	−0.12 (0.16)
Age	0.08*** (0.02)	0.05+ (0.03)
Age squared	−0.0007** (0.0002)	−0.0004 (0.0003)
Education	−0.17* (0.08)	0.28* (0.13)
Constant	0.30 (0.48)	1.22+ (0.66)
LR Chi-Squared	70.290***	28.406***
Obs.	2752	3022

+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Standard errors are in parenthesis.

Table 8
Predicted probability of participation in the general elections of 1979 and 2008, by district magnitude and party sympathy.

	District magnitude	Party supported		Difference
		Small	Large	
1979	Small (4 seats)	86.9 (2.0)	88.9 (1.0)	−2.0
	Medium (7)	87.0 (1.4)	89.3 (0.1)	−2.3
	Large (16)	87.3 (1.4)	90.0 (0.1)	−2.6+
	Difference (small–large)	−0.5	−1.1	
2008	Small (4 seats)	86.6 (2.9)	95.6 (0.6)	−9.0**
	Medium (7)	90.0 (1.7)	95.6 (0.5)	−5.6**
	Large (16)	93.6 (1.3)	95.5 (0.5)	−1.9
	Difference (small–large)	−7.0*	0.1	

+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Predicted probabilities, with their standard errors in parenthesis, derived from the estimates in Table 7.

Since logistic regression estimates are not readily interpretable, we calculated the predicted probability of participation for small and large party sympathizers at given values of district magnitude. The results, reported in Table 8, show that in 1979 the predicted probabilities of voting of large and small party supporters were similar in small and large districts. Yet in 2008 differences are clearly visible.[12] The turnout rate of small party sympathizers is nine percent points lower than that of large party sympathizers in small constituencies where only the first- and second-largest forces have real chances of winning a seat. Furthermore, the differences across these two groups of supporters are apparent in small- and medium-sized districts, but tend to diminish and eventually disappear in more populated provinces where the translation from votes to seats is more proportional.

5. Conclusions

The analyses are consistent with the learning model of electoral system effects. Our working hypothesis predicted that the negative effect of disproportionality on turnout should become increasingly apparent over time. We have

[12] Note that turnout was higher in 2008 (74%) than it was in 1979 (68%). This change might be partly attributed to the former being a more competitive election.

argued that in new democracies voters and parties are not fully acquainted with the breakdown of preferences across districts and the institutional incentives that they face. Therefore, the effect of disproportionality is less visible after electoral rules are established. This helps understand why the disproportionality-turnout nexus is weaker in young democracies than in older democracies. The analysis supports these expectations. Both in the cross-national analysis and in the case study, disproportionality has no negative effect on voter turnout during the initial phase of democracy, whereas the expected negative effect is increasingly visible after various elections have taken place.

This finding contributes to our understanding of the way electoral rules shape political outcomes, such as voter turnout, under changing contextual situations. As elections go by, experience is a useful resource for ascertaining whether or not votes and mobilization efforts are likely to be wasted, and to consequently adjust behavior. Our findings cannot determine when exactly the learning process is completed. Using different measures of disproportionality leads to different speed estimates, but in all cases we have observed, at the very least, a difference between the first two elections and the rest.

Two arguments have been put forward in the literature to explain the negative effect of disproportionality. To our knowledge, our study is the first to provide evidence that both are correct. First, parties adjust their mobilization strategies to maximize their electoral representation, not electoral turnout. Our findings show that parties adapt quickly to the structure of incentives: the Communist Party/United Left had adjusted the campaign strategy by the second election, and maintained it afterwards. From the second general election (1979) on, this small party has concentrated mobilization efforts in large districts where chances to win representation are larger. By contrast mobilization in small districts declined. Presumably this contributed to a lower turnout level in those places. Second, citizens that are close to small parties realize that the probability of their vote being wasted is higher when disproportionality is high. An analysis of survey data comparing small and large party sympathizers shows that by 2008 the former have become less likely to vote than the latter in small districts. This is probably a reaction to both less stimuli from their preferred party and the realization that their vote for their first preference is likely to be wasted.

The findings have implications for the study of elections in new democracies and electoral reforms. One cannot expect the consequences of electoral systems to be visible immediately after they are adopted. This fact can lead to disappointment on the part of proponents of election reform in the short run. Unless an intense information campaign takes place and voters can at least grossly anticipate the actual share of party support, reforms are unlikely to have the expected effects *immediately after they are implemented*. Thus, they will most probably fail to live up to the expectations of their proponents. In the specific case of the effect of proportionality, this may be one of the reasons why the introduction of PR has not increased turnout in New Zealand (Vowles, 2002). Speculatively, the reduction of registration requirement to vote in the US may not reveal its positive effects on voter turnout until the whole electorate is aware that this requirement does not exist and cohorts that learned to vote under the old system are substituted by other cohorts.

It has been recently argued that the logical way to go when studying the effects of contextual variables on voter turnout is to examine cases in which the variable of interest changes and see what the consequences of this change from a longitudinal perspective are (Franklin, 2004). For example, to learn about the effect of an institution on turnout, researchers should study a case in which this institution has been reformed and estimate the subsequent change in turnout. Considering the results reported in this study, this strategy needs to be qualified. We have shown that it may well take several decades for the effects of electoral systems to be fully displayed. The learning rate may certainly be slower or faster depending on the specific change. However, this type of research strategy can lead to an underestimation of the true effects if the time span studied after the variable of interest has changed is not lengthy enough for the full impact to be realized.

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Appendix.

Countries included in the analysis (number of elections in brackets):

Austria (19), Bolivia (5), Brazil (3), Bulgaria (5), Canada (21), Costa Rica (9), Croatia (3), Czech Republic (5), Denmark (24), Dominica (7), El Salvador (5, Estonia (4), Finland (18), France (17), Germany (17), Greece (4) Guyana (3), Honduras (3), Hungary (6), Iceland (19), India (2), Ireland (16), Israel (17), Italy (2), Jamaica (7), Japan (21), South Korea (2), Latvia (4), Lesotho (3), Lithuania (3), Malta (16), Mexico (4), Montenegro (1), Namibia (3), Netherlands (13), New Zealand (21), Norway (17), Paraguay (4), Poland (6), Portugal (12), Romania (4), Senegal (1), Serbia (2), Slovakia (5), Slovenia (4), South Africa (3), Spain (9), Sweden (19), Switzerland (16), Taiwan (1), Trinidad and Tobago (7), UK (17), Ukraine (1).

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