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## CHAPTER 8

### **ELECTORAL SYSTEMS: MAJORITY AND PLURALITY METHODS VERSUS PROPORTIONAL REPRESENTATION**

**T**he fourth difference between the majoritarian and consensus models of democracy is clear-cut. The typical electoral system of majoritarian democracy is the single-member district plurality or majority system; consensus democracy typically uses proportional representation (PR). The plurality and majority single-member district methods are winner-take-all methods—the candidate supported by the largest number of voters wins, and all other voters remain unrepresented—and hence a perfect reflection of majoritarian philosophy. Moreover, the party gaining a nationwide majority or plurality of the votes will tend to be overrepresented in terms of parliamentary seats. In sharp contrast, the basic aim of proportional representation is to represent both majorities and minorities and, instead of overrepresenting or underrepresenting any parties, to translate votes into seats proportionally.

The gap between the two types of electoral systems is also wide in the sense that changes within each type are common but that very few democracies change from PR to plurality or majority methods or vice versa (Nohlen 1984). Each group of countries appears to be strongly attached to its own electoral system. In a

comment on his withdrawal of the nomination of Lani Guinier to the position of assistant attorney general for civil rights in 1993, President Bill Clinton—the head of a country that uses mainly plurality elections—stated that he objected to her advocacy of PR, which he called “very difficult to defend” and even “anti-democratic” (*New York Times*, June 4, 1993, A18).

In this chapter I present a more detailed classification of the electoral systems used in our thirty-six democracies in terms of seven basic aspects of these systems, emphasizing the electoral formula, district magnitude, and electoral thresholds. The scholarly literature on electoral systems focuses on the degree of proportionality or disproportionality in their translation of votes into seats and on their effects on the numbers of parties in party systems. This is also the focus of the remainder of this chapter. After discussing the question of how degrees of disproportionality can be measured most accurately, I show that, although there is a great deal of variation within the PR family and although no PR system is perfectly proportional, PR systems do tend to be considerably less disproportional than plurality and majority systems, except in presidential democracies. Electoral systems are also a crucial determinant, though by no means the sole determinant, of party systems. Last, I explore the relationship between electoral disproportionality and the effective number of parliamentary parties in the thirty-six democracies.

## ELECTORAL FORMULAS

Although the dichotomy of PR versus single-member district plurality and majority systems is the most fundamental dividing line in the classification of electoral systems, it is necessary to make some additional important distinctions and to develop a more refined typology.<sup>1</sup> Electoral systems may be described in terms of

1. For thorough treatments of the various aspects of electoral systems, see Colomer (2004), Diamond and Plattner (2006), Farrell (2011), Gallagher and Mitchell (2005), Klingemann (2009), Lundell (2010), Norris (2004), and Reynolds, Reilly, and Ellis (2005).

seven attributes: electoral formula, district magnitude, electoral threshold, the total membership of the body to be elected, the influence of presidential elections on legislative elections, malapportionment, and interparty links.

Figure 8.1 presents a classification according to the first of these dimensions, the electoral formula, and it shows to which categories the thirty-six democracies or, in a few cases, particular periods in these countries belong. The first category of plurality and majority formulas can be subdivided into three more specific classes. The plurality rule—usually termed “first past the post” in Britain—is by far the simplest one: the candidate who receives the most votes, whether a majority or a plurality, is elected. It is obviously a popular formula: eleven of the thirty-six democracies used it in the period 1945–2010. It is also used for presidential elections in Korea and Iceland, and it was used in Uruguay in its three presidential elections between 1984 and 1994.<sup>2</sup>

Majority formulas require an absolute majority for election. One way to fulfill this requirement is to conduct a runoff second ballot between the top two candidates if none of the candidates in the first round of voting has received a majority of the votes. This method is frequently used for presidential elections—in France, Austria, Portugal, Finland (since 1994), and Uruguay (since 1999), as well as in the direct election of the Israeli prime minister (1996–2003). Argentina (since 1995) and Costa Rica use a combination of plurality and majority runoff: a plurality is sufficient if it is above, respectively, 45 and 40 percent; if this minimum is not reached, a majority runoff is necessary.<sup>3</sup> The majority-runoff

2. Uruguay used the plurality rule together with the “double simultaneous vote,” which was a unique system of combining intraparty primaries and the interparty contest in one election. The double simultaneous vote continues to be used in conjunction with PR for lower-house elections.

3. An additional rule in Argentina is that the minimum of 45 percent can be lowered to 40 percent if there is at least a 10 percent difference between the plurality winner and the runner-up. This system was first used in 1995; until then, a presidential electoral college was used. Before its

Plurality and majority formulas		Plurality formula		BAH	BAR	BOT
				CAN	IND	JAM
				MAU	TRI	UK
		US				
		NZ (1946–93)				
		Majority-plurality				FRA (except 1986)
		Alternative vote				AUL
Semiproportional formulas		Limited vote				JPN (1946)
		Single non-transferable vote				JPN (1947–93)
		Parallel Plurality-PR		KOR		
	JPN (1996–)					
Proportional representation		List proportional representation		ARG	AUT	BEL
				CR	DEN	FIN
				GRE	ICE	ISR
				LUX	NET	NOR
				POR	SPA	SWE
				SWI	URU	
				FRA (1986)		
ITA (1946–92)						
		Mixed member proportional formula				GER
						NZ (1996–)
						ITA (1994–)
		Single transferable vote				IRE
						MAL

FIG. 8.1 A classification of the electoral formulas for the election of the first or only chambers of legislatures in thirty-six democracies, 1945–2010

method is not used for legislative elections in any of our countries, but a closely related method is used in France for elections to the National Assembly. It is elected by a mixed majority-plurality formula in single-member districts: on the first ballot an absolute majority is required for elections, but if no candidate wins a majority, a plurality suffices on the second ballot; candidates failing to win a minimum percentage of the vote on the first ballot—12.5 percent of the registered voters since 1976—are barred from the second ballot. The second-ballot contest is usually between two principal candidates so that, in practice, there is no big difference between the majority-plurality formula and the majority runoff.

The alternative vote, used in Australia, is a true majority formula. The voters are asked to indicate their first preference, second preference, and so on among the candidates. If a candidate receives an absolute majority of the first preferences, he or she is elected. If there is no such majority, the candidate with the lowest number of first preferences is dropped, and the ballots with this candidate as the first preference are transferred to the second preferences. This procedure is repeated by excluding the weakest candidate and redistributing the ballots in question to the next highest preferences in each stage of the counting, until a majority winner emerges. The alternative vote is also used for presidential elections in Ireland.

Three main types of PR must be distinguished. The most common form is the list PR system, used in half—eighteen out of thirty-six—of our democracies during most of the period 1945–2010. There are minor variations in list formulas, but they all basically entail that the parties nominate lists of candidates in multimember districts, that the voters cast their ballots for one

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first majority-runoff election in 1994, Finland also used a presidential electoral college. Both countries abolished their electoral colleges in the 1990s, and the United States is now the only country still using an electoral college for electing its presidents.

party or another (although they are sometimes allowed to split their votes among several lists), and that the seats are allocated to the party lists in proportion to the number of votes they have collected. List PR systems may be subdivided further according to the mathematical formula used to translate votes into seats. The most frequently applied method is the d'Hondt formula, which has a slight bias in favor of large parties and against small parties compared with several other methods.<sup>4</sup>

The second form of PR is the “mixed member proportional” (MMP) formula—a term coined in New Zealand for its version of the system but now generally applied to the entire category. About half of the legislators in Germany and New Zealand are elected by plurality in single-member districts and the others are elected by list PR. Each voter has two votes, one for a district candidate and one for a party list. The reason why this combination of methods qualifies as a PR system is that the list PR seats compensate for any disproportionality produced by the district seat results. The exact degree of the overall results depends on how many list PR seats are available for the purpose of compensation; the Italian results have been considerably less proportional than those in the other two countries. Alan Siaroff (2009, 180) rightly calls the German and New Zealand MMP systems “fully compensatory” but Italian MMP only “semi-compensatory.”

4. For a more detailed description, see Lijphart 1994, 153–59. Another difference among list PR formulas is whether their lists are open, partly open, or closed. In closed-list systems, voters can vote only for the list as a whole and cannot express a preference for any specific candidates on the list; candidates are elected strictly according to the order in which the party has nominated them. Examples are Argentina, Costa, Rica, Israel, Spain, and Uruguay. In a completely open-list system, of which Finland is the best example, the voters vote for individual candidates on the list, and the order in which the candidates are elected is determined by the votes they individually receive. In Belgium, the Netherlands, and several other countries, the lists are partly open: although voters can express preferences for individual candidates, the list order as presented by the parties tends to prevail.

The third main type of PR is the single transferable vote (STV). It differs from list PR in that the voters vote for individual candidates instead of for party lists. The ballot is similar to that of the alternative vote system: it contains the names of the candidates, and the voters are asked to rank-order these. The procedure for determining the winning candidates is slightly more complicated than with the alternative vote. Two kinds of transfers take place: first, any surplus votes not needed by candidates who already have the minimum quota of votes required for election are transferred to the next most preferred candidates on the ballots in question; second, the weakest candidate is eliminated and his or her ballots are transferred in the same way. If necessary, these steps are repeated until all of the available seats are filled. STV is often praised because it combines the advantages of permitting votes for individual candidates and of yielding proportional results, but it is not used very frequently. The only instances in Figure 8.1 are Ireland and Malta. The other major example of its use is for Senate elections in Australia.

Most electoral formulas fit the two large categories of PR and plurality-majority, but a few fall in between. These semiproportional formulas are rarely used, and the only examples in our set of countries are Korea and the three systems that have been used in Japan. The limited vote, used in Japan's 1946 election, and the single nontransferable vote (SNTV), used in all subsequent elections through 1993, are closely related. Voters cast their votes for individual candidates, and as in plurality systems, the candidates with the most votes win. However, unlike in plurality systems, the voters do not have as many votes as there are seats in the district, and districts have to have at least two seats. The more limited the number of votes each voter has, and the larger the number of seats at stake, the more the limited vote tends to deviate from plurality and the more it resembles PR. In the 1946 election, each voter had two or three votes in districts ranging from four to fourteen seats. SNTV is the special case of the limited vote where the number of votes cast by each voter is reduced to

one. In the Japanese version of it, it was applied in districts with an average of about four seats.

In the parallel plurality-PR systems, introduced by the Japanese in 1996, 300 legislators were elected by plurality in single-member districts and 200 (reduced to 180 in 2000) by list PR; each voter has both a district vote and a PR vote. These features make it resemble MMP, but the crucial difference is that the PR seats are not compensatory. The plurality and PR components are “parallel” to each other—that is, they are kept entirely separate. Hence, unlike MMP, this system is only partly proportional instead of a form of PR. Korea has also used this parallel system for all of its six legislative elections since 1988, but with a much smaller PR component.

Most countries did not change their electoral formulas during the period 1945–2010. The one-time use of the limited vote in Japan in 1946 and of list PR in France in 1986 are minor exceptions. The more important changes that did occur all took place in the 1990s—in New Zealand, Italy, and Japan—and two of these countries switched to MMP.

#### DISTRICT MAGNITUDE

The magnitude of an electoral district denotes the number of candidates to be elected in the district. It should not be confused with the geographical size of the district or with the number of voters in it. Plurality and majority formulas may be applied in both single-member and multimember districts. PR and SNTV require multimember districts, ranging from two-member districts to a single nationwide district from which all members of parliament are elected. That district magnitude has a strong effect on the degree of disproportionality and on the number of parties has long been known. George Horwill (1925, 53) already called it “the all-important factor,” and in Rein Taagepera and Matthew S. Shugart’s (1989, 112) analysis, it was again found to be “the decisive factor.”

District magnitude is of great importance in two respects. First, it has a strong influence in both plurality-majority systems

and PR (and SNTV) systems, but in opposite directions: increasing the district magnitude in plurality and majority systems entails greater disproportionality and greater advantages for large parties, whereas under PR it results in greater proportionality and more favorable conditions for small parties. With regard to plurality, assume, for instance, that the election contest is between parties A and B and that party A is slightly stronger in a particular area. If this area is a three-member district, party A is likely to win all three seats; however, if the area is divided into three single-member districts, party B may well be able to win in one of the districts and hence one of the three seats. When the district magnitude is increased further, disproportionality also increases; in the hypothetical case of a nationwide plurality district, and assuming that all voters cast strictly partisan votes, the party winning a nationwide plurality of the votes would win all of the seats.

In the Australian alternative vote system and in the French majority-plurality system, only single-member districts have been used. In plurality systems, there are quite a few instances of the use of two-member and even larger districts, but larger than single-member districts are increasingly rare. The United Kingdom used several two-member districts in 1945, and both the United States and Canada had a few in the period 1945–68. In the 1952 and 1957 Indian elections, about a third of the legislators were elected from two-member districts, and Barbados elected its entire legislature from two-member districts in 1966. By 1970, however, all these two-member districts had been abolished.

The only plurality country in which larger than single-member districts survive is Mauritius, where sixty-two legislators are elected from twenty three-member districts and one two-member district.<sup>5</sup> An important reason why multimember districts have be-

5. Large multimember districts also survive in the American system for electing the presidential electoral college in which the fifty states and the District of Columbia serve as the election districts: the average magnitude is 10.5 seats per district.

come rare is that, as explained above, they lead to even greater disproportionality than the already high disproportional single-member districts. In the case of Mauritius, it should be noted, however, that the three-member districts have facilitated a different kind of proportionality: they encourage the parties and party alliances to nominate ethnically and religiously balanced slates, which has resulted in better ethnic and religious minority representation than would have been achieved through single-member district elections. Moreover, in addition to the sixty-two elected legislators, eight seats are allocated to the so-called best losers to further ensure fair minority representation (Mathur 1991, 54–71; 1997). Three other plurality countries have made special provisions for ethnic and communal minority representation by earmarking specific districts for this purpose: the Maori districts in New Zealand, discussed in Chapter 2; about a fifth of the districts in India that are set aside for the “scheduled castes” (untouchables) and “scheduled tribes”; and “affirmatively” gerrymandered districts in the United States.

The second reason why district magnitude is so important is that—unlike in plurality and majority systems—it varies greatly in PR systems and, hence, that it has a strong impact on the degree of proportionality that the different PR systems attain. For instance, a party representing a 10 percent minority is unlikely to win a seat in a five-member district but will be successful in a ten-member district. Two-member districts can therefore hardly be regarded as compatible with the principle of proportionality; conversely, a nationwide district is, all other factors being equal, optimal for a proportional translation of votes into seats. Israel and the Netherlands are examples of PR systems with such nationwide districts.

Many list PR countries use two levels of districts in order to combine the advantage of closer voter-representative contact in small districts and the higher proportionality of large, especially nationwide districts. As in MMP systems, the larger district compensates for any disproportionalities in the smaller districts, al-

though these are likely to be much less pronounced in the small multimember list PR districts than in the MMP single-member districts. Examples of two-tiered list PR systems with a nationwide district at the higher level are Denmark, Sweden since 1970, and Norway since 1989.

#### ELECTORAL THRESHOLDS

High-magnitude PR districts tend to maximize proportionality and to facilitate the representation of even very small parties. This is especially true for the Dutch and Israeli nationwide districts as well as for all systems that use upper-level nationwide districts. In order not to make it too easy for small parties to win election, all countries that use large or nationwide districts have instituted minimum thresholds for representation, defined in terms of a minimum number of seats won in the lower-tier districts and/or a minimum percentage of the total national vote. These percentages may be relatively low and hence innocuous, as the 0.67 percent threshold in the Netherlands since 1956 and the 1 percent threshold in Israel (increased to 1.5 percent for the 1992 and 2 percent for the 2006 election). But when they reach 4 percent, as in Sweden and Norway, or 5 percent, as in the German and post-1996 New Zealand MMP systems, they constitute significant barriers to small parties.

District magnitudes and electoral thresholds can be seen as two sides of the same coin: the *explicit* barrier against small parties imposed by a threshold has essentially the same function as the barrier *implied* by district magnitude. A reasonable approximation of their relationship is

$$T = \frac{75\%}{M + 1}$$

in which T is the threshold and M the average district magnitude (Taagepera 2007, 246–47). According to this equation, the median four-member district in Ireland (which uses districts with three, four, and five seats) has an implied threshold of 15 percent.

And the average district with a magnitude of 6.7 seats in the Spanish single-tier list PR system has an implied threshold of 9.7 percent. Conversely, the German 5 percent and Swedish 4 percent thresholds have roughly the same effect as district magnitudes of 14.0 and 17.8 seats.

#### OTHER ELECTORAL SYSTEM ATTRIBUTES

Another factor that can affect the proportionality of election outcomes and the number of parties is the size of the body to be elected. At first glance, this may appear to be a property that is not really part of the electoral system; however, because electoral systems are methods for translating votes into seats, the number of seats available for this translation is clearly an integral part of the system of translation. This number is important for two reasons. First, assume that three parties win 43, 31, and 26 percent of the national vote in a PR election. If the election is to a mini-legislature with only five seats, there is obviously no way in which the allocation of seats can be handled with a high degree of proportionality; the chances of a proportional allocation improve considerably for a ten-member legislature; and perfect proportionality could be achieved, at least in principle, for a hundred-member legislative body. For legislatures with a hundred or more members, size becomes relatively unimportant, but it is far from negligible for the lower or only legislative chambers of Mauritius (normally 70 members, although only 69 after the 2010 election because one "best loser" seat was not allocated), Malta (69), Iceland (63), Jamaica and Luxembourg (60 each), Botswana and Costa Rica (57 each), the Bahamas and Trinidad (41 each), and Barbados (30).

Second, the general pattern is that populous countries have large legislatures, that countries with small populations have smaller legislatures, and that the size of the legislature tends to be roughly the cube root of the population. Plurality elections always tend to be disproportional, but this tendency is reinforced when the membership of the legislature is significantly below the

cube root of the population (Taagepera and Shugart 1989, 156–67).<sup>6</sup> Barbados is a case in point: on the basis of its population of 256,000 (see Table 4.3), its House of Assembly “should” have 63 instead of 30 members. Similarly, Trinidad should have a lower house with 110 instead of 41 members, and the Bahamas, Botswana, Jamaica, and Mauritius are also well below the number predicted by the cube root law—and can therefore be expected, all other factors being equal, to have abnormally high disproportionality in their election results. Small legislative size is not a characteristic of all plurality systems: for instance, the British House of Commons is quite a bit larger than predicted by the cube root law.

Presidential systems can have an indirect but strong effect on the effective number of parliamentary parties. Because the presidency is the biggest political prize to be won and because only the largest parties have a chance to win it, these large parties have a considerable advantage over smaller parties that tends to carry over into legislative elections, even when these are PR elections, as in Costa Rica, Uruguay, and Argentina. This tendency is especially strong when the presidential election is decided by plurality instead of majority runoff (where small parties may want to try their luck in the first round) and when the legislative elections are held at the same time or shortly after the presidential elections (Shugart and Carey 1992, 206–58; Jones 1995, 88–118). Even in France, where presidential and legislative elections have usually not coincided and where presidential elections are by majority runoff, presidentialism has reduced multipartism.

6. The cube law holds that if, in two-party systems and plurality single-member district elections, the votes received by the two parties are divided in a ratio of  $a:b$ , the seats that they win will be in the ratio of  $a^3:b^3$ . However, the exponent of 3 applies only when the size of the legislative body is in accordance with the cube root law, and the exponent goes up—and hence disproportionality also increases—as the size of the legislature decreases and/or the population increases (Taagepera and Shugart 1989, 158–67).

Maurice Duverger (1986, 81–82) compares the presidential Fifth Republic with the parliamentary Third Republic, both of which used the two-ballot system for legislative elections, and asks “why the same electoral system coincided with a dozen parties in the Third Republic but ended up with only four [parties in a two-bloc format] in the Fifth Republic.” His main explanation is “the direct popular election of the president, which has transformed the political regime.”

Malapportionment may also contribute to electoral disproportionality. In single-member districts, malapportionment means that the districts have substantially unequal voting populations; malapportioned multimember districts have magnitudes that are not commensurate with their voting populations. It is especially hard to avoid in plurality and majority systems with single-member districts, because equal apportionment requires that relatively many small districts be drawn with exactly equal electorates or populations. It is much less of a problem in PR systems that use relatively large districts of varying magnitudes, because seats can be proportionally allocated to preexisting geographical units like provinces or cantons. And malapportionment is entirely eliminated as a problem when elections are conducted in one large nationwide district as in Israel and the Netherlands or with a nationwide upper tier as in Germany and Sweden.

The main cases of malapportionment have had to do with rural overrepresentation: for instance, the United States (until the reapportionment revolution of the 1960s), Australia and France (until about 1980), Japan under the SNTV system, Norway until 1985, Iceland from 1946 to 1959, and Spain. However, malapportionment in favor of rural areas leads to increased disproportionality in partisan representation only if the larger parties benefit from it; this has clearly been the case for the Liberal Democrats in Japan, the Progressive party in Iceland, and the National party (formerly the Country party) in Australia to the extent that this relatively small party can be treated as part of the larger party formation with the Liberals.

Finally, some list PR systems allow parties to have separate lists on the ballot but to formally “link” these lists, which means that their combined vote total will be used in the initial allocation of seats; because PR systems are never perfectly proportional, the combined total may well be good for an extra seat compared with the sum of the seats that the parties would win separately. The next step is the proportional distribution of seats won by the linked parties to each of the parties. A set of such interparty connected lists is usually referred to by the French term *apparentement*. Examples of list PR systems with this special feature are Switzerland, Israel, and, since 1977, the Netherlands. Because *apparentement* is of some help to the smaller parties, which tend to be underrepresented, it tends to reduce disproportionality and to increase somewhat the effective number of parties. Moreover, the formation of mutually beneficial interparty electoral links is allowed not only by *apparentement* in some list PR systems but also as a logical consequence of three other electoral systems. Both the alternative vote and STV permit parties to link up for maximum electoral gain by simply agreeing to ask their respective voters to cast first preferences for their own candidates but the next preferences for the candidates of the linked party—an advantage of which Australian and Irish parties, but not the Maltese, often avail themselves. Similarly, the French two-ballot system implies the possibility for parties to link for the purpose of reciprocal withdrawal from the second ballot in different districts; both the parties of the left and those of the right regularly use this opportunity.

#### DEGREES OF DISPROPORTIONALITY

As we have seen, many attributes of electoral systems influence the degree of disproportionality and indirectly the number of parties in the party system. How can the overall disproportionality of elections be measured? It is easy to determine the disproportionality for each party in a particular election: this is simply the difference between its vote share and its seat share. The more

difficult question is how to aggregate the vote-seat share deviations of all of the parties. Summing the (absolute) differences is not satisfactory because it does not distinguish between a few large and serious deviations and a lot of small and relatively insignificant deviations.<sup>7</sup> The index of disproportionality proposed by Michael Gallagher (1991), which is used in this study, solves this problem by weighting the deviations by their own values—thus making large deviations account for a great deal more in the summary index than small ones. The computation of the Gallagher index (G) is as follows: the differences between the vote percentages ( $v_i$ ) and seat percentages ( $s_i$ ) for each party are squared and then added; this total is divided by 2; and finally the square root of this value is taken:<sup>8</sup>

$$G = \sqrt{\frac{1}{2} \sum (v_i - s_i)^2}$$

In a few electoral systems, two sets of votes can be used for the purpose of calculating vote-seat share differences; which of the two should be used? In MMP systems, the choice is between the party list votes and the district votes, and the scholarly consensus is that the party list votes express the party preferences of the electorate most accurately. In alternative vote and STV systems, the choice is between first preference votes and final-count votes—that is, the votes after the transfer of preferences has been completed; only first preference votes are usually reported, and scholars agree that the differences between the two are of minor importance. The one case where the difference is substantial is

7. One of the consequences of this problem is that the Loosemore-Hanby (1971) index, which uses the additive approach, tends to understate the proportionality of PR systems. An obvious alternative, offered by the Rae (1967) index, is to average the absolute vote-seat share differences. It errs in the other direction by overstating the proportionality of PR systems (see Lijphart 1994, 58–60).

8. In the calculation of the Gallagher index, any small parties that are lumped together as “other” parties in election statistics have to be disregarded.

between the first and second ballot results in France. On the first ballot, the votes tend to be divided among many candidates, and the real choice is made on the second ballot. The best solution is to count the *decisive* votes: mainly second-ballot votes, but first-ballot votes in districts where candidates were elected on the first ballot (Goldey and Williams 1983, 79).<sup>9</sup>

#### ELECTORAL DISPROPORTIONALITY IN PRESIDENTIAL DEMOCRACIES

The discussion of electoral systems has focused so far almost entirely on legislative elections. In presidential democracies, however, the election of the president is at least as important as the legislative election: of roughly the same importance in systems with executive-legislative balance and of greater importance in systems with executive dominance. In fact, even in balanced executive-legislative systems, the voters consider the presidential election to be the more important one, as indicated by their lower turnout levels in legislative elections when these are not held simultaneously with presidential elections; for instance, voter turnout in off-year congressional elections in the United States tends to be only about two-thirds of turnout in presidential election years.

Presidential elections are inherently disproportional as a result of two of the electoral system properties discussed above:

9. Several smaller methodological issues concerning the calculation of the index of disproportionality also need to be clarified. First, as in the calculation of the effective number of parliamentary parties, the seats are those in the lower or only houses of parliaments. Second, unlike in the calculation of the effective number of parties, the seats won by parties in the election are used and not those gained from legislators who join parties after the election, as in Japan. Third, any uncontested seats, mainly occurring but increasingly rare in plurality systems, are excluded (if it is possible to do so). Fourth, the two boycotted elections in Trinidad in 1971 and Jamaica in 1983 are disregarded. Fifth, factionalized and closely allied parties are again counted as one-and-a-half parties—a procedure that, however, has only a minimal impact on the index of disproportionality.

the electoral formula, which for the election of a single official is necessarily one of the plurality or majority formulas (or the majoritarian election by an electoral college), and the “size of the body to be elected,” which is the absolute minimum of one. The party that wins the presidency wins “all” of the seats—that is, the one seat that is available—and the losing parties win no seats at all. This is also another respect in which presidential systems tend to be inherently majoritarian, in addition to their inherent tendency to have majoritarian cabinets and their reductive effects on the number of parties.

Table 8.1 presents the indexes of disproportionality for legislative and presidential elections in seven presidential systems. As expected, the disproportionality in presidential elections is higher than in legislative elections: on average, between 43 and 49 percent in the seven countries. If there are only two candidates, the index equals the vote percentage of the losing candidate. For instance, in the 2009 presidential election runoff in Uruguay, José Mujica won with 54.63 percent of the valid vote, and Luis Alberto Lacalle lost with 45.37 percent of the vote—yielding a disproportionality index of 45.37 percent. Moreover, the disproportionality in presidential elections is not just higher than in legislative elections, but a great deal higher: four of the seven presidential systems have average indexes of legislative disproportionality that are even below 5 percent. If both disproportionalities are relevant and should be counted, how can we best combine them? If the arithmetic average were used, the disproportionality in presidential elections would overwhelm that in legislative elections. It is therefore better to use the geometric mean—which is also generally more appropriate when values of greatly different magnitudes are averaged.<sup>10</sup> These geometric means are shown in the last column of Table 8.1.

10. The geometric mean of two numbers, like the two percentages in Table 8.1, is simply the square root of the product of these two numbers.

TABLE 8.1

Average disproportionalities in legislative and in presidential elections, the numbers of elections on which these averages are based, and the geometric means of the two disproportionalities in seven presidential systems, 1946–2010

	Legislative disproportionality (%)	Legislative elections (N)	Presidential disproportionality (%)	Presidential elections (N)	Geometric mean (%)
Argentina	7.35	13	43.94	4	17.98
Costa Rica	4.55	15	45.49	15	14.38
France <sup>a</sup>	12.08	10	43.53	8	22.93
Israel <sup>b</sup>	1.88	2	43.68	3	9.06
Korea	10.03	6	48.14	4	21.97
United States	4.43	32	46.03	16	14.28
Uruguay	0.75	6	48.81	6	6.05

*Notes:* a. Not including the 1986, 1993, and 1997 elections, which led to parliamentary phases

b. Only the 1996 and 1999 parliamentary elections and the 1996, 1999, and 2001 direct prime ministerial elections

*Source:* Based on data in Mackie and Rose 1991; Bale and Caramani 2010 and earlier volumes of the “Political Data Yearbook”; Nohlen 2005; Nohlen, Grotz, and Hartmann 2001; Nohlen and Stöver 2010; official election websites; and data provided by Royce Carroll, Mark P. Jones, and Dieter Nohlen

## DEGREES OF DISPROPORTIONALITY IN THIRTY-SIX DEMOCRACIES

The average electoral disproportionalities in all thirty-six countries are presented in ascending order in Table 8.2 together with the types of electoral systems used in their legislative elections (see the typology of Figure 8.1) and an asterisk indicating whether the country is presidential or usually presidential (that is, including France but not Israel). The indexes span a wide range from 1.21 percent in the Netherlands to 21.97 in Korea; the mean is 8.55 and the median 7.14 percent.

There is a strikingly clear line dividing the top twenty countries from the sixteen countries at the lower end of the table: the contrast is between mainly proportional and mainly majoritarian systems. Of the top twenty, eighteen are parliamentary PR systems; the other two are Uruguay, which uses PR combined with presidentialism, and Japan, which has used three different semi-proportional systems. Greece and Spain are just below Uruguay and Japan, and they are often regarded as only barely belonging to the PR family. Spain's PR system is not very proportional mainly because of its low-magnitude districts but also as a result of the overrepresentation of the smaller provinces. The Greek PR system has changed frequently, but the usual system is "reinforced PR"—a deceptive label because what is being reinforced is the large parties rather than proportionality. Nevertheless, even these two impure PR systems have lower disproportionalities than any of the plurality and majority systems. Most of the PR countries have average disproportionalities between 1 and 5 percent; the exemplar cases of Belgium and Switzerland are approximately in the middle of this range.

On the plurality and majority side of the dividing line, the only countries with disproportionalities below 10 percent are New Zealand, Australia, and India. New Zealand's relatively low overall percentage is partly based on its PR election results since 1966. Most of the plurality countries have disproportionalities between 10 and 20 percent. The five parliamentary systems with

TABLE 8.2

Average electoral disproportionality and type of electoral system (used in legislative elections) in thirty-six democracies, 1945–2010

	Disproportionality (%)	Electoral system
Netherlands	1.21	List PR
Denmark	1.71	List PR
Sweden	2.04	List PR
Malta	2.07	PR-STV
Austria	2.51	List PR
Switzerland	2.55	List PR
Israel	2.60	List PR
Germany	2.67	PR-MMP
Finland	2.96	List PR
Belgium	3.35	List PR
Luxembourg	3.43	List PR
Italy	3.61	List PR (1946–92), PR-MMP (1994–)
Iceland	3.85	List PR
Ireland	3.93	PR-STV
Portugal	4.43	List PR
Norway	4.53	List PR
Uruguay	6.05	List PR*
Japan	7.00	Limited vote (1946), SNTV (1947–93), Parallel plurality-PR (1996–)
Spain	7.28	List PR
Greece	7.88	List PR
New Zealand	9.25	Plurality (1946–93), PR-MMP (1996–)
Australia	9.44	Majority: alternative vote
India	9.60	Plurality
Trinidad	11.33	Plurality

TABLE 8.2 *continued*

	Disproportionality (%)	Electoral system
Canada	11.56	Plurality
United Kingdom	11.70	Plurality
United States	14.28	Plurality*
Costa Rica	14.38	List PR*
Botswana	14.61	Plurality
Mauritius	15.61	Plurality
Jamaica	15.66	Plurality
Bahamas	16.48	Plurality
Barbados	17.27	Plurality
Argentina	17.98	List PR*
France	20.88	Majority-plurality (1958–81, 1988– ), List PR (1986)*
Korea	21.97	Parallel plurality-PR*

\*Presidential systems

*Note:* The number of elections on which these averages are based may be found in Table 5.2

*Source:* Based on data in Mackie and Rose 1991; Bale and Caramani 2010 and earlier volumes of the “Political Data Yearbook”; Nohlen 2005; Nohlen, Grotz, and Hartmann 2001; Nohlen, Krennerich, and Thibaut 1999; Nohlen and Stöver 2010; official election websites; and data provided by Royce Carroll, Mark P. Jones, Dieter Nohlen, Ralph Premdas, and Nadarajen Sivaramen

the highest disproportionalities—Botswana, Mauritius, Jamaica, the Bahamas, and Barbados—are all small countries with plurality systems and unusually small legislatures; moreover, Mauritius uses mainly three-member districts. The United Kingdom is actually among the least disproportional of the plurality systems. The only exceptional cases of PR systems that are highly disproportional are two presidential democracies: Costa Rica and Argentina. A glance back at Table 8.1 reveals, however, that their legislative disproportionalities are only 4.55 and 7.35 percent, on the

high side but not completely abnormal for PR systems—similar to those of, respectively, Norway and Spain. The presidentialism of these countries is responsible for giving them their high overall disproportionality. Uruguay is exceptional in having a relatively low overall disproportionality—6.05 percent—in spite of its presidential system of government and its high presidential disproportionality. The explanation is that its legislative elections have been extremely proportional, even more so than those in the Netherlands, which is at the top of Table 8.2: the respective percentages are 0.75 and 1.21.

Legislative disproportionality is also relatively low in the United States in spite of the plurality method for congressional elections. The main explanation of this unusual phenomenon is the existence of primary elections in the United States. In most plurality systems, a major portion of the disproportionality of elections is caused by small parties that remain unrepresented or are severely underrepresented; there are very few of these in the United States because primary elections give strong incentives for dissidents to try their luck in one of the major party primaries instead of establishing separate small parties; in addition, state laws tend to discriminate against small parties. Yet the presidential elections give the United States a high overall level of disproportionality after all. Korea has the highest disproportionality of our thirty-six countries, produced not only by its presidentialism but also—at first glance a bit surprisingly, because it has a semiproportional system for electing its legislature—by its high legislative disproportionality of 10.03 percent (see Table 8.1). The main explanation is that fewer than 20 percent of the seats in its parallel plurality-PR system are PR seats.

Examining the effects of changes in the electoral systems and shifts from presidential to parliamentary government in individual countries provides additional insight into the causes of electoral disproportionality. France's percentage is lower in Table 8.2 than in Table 8.1, because the three elections that triggered parliamentary phases were somewhat more proportional than under

presidentialism, especially in 1986, when PR was used and the degree of disproportionality dropped to 7.23 percent. Israel's already low overall disproportionality of 2.60 percent was even lower in the purely parliamentary elections before and after the years with the directly elected prime minister: 1.78 percent. The most dramatic change took place in New Zealand when PR replaced plurality elections: average disproportionality decreased from 11.11 to 2.92 percent. In contrast, the electoral system changes in Italy and Japan produced substantial increases in disproportionality even though these changes were within rather than between the three broad categories of electoral formulas shown in Figure 8.1. Italy's shift from list PR to PR-MMP more than doubled its disproportionality, from 2.47 to 6.34 percent. Both are PR formulas, but, as mentioned earlier, the PR component of Italy's PR-MMP—in contrast with Germany's and New Zealand's—is only partly compensatory. Japan's old limited vote and SNTV systems yielded relatively proportional results—their average disproportionality was only 5.03 percent. Although the new parallel plurality-PR system has about twice as many PR seats available as Korea's similar system, Japan's percentage of disproportionality increased dramatically to 14.48—a percentage typical of plurality and majority systems and one that does not appear to justify Japan's "semiproportional" label.

#### ELECTORAL SYSTEMS AND PARTY SYSTEMS

A well-known proposition in comparative politics is that the plurality method favors two-party systems; Duverger (1964, 217, 226) calls this proposition one that approximates "a true sociological law." Conversely, PR and two-ballot systems (like the French majority-plurality method) encourage multipartism. Duverger explains the differential effects of the electoral systems in terms of "mechanical" and "psychological" factors. The mechanical effect of the plurality rule is that all but the two strongest parties are severely underrepresented because they tend to lose in each district; the British Liberals and Liberal Democrats, con-

tinually the disadvantaged third party in the postwar era, are a good example. The psychological factor reinforces the mechanical one: "The electors soon realize that their votes are wasted if they continue to give them to the third party: whence their natural tendency to transfer their vote to the less evil of its two adversaries." In addition, the psychological factor operates at the level of the politicians, whose natural tendency is not to waste their energy by running as third-party candidates but instead to join one of the large parties.

Douglas W. Rae (1967, 67–129) has contributed a number of significant refinements to the study of the links between electoral and party systems. Different electoral systems have varying impacts on party systems, but, Rae emphasizes, they also have important effects in common. In particular, all electoral systems, not just the plurality and majority ones, tend to overrepresent the larger parties and underrepresent the smaller ones. Three important aspects of this tendency must be distinguished: (1) all electoral systems tend to yield disproportional results; (2) all electoral systems tend to reduce the effective number of parliamentary parties compared with the effective number of electoral parties; and (3) all electoral systems can manufacture a parliamentary majority for parties that have not received majority support from the voters. On the other hand, all three tendencies are much stronger in plurality and majority than in PR systems.

Rae's first proposition is clearly shown in Table 8.2: even the most proportional system, that of the Netherlands, still has a disproportionality of 1.21 percent instead of zero percent. But, as highlighted earlier, the disproportionality of PR systems generally is much lower than that of plurality and majority systems. Rae's second and third propositions are based on the fact that the disproportionalities of electoral systems are not random but systematic: they systematically advantage the larger parties and disadvantage the smaller parties—and again especially so in plurality and majority systems. That is why elections generally, but plurality and majority elections in particular, reduce the effective number of parties.

The systematic advantage that electoral systems give to large parties becomes especially important when parties that fail to get a majority of the votes are awarded a majority of the seats. This makes it possible to form single-party majority cabinets—one of the hallmarks of majoritarian democracy. Rae (1967, 74–77) calls such majorities “manufactured”—that is, artificially created by the electoral system. Manufactured majorities may be contrasted with earned majorities, when a party wins majorities of both votes and seats, and natural minorities, when no party wins a majority or either votes or seats. The clearest examples of manufactured majorities can be found in our prototypical cases of Great Britain and New Zealand, but many such majorities have also occurred in Australia and Canada; a recent Canadian example is the clear seat majority won by the Conservatives with merely 39.6 percent of the popular vote in the May 2011 election. Earned majorities are common in plurality systems with strict two-party competition: the Bahamas, Botswana, Jamaica, Trinidad, and the United States. In contrast, PR can also produce manufactured or earned majorities, but it rarely does so. Moreover, any manufactured majorities in PR systems tend to be produced from popular votes that are closer to 50 percent instead of the popular votes closer to 40 percent that are typical in plurality countries. These infrequent results have occurred mainly in countries that, in spite of PR, have relatively few parties (Austria and Malta), in countries with relatively impure PR (Spain and Greece), and in presidential systems that use PR for legislative elections (Argentina, Costa Rica, and Uruguay).

We can also expect a strong negative relationship between the disproportionality of the electoral system and the effective number of parliamentary parties. Figure 8.2 shows this relationship in our thirty-six democracies. The correlation coefficient is  $-0.57$ , which is statistically significant at the 1 percent level. As disproportionality increases, the effective number of parties decreases.

The figure shows considerable scattering and quite a few outliers, however. Other factors clearly also strongly affect the number of parties. One is the degree of pluralism and the number of

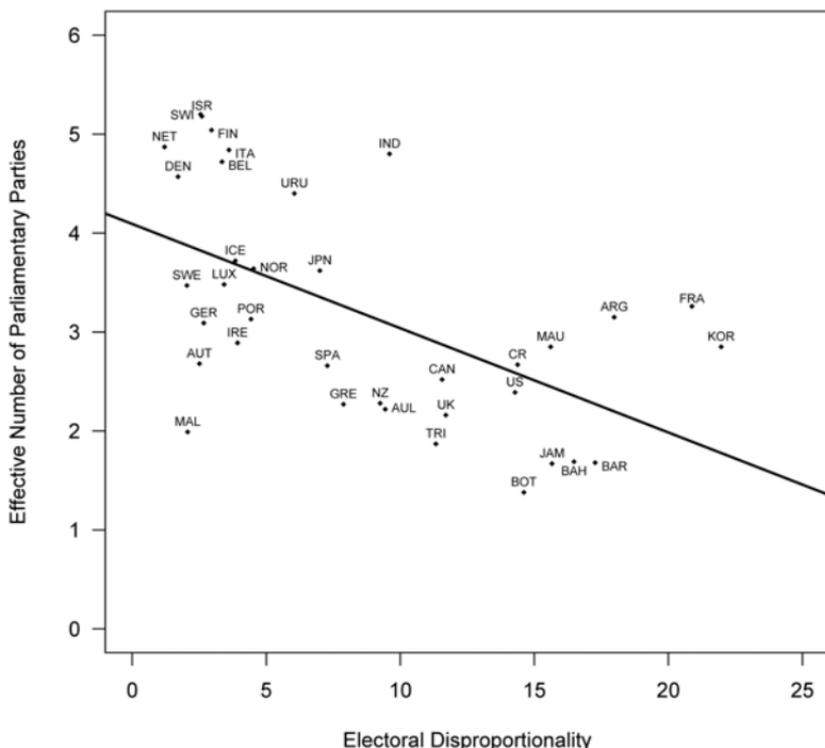


FIG. 8.2 The relationship between electoral disproportionality and the effective number of parliamentary parties in thirty-six democracies, 1945–2010

groups into which a society is divided, which can explain India's multipartism in spite of the reductive effects of its disproportional electoral system. Similarly, the seven countries grouped together in the top left corner of the figure—Switzerland, Israel, the Netherlands, Finland, Italy, Belgium, and Denmark—have even more multipartism than could be expected from their proportional election systems, and with the exception of Denmark, they are all plural or semiplural societies. The opposite effect can be seen in Austria, whose plural and later semiplural society has consisted mainly of two large “camps,” and in Malta, where the electorate has long tended to line up in two groups of almost equal size: in these two countries, two-party and two-and-a-half

party systems have coexisted with highly proportional PR systems. Three of the presidential democracies—Argentina, France, and Korea—are also relatively deviant, with considerably more parties than expected on the basis of their electoral disproportionalities. Botswana, on the other side of the regression line, has even fewer parties than could be expected from its highly disproportional plurality system.

The overall relationship between the two variables depends to a great extent on the sizable difference between two groups of countries, largely but not entirely coinciding with the difference between PR and plurality systems: most of the PR countries with relatively many parties on one hand, and most of the plurality and majority countries, the impure PR systems of Greece and Spain, and, although not as clearly, most of the presidential systems with relatively few parties on the other.