



Democratic Electoral Systems around the world, 1946–2011



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ABSTRACT

This research note describes an update to Golder's (2005) *Democratic Electoral Systems (DES)* dataset. We extend the temporal scope of the original dataset by including all legislative and presidential elections that took place in democratic states from 2001 to 2011. In addition to significantly expanding the size of the *DES* dataset, we offer a simplified classification scheme for electoral systems. We also provide more detailed information about all democratic elections since 1946, including the dates for each round of elections as well as the rules used in different electoral tiers. A brief temporal and geographic overview of the data is presented.

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1. Introduction

Elections are central to the very nature of contemporary democratic rule. They provide the primary means for ensuring that governments remain responsive and accountable to their citizens. Much though depends on the rules used in these elections (Powell, 2000). In this note, we describe an update to Golder's (2005) *Democratic Electoral Systems (DES)* dataset on electoral rules that covers democratic elections from 1946 (or independence) through 2011. The new dataset contains information on 1197 legislative and 433 presidential elections. In addition to significantly expanding the temporal scope of the original *DES* dataset, we have added more detailed information about the elections and electoral systems, including the dates for each round of elections as well as the rules used in different electoral tiers.

2. Democratic elections

Our update focuses on legislative and presidential elections in *democratic* regimes. A regime is classified as a democracy if (i) the chief executive is elected, (ii) the legislature is elected, (iii) there is more than one party

competing in elections, and (iv) an alternation under identical electoral rules has taken place. A regime is classified as a dictatorship if any of these four conditions do not hold (Przeworski et al., 2000). Countries are coded based on the regime that existed at the end of a given year. The specific classification of regimes is based on data from Cheibub et al. (2010), which we updated through 2011.

Note that the 'alternation rule' described above can lead some elections to be retroactively recoded as democratic. This was the case, for example, with some elections in Paraguay. The 2008 Paraguayan elections saw the Colorado Party lose power for the first time since the end of Alfredo Stroessner's dictatorship in 1989. None of the elections in Paraguay since 1989 were considered democratic until 2008, at which point they all became democratic. A consequence of this retroactive recoding is that our set of democratic elections in the period from 1946 to 2000 is slightly different from that in the original *DES* dataset.¹

Not all elections that occur when a regime is classified as a dictatorship are dictatorial. This apparent anomaly has to do with the fact that a country's regime type is coded based on its status at the end of a given year. Elections like those in Argentina 1962, Nigeria 1983, Philippines 1965, and

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¹ Another reason for the slight difference in our sample size for this period can be traced to a few instances in which Golder (2005) and Cheibub et al. (2010) differ in their coding of regime type.

Thailand 1976 all preceded a democratic collapse in the same year. Although these countries are considered dictatorial at the end of these years, we code these particular elections as democratic. Finally, we should note that we code the 1997 elections in Kenya, the 1999 elections in Guinea Bissau, the 2005 elections in Liberia, the 2006 elections in Mauritania, and the 2008 elections in Bangladesh as democratic even though Cheibub, Gandhi, and Vreeland (CGV) do not code these countries as democratic until the following year. The reason for this is that these elections are the primary reason cited by CGV for their eventual recoding of these countries as democratic.²

In Fig. 1, we show the total number of legislative and presidential elections in democratic regimes by decade. The last decade has witnessed the most elections in the post World War II era, with 299 legislative and 133 presidential elections being held in 120 democracies from 2001 through 2010. Seven countries held democratic elections for the first time: East Timor in 2002, Georgia in 2004, Kyrgyzstan and Liberia in 2005, Mauritania in 2006, and finally Bhutan and the Maldives in 2008. There are two additional things of note in Fig. 1. The first is the large increase in the number of democratic elections since the end of the 1980s. This is obviously a consequence of democratization in much of Eastern Europe, Latin America, Asia, and Africa. The second is the increase in the number of presidential elections relative to legislative elections in the same time period. Whereas legislative elections typically outnumbered presidential elections by a factor of three or four to one prior to 1990, presidential elections now comprise almost a third of all elections. To a large extent, this has to do with the increasing proportion of semi-presidential, and to some extent presidential, democracies in the world (Clark et al., 2012, 462–463).

3. Legislative elections

As Fig. 2 indicates, we classify legislative electoral systems into three main categories – majoritarian, proportional, and mixed – based on their electoral formula.³

3.1. Majoritarian systems

A majoritarian electoral system is one in which the candidates or parties that receive the most votes win. Although some majoritarian systems require the winning candidate or party to obtain an absolute majority of the votes (absolute majority systems), others require only that the candidate or party win more votes than anyone else

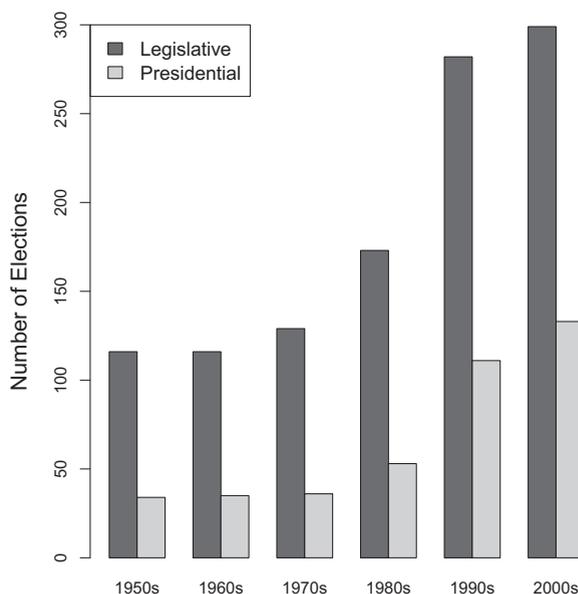


Fig. 1. Legislative and presidential elections by decade: 1951–2010.

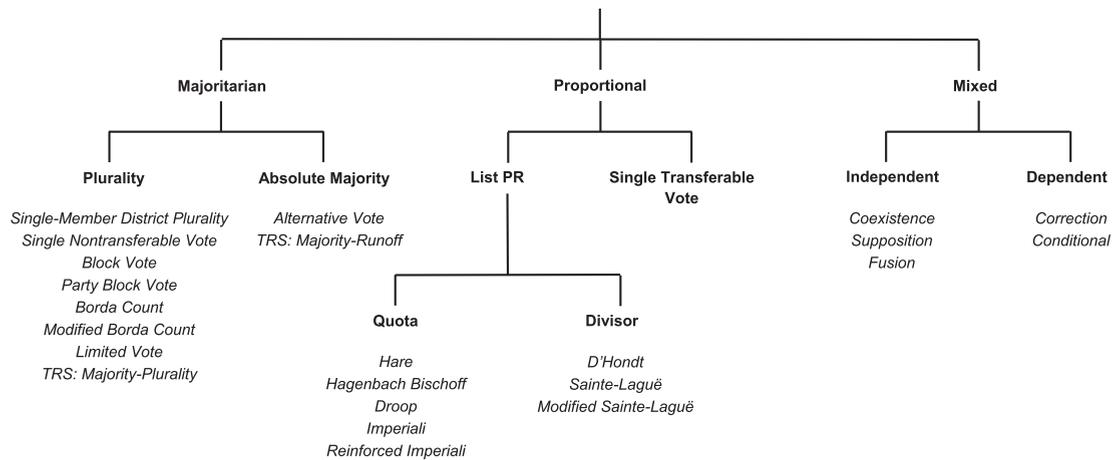
(plurality or relative majority systems). Most plurality systems can be distinguished in terms of the number of votes per voter and seats per district. For example, in a *single-member district plurality (SMDP)* system, voters cast a single candidate-centered vote in a single-member district. Under the *single nontransferable vote (SNTV)*, voters cast a single candidate-centered vote in a multi-member district. The *block vote (BV)* is a candidate-centered system used in multi-member districts in which voters have as many votes as there are district seats. The *limited vote (LV)* is a candidate-centered system used in multi-member districts in which voters have multiple votes, but fewer votes than there are district seats. In each of these systems, the candidates with the most votes win. The *party block vote (PBV)* is used in multi-member districts in which voters cast a single party-centered vote; the party with the most votes wins all of the district seats. Not all plurality systems can be distinguished in this way, though. For example, the *Borda count (BC)* and *modified Borda count (mBC)* are candidate-centered, preferential voting systems used in either single- or multi-member districts in which voters rank-order the candidates. Values are assigned to each rank of a voter's preference ordering, and the candidates with the most 'valuable' votes across all voters are elected.⁴

In terms of absolute majority systems, the *alternative vote (AV)* is a candidate-centered, preferential voting system used in single-member districts where voters rank

² As an example, CGV do not code Liberia as democratic until 2006 despite the fact that presidential elections took place in October 2005 because the winner of these elections, Ellen Johnson-Sirleaf, did not officially take office until January 2006.

³ This is a simplification of the classification scheme employed by Golder (2005), who classifies electoral systems into four main categories – majoritarian, proportional, mixed, and multi-tier. One problem with the original Golder classification scheme is that it confuses two different things, the electoral formula and the number of electoral tiers. For more detailed information on electoral systems and our classification scheme, see Clark et al. (2012, 535–602).

⁴ Under the BC, each rank in a voter's preference ordering is assigned a value using equal steps. For example, if there were ten candidates, a voter's first preference might be worth 1, his second preference 0.9, his third preference 0.8, and so on. Under the mBC, each rank in a voter's preference ordering is assigned a value using a series of divisors – 1, 2, 3, 4, and so on. For example, if there were ten candidates, then a voter's first preference would be worth 1, his second preference 0.5, his third preference 0.33, and so on.



Note: Figure 2 lists those electoral systems used in democratic national-level lower house legislative elections from 1946 through 2011.

Fig. 2. Classification of legislative electoral systems.

order the candidates. AV systems in which voters have to rank all of the candidates are called 'full preferential' systems, whereas AV systems in which voters have to rank only some of the candidates are called 'optional preferential' systems. If a candidate wins an absolute majority of first-preference votes, he is immediately elected. If no candidate wins an absolute majority, then the candidate with the fewest first-preference votes is eliminated, and her votes are reallocated among the remaining candidates based on the designated second-preferences. This process continues until one candidate has an absolute majority of the votes cast (full preferential) or an absolute majority of the votes remaining (optional preferential).

A two-round system (TRS) is a majoritarian electoral system that has the potential for two rounds of elections. In a TRS, candidates or parties are elected in the first round if they obtain a specified level of votes, nearly always an absolute majority. If no one obtains this level of votes, then a second round of elections takes place. In a *majority-runoff TRS*, the top two vote winners go through to the second round, where whoever wins the most votes – necessarily an absolute majority – is elected.⁵ In a *majority-plurality TRS*, all candidates who overcome some preordained threshold go through to the second round, where whoever wins the most votes, whether it is an absolute majority or not, is elected.⁶

⁵ Although most majority-runoff systems are candidate-centered in single-member districts, it is possible to have a party-centered majority-runoff system in multi-member districts. Mali, for example, uses the party block vote with an absolute majority requirement in its multi-member districts.

⁶ Although most majority-plurality systems are employed in single-member districts, it is also possible for them to be used in multi-member districts. Kiribati, for example, employs the block vote with an absolute majority requirement for election in the first round in its multi-member districts.

Although highly unusual, there are some two-round systems in which a candidate can be elected in the first round with less than an absolute majority. For example, the first-placed candidate in Mongolian elections between 1996 and 2004 only had to win more than 25% of the vote to avoid a second round. These systems might be referred to as qualified-majority TRSs.

3.2. Proportional systems

Proportional electoral systems are quota- or divisor-based systems employed in multi-member districts.⁷ All proportional systems except the single transferable vote (STV) employ party lists. Party list systems employ either quotas (with allocation of remainders) or divisors to allocate seats. A quota is the number of votes that guarantees a party a seat in a particular district. Five different quotas are commonly used: *Hare*, *Hagenbach-Bischoff*, *Imperiali*, *Reinforced Imperiali*, and *Droop*. A quota, $Q(n)$, is defined as,

$$Q(n) = \frac{V_d}{M_d + n}, \quad (1)$$

where V_d is the total number of valid votes in district d , M_d is the district magnitude, and n is the modifier of the quota. When $n = 0$, the system employs the Hare quota; when $n = 1$, the system employs the Hagenbach-Bischoff quota; when $n = 2$, the system employs the Imperiali quota; and when $n = 3$, the system employs the Reinforced Imperiali quota. The Droop quota is equal to the Hagenbach-Bischoff

⁷ Some majoritarian systems – those with absolute majority requirements – are also quota-based systems. However, these systems are almost always applied in single-member districts. Mali is unusual in employing a majority-runoff TRS in its multi-member districts. To avoid any ambiguity in our classification rules, we limit PR systems to those that apply quotas of less than 50% in multi-member districts.

quota plus one (with any ‘decimal part’ removed). Remainder seats in quota-based systems are typically allocated using the largest remainder (LR), the highest average (HA), or the modified highest average (mHA) method.⁸ Divisor-based systems divide the total number of votes won by each party by a series of numbers (divisors) to obtain quotients. Seats are then allocated according to which parties have the highest quotients. Three different divisor systems are commonly used: *D’Hondt*, *Sainte-Laguë*, and *Modified Sainte-Laguë*. The D’Hondt system uses the divisors 1, 2, 3, 4, ...; the Sainte-Laguë 1, 3, 5, 7, ...; and the Modified Sainte-Laguë 1.4, 3, 5, 7, ...

The *Single Transferable Vote (STV)* is a proportional system that does not employ a party list. It is a candidate-centered, preferential voting system used in multi-member districts where voters rank order the candidates. Candidates must obtain a particular quota, often the Droop quota, in order to win a seat.⁹ Votes go initially to each voter’s most preferred candidate. If an insufficient number of candidates obtain the quota, then the candidate with the lowest number of first-choice votes is eliminated. The votes from the eliminated candidate, as well as any surplus votes from candidates that are already elected, are then reallocated to the remaining candidates according to the designated second-preferences. This process continues until all of the seats are filled. The exact process by which votes are transferred varies from country to country.

3.3. Mixed systems

A mixed electoral system is one in which voters elect representatives through two different systems, one majoritarian and one proportional.¹⁰ Although many mixed systems have more than one electoral tier – a level at which votes are translated into seats – with a majoritarian formula employed in one and a proportional formula employed in another, multiple electoral tiers are not a necessary characteristic of mixed systems. Mixed systems differ in terms of whether they are independent or dependent. An independent mixed system, often referred to as a mixed parallel system, is one in which the majoritarian and proportional components of the electoral system are implemented independently of one another. Independent mixed systems come in three types: coexistence, superposition, and fusion (Massicotte and Blais, 1999). A *coexistence* system is one in which some districts in an electoral tier employ a majoritarian formula, while others employ a proportional formula. A *superposition*

system is one in which the majoritarian and proportional formulas are applied in different electoral tiers. And a *fusion* system is one in which majoritarian and proportional formulas are used within a single district.

A dependent mixed system, often referred to as a mixed member proportional system, is one in which the application of the proportional formula is dependent on the distribution of seats or votes produced by the majoritarian formula. Dependent mixed systems come in two types: correction and conditional (Massicotte and Blais, 1999). A *correction* mixed system is one in which the seats distributed by the proportional formula in one set of districts are used to correct the vote-seat distortions created by the majoritarian formula in another. A *conditional* mixed system is one in which the use of one electoral formula is triggered by a certain outcome of the other.

3.4. An overview

In Fig. 3, we show the number of elections employing majoritarian, proportional, and mixed electoral systems by decade. In addition to indicating how the number of democratic elections has increased over time, Fig. 3 illustrates that the use of majoritarian electoral systems has significantly declined while that of mixed systems has increased. In the 1950s, majoritarian, proportional, and mixed electoral systems were employed in about 42%, 50%, and 8% of democratic elections, respectively. By the 2000s, though, majoritarian systems were employed in only 33% of elections, while mixed systems were used in 18% of them.

The geographic distribution of electoral systems around the world across decades is shown in Fig. 4. Among other things, the figure illustrates the progress of the third wave of democracy, starting with the democratic transitions in Spain, Portugal, and Greece in the 1970s. It also indicates

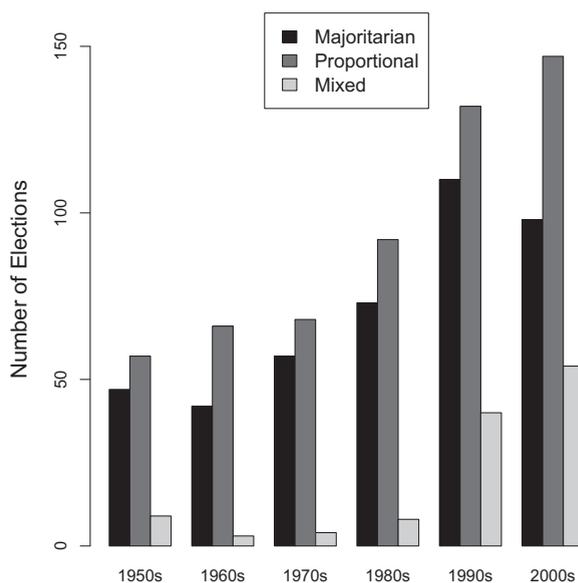


Fig. 3. Legislative electoral systems by decade.

⁸ The LR method gives unallocated seats to those parties with the largest remaining fraction of a quota after the initial allocation of seats. The HA method involves dividing the number of votes won by each party by the number of seats they obtain in the initial allocation. Remainder seats are then allocated to those parties who ‘paid’ the highest average number of votes for their seats. The mHA method is similar except that it divides the votes obtained by each party by the number of already-allocated seats plus one.

⁹ It is easy to see that the majoritarian AV system is just the single-member district equivalent of the STV where the Droop quota is an absolute majority.

¹⁰ As with the original Golder (2005) dataset, we only classify an electoral system as mixed if more than 5% of the total legislature is elected by a different electoral formula to that used to elect the other deputies.

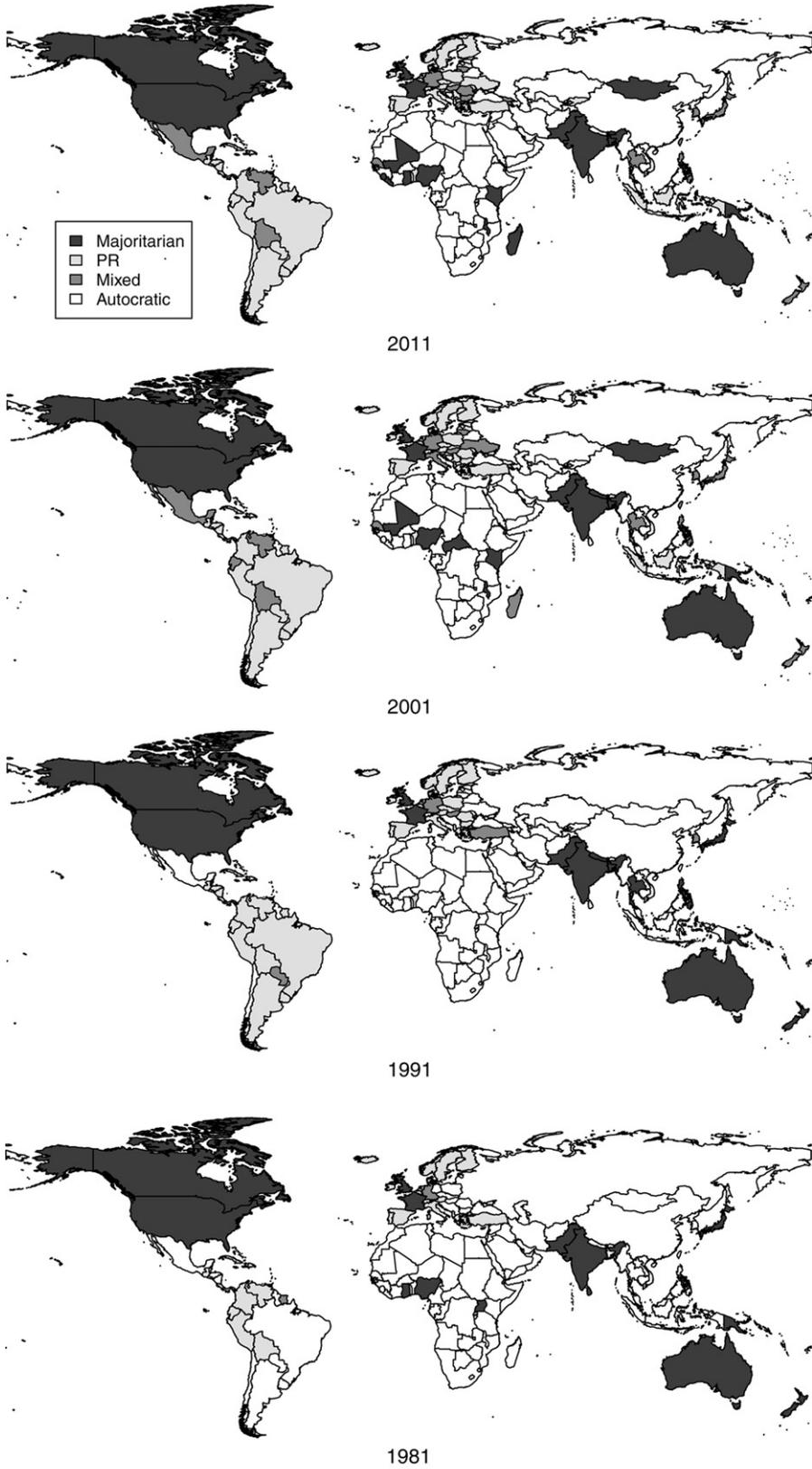


Fig. 4. Electoral systems around the world.

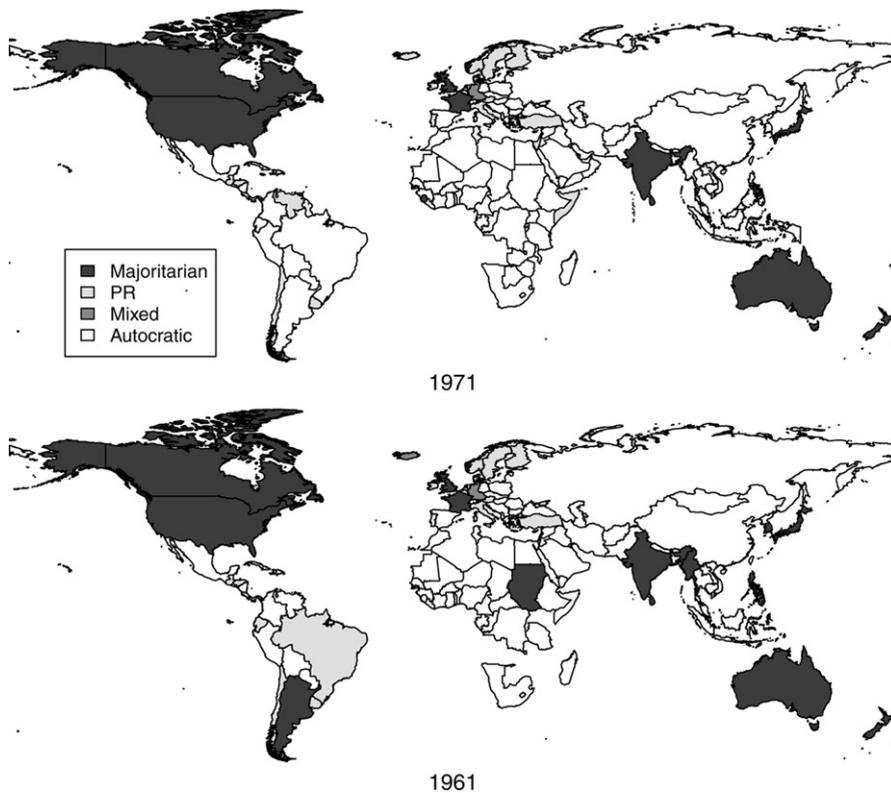


Fig. 4. (continued)

how the frequency of the three main electoral system types varies across geographic regions.¹¹ The impact of colonial rule is obviously still felt today, with former British and French colonies typically employing majoritarian electoral systems like their past colonial rulers. This helps to explain the dominance of majoritarian systems in places like North America, the Caribbean islands, India, Pakistan, and much of sub-Saharan Africa and Australasia. Proportional systems have historically predominated in South America and Europe. Although this predominance remains, both regions, and in particular Europe, has seen an increase in the use of mixed electoral systems in recent decades. In Europe, this change can largely be traced to the adoption of mixed systems by the newly democratic states in the east after 1989. In addition to Eastern Europe, mixed systems are now also prevalent in Asia, driven by states like Japan, the Philippines, and Sri Lanka.

In Fig. 5, we provide descriptive statistics as of 2011 on the number of democracies using the various sub-categories of majoritarian, proportional, and mixed systems.¹² Amongst majoritarian systems, the SMDP formula is by far the most common, with relatively few countries

employing each of the other formulas.¹³ Overall, list PR systems are the most common type of electoral system employed in democracies. About 63% of list PR systems employ a divisor-based method for allocating seats, with D'Hondt the most prevalent by far. Of the quota-based methods, the Hare quota, typically with largest remainders, is the most common. Only two countries employ the single transferable vote, Ireland and Malta. Among mixed electoral systems, 55% are independent and 45% are dependent. This represents a significant increase in the proportion of dependent systems, which only accounted for about 35% of mixed electoral systems in the 1990s. Supposition and correction systems are easily the most common type of independent and dependent mixed systems, respectively. Interestingly, the distribution of electoral formulas used in the proportional component of mixed systems differs significantly from that used in pure proportional systems. Specifically, 60% of elections employing mixed electoral rules in the 2000s used the Hare quota with largest remainders for their proportional component, while only 20% used D'Hondt.

¹¹ We show the different geographic regions separately and in more detail in the Online Appendix A.

¹² For multi-tier majoritarian and proportional systems, the data refer to the electoral formula in the lowest electoral tier.

¹³ The limited vote was not in use in any democracy in 2011. Although no democracy currently employs a straight party block vote, Mali employs it as part of its majority-runoff two-round system. And although the Borda count is not used by any country in its lowest electoral tier, and hence fails to register in Fig. 5, it is currently employed to elect two minority (Italian and Hungarian) members to the Slovenian legislature.

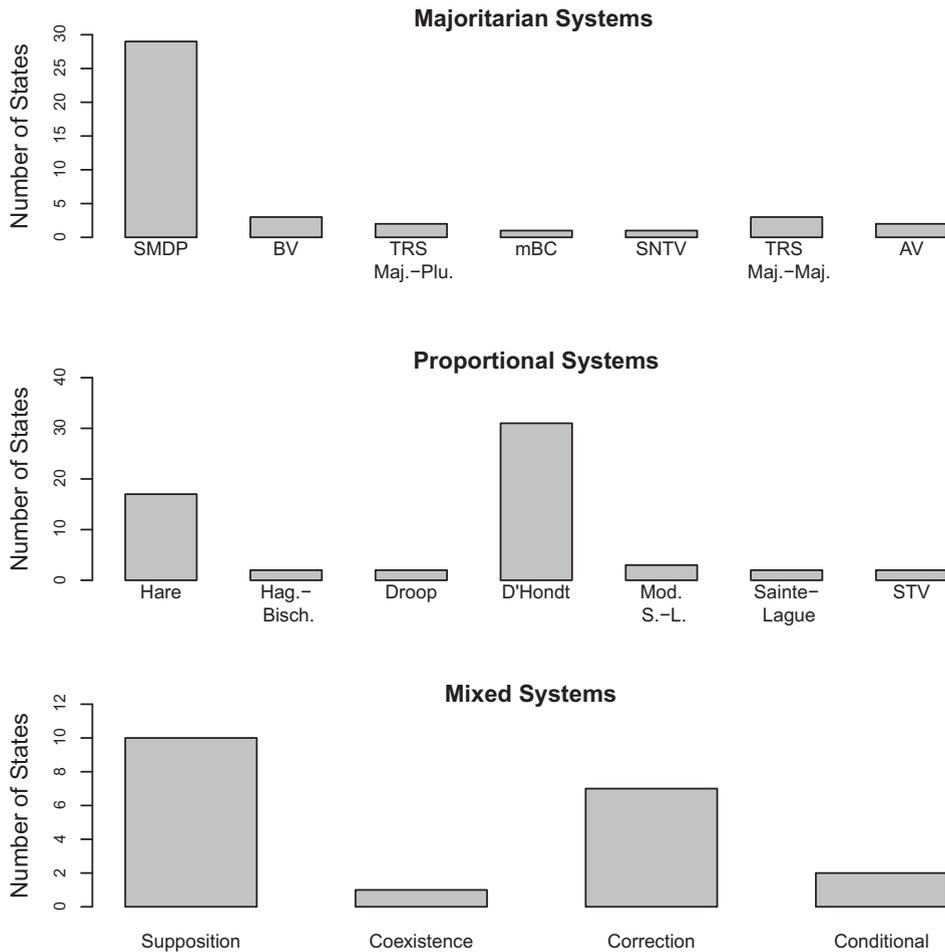


Fig. 5. Electoral rules 2005-2011.

3.5. Party system size

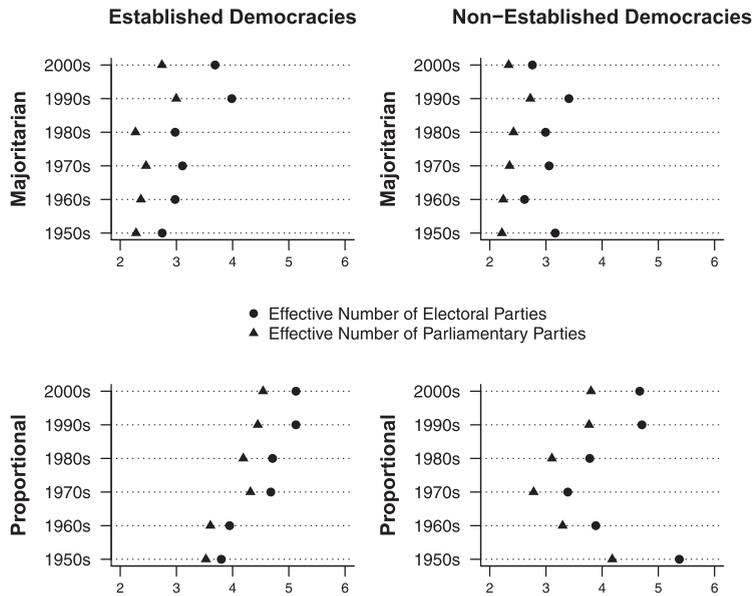
As with the [Golder \(2005\)](#) dataset, we provide information on party system size. Specifically, we provide information on the effective number of electoral and parliamentary parties.¹⁴ In [Fig. 6](#), we show descriptive statistics on party system size by decade across majoritarian and proportional electoral systems, and across established and non-established democracies.¹⁵ Although these plots ignore the important influence of social heterogeneity on party system size, they only apply to the national level, and they aggregate over many countries and elections, the data from established democracies are consistent with [Duverger's \(1963\)](#) theory ([Clark and Golder, 2006](#)). This is indicated by the fact that party systems in

proportional states are consistently larger than those in majoritarian ones, and that the effective number of parliamentary parties has historically been less than three in majoritarian states (left panel). Duverger's mechanical effect of electoral systems is also clearly visible – the divergence between the effective number of electoral and parliamentary parties is consistently smaller in proportional systems, indicating that votes are more accurately translated into seats in these systems.

The plots for established democracies also indicate that party system size in proportional states has increased significantly in recent decades. While the effective number of electoral parties was 3.8 on average in the 1950s, it was 5.13 in the 2000s. This increase in party system size, which is noticeable from the 1970s, is consistent with claims that the emergence of a post-materialist cleavage in the 1960s, centered around environmental, gender, immigration, and other social issues, led to the emergence of new parties ([Inglehart, 1977](#); [Kitschelt, 1988](#)). There is also some evidence that party systems in majoritarian countries have expanded slightly since the 1990s. The much smaller expansion in these party systems is consistent with Duverger's theory that majoritarian electoral rules restrict the extent to which increased social pressures are translated into larger party systems ([Clark and Golder, 2006](#)).

¹⁴ The effective number of parties is calculated as $1/\sum_{i=1}^p p_i^2$, where p_i is either the vote or seat share of party i for electoral and parliamentary parties, respectively. When calculating the effective number of parties, independents or 'others' in official election statistics are treated as a single party. As this can produce misleading results when these categories are large, we also provide a 'corrected' effective number of parties based on the methods of bounds suggested by [Taagepera \(1997\)](#).

¹⁵ Established democracies are identified here as those countries that have remained democratic since 1946.



Note: Established democracies are identified as those countries that have remained democratic since 1946. The effective numbers of parties have been calculated using the methods of bounds (Taagepera 1997).

Fig. 6. Party system size.

As Duverger (1963, 228) himself predicted, his theory receives slightly less support among non-established democracies, where voters and elites are less likely to have coordinated their expectations about party viability. That said, party systems in proportional states are still consistently larger and more variable than those in majoritarian ones.

4. Presidential elections

We classify presidential electoral systems into five main categories: *plurality*, *absolute majority*, *qualified majority*, *alternative vote*, and *electoral college*. The candidate with the most votes is elected president in a plurality system. In an absolute majority system, a candidate must win over 50% of the vote to be elected. If no candidate overcomes this threshold in the first round, then a runoff ensues between the top two candidates. Qualified majority systems are similar in that they typically specify some percentage of the vote that a candidate must win in order to be elected in the first round. If two or more candidates overcome this threshold, then the highest vote winner is elected. Qualified majority systems differ in terms of the electoral procedure that is employed when no candidate surpasses the specified threshold in the first round. For example, some countries employ a runoff between the top two candidates from the first round, while others indirectly elect the president through various procedures. As indicated earlier, the alternative vote is a preferential voting system where voters rank order the presidential candidates. Votes are then repeatedly counted and transferred until one candidate obtains an

absolute majority. In an electoral college system, a set of electors is appointed through various mechanisms to choose the president.

In Fig. 7, we show how the proportion of presidential elections employing these different electoral systems varies over time. The most notable change over time is

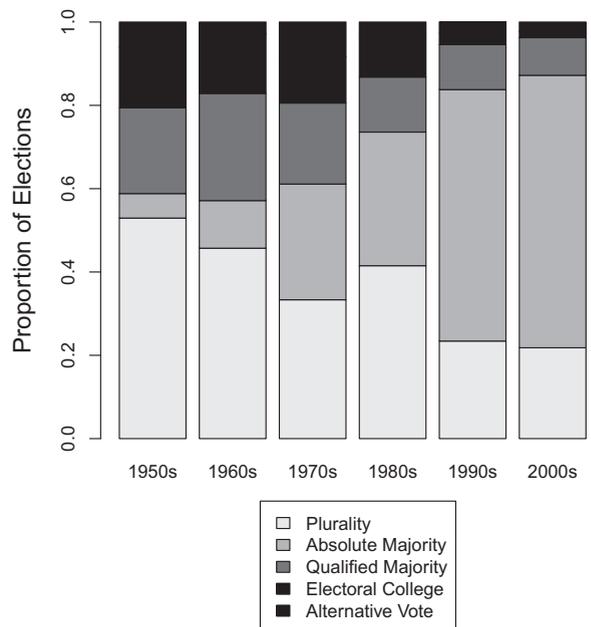
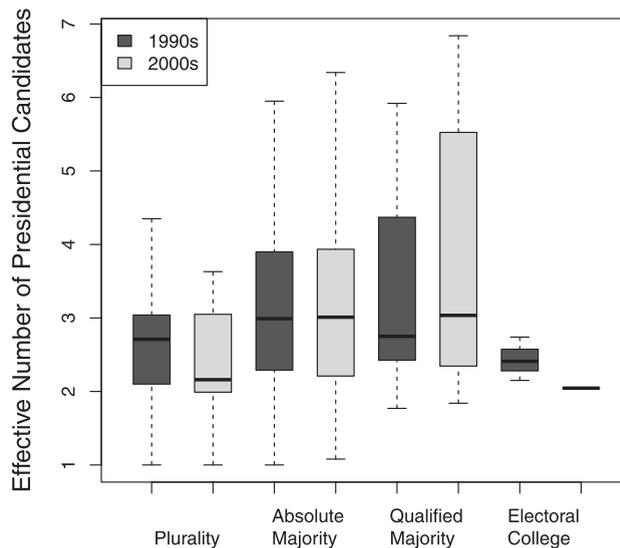


Fig. 7. Presidential electoral systems by decade.



Note: The thick horizontal black lines indicate the median effective number of presidential candidates. The boxes designate the interquartile range, and the whiskers extend to 1.5 times the interquartile range.

Fig. 8. The effective number of presidential candidates.

the shift towards absolute majority systems for electing presidents. While absolute majority systems were employed in just 6% of presidential elections in the 1950s, they were used in 65% of elections in the 2000s. Both the use of plurality and qualified majority systems have declined significantly over time. The electoral college is currently used only in the United States, after Argentina and Finland abandoned it in the 1980s. And Ireland and Sri Lanka are the only countries to currently employ the alternative vote for electing their presidents.

A box plot summarizing the effective number of presidential candidates for the 1990s and 2000s across each electoral system is shown in Fig. 8. Duverger's theory predicts that the effective number of presidential candidates will be both larger on average and more varied in absolute majority systems than in plurality ones (Golder, 2006). This has to do with the fact that Duverger (1963) views (i) social pressure as the primary driving force behind the number of presidential candidates, and (ii) plurality electoral systems as more restrictive, or less permissive, than absolute majority systems. Given these views, it follows that the number of presidential candidates should always be low in non-permissive plurality systems irrespective of whether the social pressure for presidential candidates is low or high. In contrast, the number of presidential candidates may be low or high in absolute majority systems depending on the level of social demand for presidential candidates. The data in Fig. 8 is broadly consistent with these predictions. Duverger's theory does not provide specific predictions about how the number of presidential candidates varies across the other electoral systems.

5. Conclusion

In this research note, we have described an update and extension of Golder's (2005) *Democratic Electoral Systems*

dataset. We have also presented a brief temporal and geographic overview of the data. We hope that our dataset will be of use to scholars interested in the origins and consequences of electoral institutions broadly defined.

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Appendix A. Supplementary data

Supplementary data related to this article can be found at <http://dx.doi.org/10.1016/j.electstud.2013.01.005>.

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