

FPTP	first-past-the-post (plurality formula)
LR	largest remainders
LSq	least-squares index
LV	limited vote
PR	proportional representation
SNTV	single non-transferable vote
STV	single transferable vote

EXCEPT in very small communities, democracy necessarily means *representative* democracy in which elected officials make decisions on behalf of the people. How are these representatives elected? This indispensable task in representative democracies is performed by the electoral system—the set of methods for translating the citizens' votes into representatives' seats. Thus the electoral system is the most fundamental element of representative democracy.

The aim of this book is to analyse the operation and the political consequences of electoral systems, especially the degree of proportionality of their translation of votes into seats, and their effects on party systems. My emphasis will be on the electoral systems that have been used in the world's most successful democracies—that is, those that have been in existence for a long time—most of which are European democracies. I shall describe the electoral systems in terms of their three most basic properties: the electoral formula (such as plurality, the different forms of proportional representation, and so on), the district magnitude (the number of representatives elected per district), and the electoral threshold (the minimum support that a party needs to obtain in order to be represented). These three elements, which will be defined more precisely later on, together with the size of the representative body, will be shown to have major consequences, especially for proportionality but also for party systems.

The number of electoral systems is, in principle, infinite; the number of systems that democratic engineers and reformers have proposed is much smaller; and the number that have been in actual use is smaller still. I shall try to show that there is neither as much variation in electoral systems nor as much complexity as is often assumed. In particular, systems of proportional representation—to which I shall henceforth refer as PR—are often thought of as inherently complicated; newspaper articles reporting on PR

Introduction: Goals and Methods

elections almost automatically call the PR system being used a ‘complex form of PR’!¹ In fact, with only a few exceptions, PR systems can be classified and described in relatively simple and straightforward terms. One of the reasons for the unnecessary confusion surrounding electoral systems is that both electoral engineers and students of electoral systems have used confused terminologies—with the same term sometimes being used for different practices and the same practice referred to by different terms. I shall try to clarify and simplify the basic terms, and I shall present the principal properties of the various electoral systems in clearly defined categories so as to facilitate comparisons among them as well as the systematic testing of their political consequences.¹

WHICH ELECTORAL SYSTEMS?

This analysis covers the electoral systems used in twenty-seven democracies from 1945 to 1990—that is, those used in the vast majority of the free and democratic parliamentary elections (at the national level in countries larger than mini-states) that have ever been conducted. Of the twenty-seven democracies, twenty-four are the world’s most durable democracies with a history of free elections without major interruptions since 1945 or shortly thereafter. They are the four most populous countries of Western Europe (the United Kingdom, France, Germany, and Italy), the five Nordic states (Sweden, Norway, Denmark, Finland, and Iceland), the three Benelux states (The Netherlands, Belgium, and Luxembourg), four other smaller democracies (Ireland, Austria, Switzerland, and Malta), and eight countries outside Europe (the United States, Canada, Costa Rica, Israel, India, Japan, Australia, and New Zealand).

To these I added Spain, Portugal, and Greece, although they do not qualify under the criterion of long-term and uninterrupted democracy.² On the other hand, they have been democratic since the mid-1970s and are generally judged to be stable and consolidated democracies; moreover, it seems appropriate to consider them alongside the other West European democracies. Malta is another somewhat doubtful case for inclusion since it did not become independent until 1964, but it did conduct free

universal-suffrage elections as an internally self-governing territory from 1947. It also offers the advantage of providing a second example, in addition to Ireland, of the unusual single transferable vote (STV) form of PR. Finally, a practical advantage of including Malta as well as Spain, Portugal, and Greece is that their election data are available in the *International Almanac of Electoral History*, the handbook that serves as the major source of election data for this study.³

As the year in which the Second World War ended, 1945 is a conventional starting-point for studies in the social sciences. It is especially appropriate for this study because, prior to 1945, many of the countries listed above were not democratic or democratic for only a short period (such as Germany, Italy, and Japan), not yet independent (India and Israel), or did not have fully democratic elections with universal suffrage since women did not have the right to vote (France and Belgium). Of course, even after 1945, two of our countries continued to have serious restrictions on the right to vote: the United States until the passage of the Voting Rights Act in 1965 and Switzerland until the adoption of women’s voting rights in 1971. Most of our countries conducted elections in 1945 or 1946; for the others, the starting-point is the first election after 1945 followed by an uninterrupted period of regular free elections lasting until the end of 1990.

The year 1990 was chosen as the end of the period under analysis for practical reasons—the availability of accurate and comparable election data. However, three elections held before the end of 1990—the November 1989 election in India and the December 1990 elections in Germany and Denmark—could not be included because the necessary election information was still missing when the data analysis had passed a critical point. There may also be some symbolic significance in ending the analysis just prior to the 1990 all-German election because this was an election in a partly new and different country and, even more significantly, it marked the end of the post-Second World War era.

The electoral systems to be analysed are those for national lower-house elections (or, in the case of unicameral parliaments, the elections of the one chamber) in the countries and the period indicated. This means that all other national (upper-house and presidential) and all subnational elections are excluded, even when they are direct, popular elections. The only exception is that, for the twelve members of the European Community, the elections to the

European Parliament are included. For the purpose of this analysis, I am treating the European Parliament as a set of national mini-parliaments. This does not represent a correct view of the actual operation of the European Parliament, but it is an accurate interpretation of the way it is elected—by twelve different electoral systems that are generally much more closely related to the twelve national parliamentary electoral systems than they are to each other. Vernon Bogdanor writes that even the third cycle of European elections, held in 1989, again ‘proved to be, as in 1979 and 1984, primarily an arena for a set of national contests’.⁴ And Hermann Schmitt cites survey data showing that most voters continue to think of the parties competing for election to the European Parliament as national parties, and that they would also ‘prefer to have parties in the European Parliament structured along national rather than on political-ideological lines’.⁵

In addition to enriching the data base for this study, the inclusion of the Euro-elections has two special advantages. First, it provides examples of the election of relatively small representative bodies: all of the twelve countries have European Parliament delegations that are considerably smaller than the lower or only chambers of their national parliaments. Second, it offers good opportunities for controlled comparison, because for most countries the electoral systems for the national parliaments and for the national mini-parliaments in the European Parliament resemble each other closely but are not completely identical.

Table 1.1 lists the 350 parliamentary and 34 Euro-elections that form the empirical basis of this comparative study. In almost all cases, all the votes cast and all seats at stake in an election are included in the analysis. However, I made a few exceptions to this general rule in order to make the comparisons of votes and seats as accurate as possible. For instance, I excluded all uncontested seats for which no votes were cast or recorded (mainly in countries with majoritarian election systems but also in Ireland and Switzerland) and seats filled by indirect election (the West Berlin representatives in the Bundestag and in the European Parliament).

In order not to confuse the effects of different electoral systems, I excluded the few STV districts (both votes and seats) from British elections, which have been mainly plurality elections: the four two-member and three-member STV districts in the 1945 parliamentary election and the Northern Ireland three-member STV

Country	National elections	European elections	Total	Exclusions	Number	Years	Number	Years	Number	Years	Number	Years
Australia (AUS)	19	1946-90	—	—	19	Uncontested seats	14	1979-89	1981-89	10	West Berlin	14
Austria (AUT)	14	1945-90	—	—	19	Uncontested seats	14	1979-89	1981-89	10	West Berlin	14
Belgium (BEL)	15	1945-88	—	—	18	—	—	—	—	—	Uncontested seats	14
Canada (CAN)	15	1946-87	—	—	1979-89	1981-89	3	1981-89	1981-89	3	West Berlin	14
Costa Rica (CR)	10	1953-90	—	—	15	—	—	—	—	—	Uncontested seats	14
Denmark (DEN)	19	1945-88	—	—	10	—	—	—	—	—	Faroës, Greenland	14
Finland (FIN)	13	1945-87	—	—	13	—	—	—	—	—	Overseas	14
France (FRA)	14	1945-88	—	—	17	Overseas	1945-89	1979-89	3	—	West Berlin	14
Iceland (ICE)	7	1974-90	3	3	11	Departments and territories, Algeria	1979-89	1981-89	3	—	West Berlin	14
Greece (GRE)	7	1949-87	3	3	11	Departments and territories, Algeria	1979-89	1981-89	3	—	West Berlin	14
Ireland (IND)	8	1952-84	—	—	14	Uncontested seats	1979-89	1981-89	3	—	West Berlin	14
Israel (ISR)	12	1948-88	—	—	12	Uncontested seats	1979-89	1981-89	3	—	West Berlin	14
Italy (ITA)	11	1946-87	—	—	14	The two seats left unfilled in the 1946 election	1979-89	1981-89	3	—	West Berlin	14
Japan (JPN)	18	1946-90	—	—	18	The 1948 and 1951 elections were treated as partial elections	—	—	—	—	West Berlin	14
Luxembourg (LUX)	10	1945-89	3	3	13	The 1948 and 1951 elections were treated as partial elections	1946 election	1946 election	3	—	West Berlin	14

TABLE 1.1. National legislative (lower or only house) elections and European Parliament elections in 27 democracies, 1945-90

district used for the 1979, 1984, and 1989 Euro-elections. I also followed the usual scholarly conventions of focusing on metropolitan France only (excluding the delegates from the overseas departments and territories) and analysing Denmark without the Faroes and Greenland. A few more details of this kind are provided in Table 1.1.

BASIC METHODOLOGY

In contrast with Douglas W. Rae's classic study, in which elections serve as the units of analysis,⁶ my cases are seventy *electoral systems*, defined as sets of essentially unchanged election rules under which one or more successive elections are conducted. Elections held under the same electoral system are regarded as repeated observations of the operation of a single electoral system. For instance, Finland provides only one electoral system under which its thirteen parliamentary elections were held, whereas Germany provides six different electoral systems, four Bundestag and two European Parliament systems, that guided its total of fourteen elections.

My variables are the basic characteristics of electoral systems, measures of disproportionality, and measures of multipartism and of the production of majority parties. I follow two basic multivariate approaches. One is a comparable-cases strategy that concentrates on within-country variations when more than one electoral system is used in the same country; this permits the examination of the effect of changing one aspect of an electoral system while the system remains the same in other respects. Additionally, the effect of small changes *within* electoral systems—changes that are not sufficiently important to signify changes of the electoral system—will be examined.

The second basic strategy relies on a cross-sectional research design in which cross-tabulations as well as multiple correlation and regression are applied to the seventy electoral systems. However, what is an advantage for the first strategy—having attractive comparable cases in the form of more than one electoral system in the same country—presents somewhat of a problem for the second strategy, because it means that some of the cases are not completely independent. For this reason, I shall also present an

Country	National elections	European elections	Total	Exclusions
	Number	Years	Number	Years
Malta (MAL)	11	1947-87	—	11
Netherlands (NET)	14	1946-89	—	17
New Zealand (NZ)	16	1946-90	3	—
Norway (NOR)	12	1945-89	—	16
Portugal (POR)	7	1975-87	2	—
Spain (SPA)	5	1977-89	2	1987-89
Sweden (SWE)	14	1948-88	—	7
Switzerland (SWI)	11	1947-87	—	—
United Kingdom (UK)	13	1945-87	3	—
United States (US)	23	1946-90	—	23
TOTAL	350	34	384	—

United States (US) 23 1946-90 — 23
 Malta (MAL) 11 1947-87 — 11
 Netherlands (NET) 14 1946-89 — 17
 New Zealand (NZ) 16 1946-90 3 —
 Norway (NOR) 12 1945-89 — 16
 Portugal (POR) 7 1975-87 2 —
 Spain (SPA) 5 1977-89 2 1987-89
 Sweden (SWE) 14 1948-88 — 7
 Switzerland (SWI) 11 1947-87 — —
 United Kingdom (UK) 13 1945-87 3 —
 United States (US) 23 1946-90 — 23
 TOTAL 350 34 384

Non-voting seats
 and uncontested
 (Euro-elections),
 STV districts
 Northern Ireland
 (1945), the
 unicameral
 (1945), the
 unicameral
 and uncontested
 elections
 (Euro-elections),
 STV districts
 Northern Ireland
 (1945), the
 unicameral
 and uncontested
 elections
 (Euro-elections),
 the District of
 Columbia, Puerto
 Rico, etc.

TABLE 1.1. (Cont.)

analysis of fifty-three, instead of seventy, cases by combining those electoral systems in the same country where such a combination is at all possible and justifiable.

A different but at least equally crucial aspect of my research strategy was the combination of a collaborative project with, as its product, a single-authored book. Experts on, and usually in, each of the twenty-seven countries, supplied me with vital information, interpretation, and feedback on the rules and operation of their countries' electoral systems. My goal was to find the optimal mix of the pooled wisdom provided by joint scholarship with the consistency of having one author and researcher-in-chief.

Finally, a major methodological goal of this book is to promote replication. As the following chapters will repeatedly show, a host of important decisions must be made with regard to classification, measurement, and other methodological matters. I shall always explicitly defend my choices, and, in many instances, I shall also show the results that would have been yielded if different measures and methods had been used. But I want to make it as easy as possible for my readers to reanalyse the data according to the alternatives that *they* prefer. For this purpose, all of the basic data are easily available. The detailed characteristics of the seventy electoral systems are given in the tables of Chapter 2. The measures of disproportionality and multipartism for the same seventy electoral systems are listed in Appendix B. If readers want to do a more thorough replication, they can obtain the disproportionality and multipartism measures for each of the 384 elections from the author.⁷ Finally, all of the raw election data may be found in a few easily accessible sources: the *International Almanac of Electoral History* together with the 1989 and 1990 updates in the *European Journal of Political Research* (for all of the countries except India and Costa Rica) and the two volumes *Europe Votes 2* and *Europe Votes 3* (for the European Parliament elections).⁸ Appendix C contains a list of corrections and clarifications concerning these data as well as the election figures for India and Costa Rica.

OVERVIEW AND PREVIEW

Chapter 2 will give a detailed description and classification of the seventy electoral systems. It will also highlight general patterns

(such as the high frequency of the use of list PR and of the d'Hondt formula) and general trends (such as the increasing use of more proportional methods and the increasing use of two-tier districting systems). Chapter 3 will examine the concepts of electoral disproportionality, multipartism, and majority-party generation, and will discuss the advantages and disadvantages of the different operational measures that have been proposed. How to measure disproportionality presents the most serious problem, but I shall show not only that my preferred measure—Michael Gallagher's least-squares index—offers a good solution, but also that values of the different measures advocated by other scholars correlate highly with those of the least-squares measure.

The next three chapters examine the relationships between the electoral system variables, disproportionality, multipartism, and majority-party generation. Chapter 4 does so by examining within-country variation, and Chapter 5 by means of a cross-sectional design. Chapter 6 extends the analysis by examining the potential explanatory power of four additional elements of electoral systems: ballot structure, malapportionment, presidentialism, and *apparetement*. My main conclusions will be that, of the five dependent variables, disproportionality is the one that can be explained best in terms of the electoral system characteristics, and that the strongest explanation of the various dependent variables is provided by what I shall call the 'effective threshold', a combination of district magnitude and electoral thresholds. The effect of the electoral system on multipartism is more modest but still very important, and the explanatory power of the other electoral system variables—the electoral formula, assembly size, *apparetement*, ballot structure, and presidentialism—is also more modest but, again, not at all negligible. Chapter 7 will conclude by examining some of the practical lessons that electoral engineers and reformers can learn from my findings.

Electoral Systems: Types, Patterns, Trends

THE foremost purpose of this book is to analyse the political effects of electoral systems. The first step that needs to be taken towards that goal is the description and classification of the electoral systems. This is usually done in terms of the different 'dimensions' of electoral systems—a practice that I shall also adopt for the description of the seventy electoral systems of our twenty-seven countries between 1945 and 1990 in the bulk of this chapter. The last three sections will deal with the empirical relations between the dimensions and with general patterns and trends in the development of electoral systems.

DIMENSIONS OF ELECTORAL SYSTEMS

There is broad agreement among electoral system experts that the two most important dimensions of electoral systems, with major consequences for the proportionality of election outcomes and for party systems, are the electoral formula and the district magnitude.¹ Three main types of electoral formulas and a large number of subtypes within each of these are usually distinguished: majoritarian formulas (with plurality, two-ballot systems, and the alternative vote as the main subtypes), PR (classified further into largest remainders, highest averages, and single transferable vote formulas), and semi-proportional systems (such as the cumulative vote and the limited vote). The purpose of the introduction of PR in many countries was to achieve greater proportionality and better minority representation than the earlier majoritarian electoral methods had produced.

District magnitude is defined as the number of representatives elected in a district (constituency). One of the best-known findings

of Douglas W. Rae's 1967 study *The Political Consequences of Electoral Laws*—the first systematic comparative analysis of the effects of electoral systems on disproportionality and multipartism, which has been a major source of inspiration for this book—was the extremely strong influence of district magnitude.² Rae modestly attributes this proposition to James Hogan who wrote in 1945: 'the decisive point in P.R. is the size [magnitude] of the constituencies: the larger the constituency, that is, the greater the number of members which it elects, the more closely will the result approximate to proportionality'.³ And twenty years earlier, George Horwill had already referred to district magnitude as 'the all-important factor'.⁴

In PR systems, proportionality—and the chances for small parties to gain representation—are necessarily very limited when there are only two or three representatives per district, but increase dramatically when magnitude increases. In countries with multi-member districts, district magnitude tends to vary; in this study, therefore, magnitude will usually refer to the *average* district magnitude. It can be calculated very simply by dividing the total number of seats in the legislature (to which I shall henceforth refer as the assembly size) by the number of districts. Because of the importance of this dimension, all three variables—average magnitude, number of districts, and assembly size—will be listed for each electoral system in the tables in this chapter that provide the basic information on our seventy electoral systems. As will be discussed shortly, assembly size is also an important factor in its own right.

One complication with regard to magnitude is that there may be two, or even more, levels of districts; for instance, a country with PR elections may be divided into, say, ten or twenty electoral districts, but may also have a national district that is superimposed on the lower-level districts. This type of system, for which Rae has coined the term 'complex districting',⁵ will be explained in due course.

Another important dimension of electoral systems is the electoral threshold, that is, a minimum level of support which a party needs in order to gain representation. If the electoral law provides for such a threshold, it is usually applied at the national level (indicated by N in the tables), but it may also be imposed at the district (D), or at an in-between, regional (R) level, and the minimum may be defined in terms of a certain number of votes, a percentage

of the votes, or some other criterion such as the winning of at least one seat in a lower-level district in order to be eligible for seats in the higher-level district.

Not all electoral systems have such legal thresholds—in fact, most do not—but, as Rein Taagepera and Matthew S. Shugart have pointed out, even in the absence of an explicit legal threshold, an actual threshold is implied by the other two dimensions of the electoral system, especially by district magnitude.⁶ Low magnitudes have the same effect as high thresholds: both limit proportionality and the opportunities for small parties to win seats; as magnitudes increase and thresholds decrease, proportionality and the chances for small parties improve. In other words, legal thresholds and district magnitudes can be seen as two sides of the same coin. Accordingly, I shall often treat these two dimensions as one variable. All magnitudes and legal thresholds can be converted into a single operational indicator: the effective threshold, stated in terms of a percentage of the total national vote. How the effective threshold is calculated will be explained later.

The fourth major dimension on which this study will focus is assembly size—that is, the total number of seats in the legislature. Rae calls attention to this ‘generally neglected variable’, but he does not enter it into his empirical analysis.⁷ Its effect has not been studied systematically by other electoral system analysts either, perhaps because they have tended to see it as a factor external to the electoral system, that is, as merely a characteristic of legislatures elected according to particular electoral systems rather than as a characteristic of electoral systems as such. However, if electoral systems are defined as methods of translating votes into seats, the total numbers of seats available for this translation appears to be an integral and legitimate part of the systems of translation. In any case, there can be no doubt that assembly size can have a strong influence on proportionality and on the degree of multipartism. For instance, if four parties win 41, 29, 17, and 13 per cent of the national vote in a PR election—to use the example that I shall also use in Appendix A to illustrate the operation of different PR formulas—there is no way in which the allocation of seats can be handled with a high degree of proportionality if the election is to a mini-legislature with only five seats; 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 100-member legislative body. Of course, the same pattern theoretically applies to non-PR systems as well, but since these systems do not even aim at proportionality, the hypothesis that assembly size may have a significant additional effect on their degree of disproportionality may seem less plausible. Nevertheless, Taagepera has found that, in plurality elections, the degree of disproportionality does tend to increase, all other factors being equal, as the size of the legislature decreases.⁸ In short, there is ample theoretical justification to include assembly size as one of the important dimensions of electoral systems.

As already stated in the previous chapter, I define an electoral system as a set of essentially unchanged election rules under which one or more successive elections are conducted in a particular democracy. This definition can now be refined by stating it in terms of the four major dimensions of electoral systems: if there is a significant change on one or more of the four dimensions, this means that a new electoral system must be distinguished. A further refinement is needed in order to define precisely what counts as significant change. The electoral formula is a discrete variable; hence any change in the formula can be recognized easily and will be regarded as a significant change. In two-tier districting systems, the criterion will be a change in formula at what I shall define later as the decisive tier. However, since the other three dimensions are continuous variables, exact cut-off points have to be specified.

For all three, I propose a 20 per cent criterion: 20 per cent or greater change in district magnitude (in two-tiered districting systems, the magnitude at the more important upper level will be counted), 20 per cent or more change in the national legal threshold (or the adoption of such a threshold where none existed before), and 20 per cent or greater change in assembly size. For instance, a change in legal threshold from 5 to 6 or more, in district magnitude from 10 to 12 or more, or in assembly size from 200 to 240 or more (or the other way around) will be regarded as changes that create a different electoral system.⁹ This criterion is necessarily arbitrary; cut-off points anywhere between 10 per cent and 25 per cent would also be reasonable and legitimate. By selecting the relatively high value of 20 per cent, I am deliberately opting to err on the side of caution: in particular, I want to avoid artificially inflating the number of cases (electoral systems) for the

analysis by creating two or more cases that are too strongly alike and that really should be treated as a single case. Chapters 4 and 5 will examine, respectively, the effects of changes within electoral systems and of changes in a smaller set of cases generated by combining relatively similar cases; in other words, these analyses will first relax and then tighten the 20 per cent criterion, and will therefore provide a check of whether 20 per cent is too strict or too lenient as the cut-off point.

FOUR OTHER ELECTORAL SYSTEM VARIABLES

The above four dimensions provide the framework for the description and classification of the seventy electoral systems in this chapter and will also be the main independent variables in the analysis of the effects of these electoral systems in Chapters 4 and 5. In addition, I shall pay some attention to four minor, but not necessarily negligible, aspects of electoral systems and test their political consequences: ballot structure, malapportionment, the difference between legislative elections in parliamentary and in presidential systems, and the possibility of linked lists.

First, ballot structure is one of Rae's three basic dimensions of electoral systems along with formula and magnitude. (Rae does not consider thresholds and assembly size.) Ballot structure can be either categorical, if the voter can give his or her vote to one party only, which is the case in most electoral systems, or ordinal if the voter can divide his or her vote among two or more parties. (The term 'ordinal ballot structure' is somewhat misleading because it includes, but is not limited to, systems in which voters rank order two or more parties.) Rae hypothesizes that ordinal balloting, by allowing vote dispersion, may encourage multipartism, but finds that his evidence (for twenty countries in the period from 1945 to 1964) contradicts his hypothesis.¹⁰ However, since the hypothesis is not implausible, it is worth retesting it against the much broader empirical evidence of our seventy electoral systems.

Second, in his recent analysis of the proportional or disproportional effects of different electoral formulas, Michael Gallagher rightly warns his readers that other dimensions of electoral systems

may also affect the degree of proportionality of election outcomes: in addition to district magnitude and thresholds (he does not mention the factor of assembly size), he points to 'the possibility of malapportionment'.¹¹ In single-member district systems, malapportionment means that the districts have substantially unequal voting populations; malapportioned multi-member districts have magnitudes that are not commensurate with their voting populations. Obviously, malapportionment may systematically favour one or more parties and therefore contribute to electoral disproportionality. Malapportionment often takes the form of rural or regional overrepresentation. It has not been a serious problem in most of our long-term democracies during the post-Second World War era, but its possible influence is also worth testing.

Third, Shugart has shown that presidential systems can have an important effect on legislative elections if presidential elections are by plurality and if legislative elections are held at the same time: large parties have an advantage in presidential races since smaller parties do not have much of a chance to have one of their candidates elected, and this advantage tends to carry over into the legislative elections.¹² Hence, presidentialism tends to discourage multipartism. Because our set of countries includes only two presidential systems (the United States and Costa Rica), it does not offer an optimal opportunity to test this hypothesis, but semi-presidential systems (France, Finland, and Portugal) and parliamentary systems with directly elected presidents (Austria, Iceland, and Ireland) may be hypothesized to have similar effects.

The fourth variable that I shall examine pertains especially to PR systems in which voters choose among competing party lists. In several of these, parties are allowed formally to link or connect their lists, which means that their combined vote total will be used in the initial allocation of seats. A set of such inter-party connected lists is usually referred to by the French term *apparentement*. As Andrew McLaren Carrstairs has pointed out, since almost all electoral systems, including PR, in practice favour the larger parties to some extent, 'the question of whether or not *apparentement* is permitted can be of great importance to the smaller parties'.¹³ Several other electoral systems have features that are functionally equivalent to *apparentement*. Along with ballot structure, malapportionment, and presidentialism, it will be tested in Chapter 6.

MAJORITARIAN ELECTION SYSTEMS

Table 2.1 lists the twelve majoritarian election systems that have operated in seven of our countries during the 1945–90 period. Six of these countries used only majoritarian electoral systems, and the basic facts concerning their entire electoral system history is contained in the table: Canada, New Zealand, and the United States used the same system throughout the period, and Australia, India, and the United Kingdom, while undergoing a significant change on one dimension, stayed within the confines of majoritarianism. France is the only country in the table with only two (of its six) electoral systems in Table 2.1.

When countries have used two or more systems, they are numbered in chronological order; for instance, IND1 is the first system used in India in the 1952 and 1957 elections, and IND2 is the Indian system for the elections from 1962 to 1984; and the two French systems are labelled FRA3 and FRA6 because two non-majoritarian systems occurred before FRA3 and again between FRA3 and FRA6. For countries with European Parliament elections (all of which took place at the end of our period, between 1979 and 1989), these Euro-election systems are identified by their chronological numbers and also, for the sake of maximum clarity, by the letter 'E'. For example, UK1 is the system for House of Commons elections and UK2E the system for electing British representatives to the European Parliament. I shall use the same conventions in the tables for PR and other electoral systems later on in this chapter. Furthermore, all of these tables will also list the number of elections in each electoral system and the time-span during which these elections took place (in the second column).

Two further general conventions will be used in order to make these tables as clear and informative as possible. One is that all integers indicate exact and unchanging numbers; all other numbers indicate averages. For instance, the district magnitudes of 1 in Table 2.1 mean that in these electoral systems all districts in all elections were, without exception, single-member districts, whereas the three district magnitudes of 1.00 indicate the use of some, but very few, two-member or multi-member districts. Second, it is noted which entries indicate approximations. An example is the plurality

Electoral system ^a	Number and years of elections ^b	Electoral formula ^c	District ^d	Number of Assembly ^e	districts ^f	size ^g	threshold ^h	Effective N/R/D ⁱ (%)	elective systems
IND1	2: 1952-7	Plurality	1.21	396	480.50	—	35 ^j		
CAN	15: 1945-88	Plurality	1.00	267.07	268.27	—	35 ^j		
US	23: 1945-90	Plurality ^k	1.00	433.83	435.17	—	35 ^j		
UK1	13: 1945-87	Plurality	1.00	631.69	632.85	—	35 ^j		
IND2	6: 1962-84	Plurality	1.00	631.69	632.85	—	35 ^j		
NZ	16: 1946-90	Plurality	1.00	522.00	522.00	—	35 ^j		
UK2E	3: 1979-89	Plurality	1	85.69	85.69	—	35 ^j		
FRA3	7: 1958-81	Majority-Plurality	1	78	78	—	35 ^j		
FRA6	1: 1988	Majority-Plurality	1	470.14	122 ^l (D)	—	35 ^j		
AU11	1: 1946	Majority-Plurality	1	555	555	17 ^l (D)	35 ^j		
AU12	15: 1949-83	Alternative vote	1	74	74	—	35 ^j		
AU13	3: 1984-90	Alternative vote	1	148	148	—	35 ^j		

- ^a See description of electoral systems on pp. 13–14, 16.
^b See description of integers used on p. 16.
^c See description of intermediate systems on pp. 13–14, 16.
^d Approximation.
^e See description of level at which the threshold is applied on p. 11.

Notes:

TABLE 2.1. Twelve majoritarian electoral systems, in decreasing order of district magnitude, 1945–90

formula for US House of Representatives elections; this has indeed been the usual formula, but the majority-runoff method has also been used (in Louisiana, where the first stage of the election is referred to as the 'non-partisan primary', and in Georgia). All values of the effective threshold in Table 2.1 are also indicated as approximations; the reasons for using these approximations and the definition of the term 'effective threshold' will be given later on during the discussion of PR systems. (It is also worth recalling the exclusions specified in Table 1.1; in particular, the numbers of districts and the assembly sizes are based on contested seats only.)

Of the many majoritarian formulas that exist in theory, Table 2.1 shows that only three have been in actual use in our set of countries between 1945 and 1990: plurality, majority-plurality, and the alternative vote.¹⁴ The plurality formula—often also called the first-past-the-post (FPTP) or relative majority method—stipulates that, in single-member districts, voters can cast one vote each and that the candidate with the most votes wins. (In two-member districts, voters have two votes and the two candidates with the most votes win; and so on.) Five countries have used plurality and have used it almost without exceptions: Canada, India, New Zealand, the United Kingdom, and the United States.¹⁵

The French Fifth Republic provides the only instance of the two-ballot majority-plurality formula. Here the rule is that a majority (that is, an absolute majority—more than half of the valid votes) is required for election on the first ballot; if the first ballot does not produce a winner, a second ballot is conducted and the candidate with the most votes wins, even if he or she wins only a plurality of the votes. The second ballot can have more than two candidates, but the usual second-ballot pattern in France is a contest between two principal candidates, because the weakest candidates are forced to withdraw and other candidates may withdraw voluntarily in favour of stronger candidates of allied parties. However, the majority-plurality formula should be distinguished from the majority-runoff in which the second round of the election is restricted to the top two candidates from the first round; it may therefore be characterized as the majority-majority formula, in contrast with the French majority-plurality method. The majority-runoff has not been used in our set of countries for legislative elections (with the small exception of some US Congressional

elections, noted above), but it is used for direct presidential elections in France, Portugal, and Austria.¹⁶

Australia is the only country that has used the alternative vote. Voters are asked to list the candidates in order of their preference. If a candidate receives an absolute majority of first preferences, he or she is elected; if not, the weakest candidate is eliminated, and his or her ballots are redistributed among the remaining candidates according to these ballots' second preferences; this process continues until a majority winner emerges. As a simple example, let us assume that there are four candidates (*A*, *B*, *C*, and *D*) receiving, respectively, 41, 29, 17, and 13 per cent of the voters' first preferences; since no candidate has received a majority of the first preferences, candidate *D* is eliminated. Let us further assume that the second preferences on *D*'s ballots are for *C*; this means that, after the second round of counting, *C* now has 30 per cent of the vote, *A* 41 per cent, and *B* 29 per cent. *B* is therefore eliminated next, and in the third round of counting, the contest is between *A* and *C*—one of whom will be the winner. The alternative vote, which in Australia is usually referred to as 'preferential voting', may be thought of as a refinement of the majority-runoff formula in the sense that weak candidates are eliminated one at a time (instead of all but the top two candidates at the same time) and that voters do not have to go to the polls twice.¹⁷

The plurality systems are listed first in Table 2.1 (followed by majority-plurality and alternative vote) and, within the plurality group, the systems are listed in decreasing order of district magnitude. The most striking characteristic of these magnitudes is that, with the exception of the first Indian system, they are either exactly 1 or very close to 1; that is, single-member districts have been the rule and two-member or larger multi-member districts very infrequent exceptions. The only instance of substantial numbers of larger than single-member districts occurred in the 1952 and 1957 Indian elections: slightly more than a third of the seats were in two-member districts (and in one three-member district in 1952). The next on the list is Canada, which had two two-member districts in the nine elections from 1945 to 1968, yielding an average district magnitude for all fifteen elections of slightly less than 1.005, rounded to 1.00 in Table 2.1. The United States had between one and three two-member districts in the Congressional elections from 1946 to 1968—as well as one

eight-member district in 1962 (the state of Alabama)—for an overall average magnitude of 1.003.¹⁸ And the United Kingdom had fifteen two-member districts in 1945, yielding an average magnitude of 1.002 for all of its post-war parliamentary elections.

As the foregoing already implies, it is also striking that all larger than single-member districts were abolished everywhere: in the United Kingdom after the 1945 election, in India after 1957, and both in Canada and in the United States after 1968. From 1970 on, only single-member districts survived.

All majoritarian systems make it difficult for small parties to gain representation (unless they are geographically concentrated), because they need to win majorities or pluralities of the vote in electoral districts. For this reason, all majoritarian systems tend to systematically favour the larger parties, to produce disproportional election outcomes, and to discourage multipartism.¹⁹ District magnitudes larger than 1 tend to reinforce these tendencies; at the extreme, a single at-large (nation-wide) district would, assuming strict party-line voting, give all legislative seats to the plurality or majority party. For instance, if the 435 members of the US House of Representatives were elected in one 435-member district, with each voter having 435 votes and casting these votes for either 435 Democratic or 435 Republican candidates, the House would end up consisting of either 435 Democrats or 435 Republicans. It is therefore a very important characteristic of the majoritarian systems in Table 2.1 that they are largely single-member district systems. Single-member districts do not make majoritarian systems into proportional ones, but they do limit the degree of disproportionality. The exact degrees of disproportionality and of the discouragement of multipartism that remains will be analysed in Chapters 4 and 5.

Given the prevalence of single-member districts, the number of districts in all majoritarian election systems is large—in fact, equal or almost equal to the assembly size in most cases. In most countries, the size of the assembly has remained very stable, especially in the United States where a membership of 435 Representatives was maintained throughout the period with the exception of the two elections after the admission of Hawaii and Alaska when it was temporarily raised to 437. At the other extreme, Australia's House of Representatives doubled in size from 1946 to the late 1980s. France's National Assembly was expanded

by about 17 per cent from the 1981 two-ballot election to the 1986 PR contest, and the larger size was retained when the double-ballot was readopted for the 1988 election.

Finally, since majoritarian election systems are inherently unfavourable for small parties, they do not need—and generally do not use—legal thresholds. The one exception, as Table 2.1 shows, is the threshold that French election law has set for access to the second ballot. In 1958 and 1962, candidates with less than 5 per cent of the district vote in the first round were barred from the second ballot; this was raised to 10 per cent of the eligible electorate (approximately 13 per cent of the valid votes) for the next three elections and to 12.5 per cent, again of the eligible voters (about 17 per cent of the valid votes), before the 1978 election. However, both in France and in the other majoritarian systems, parties need many more votes in order to get elected to the legislature in significant numbers and not to be severely underrepresented. For this reason, I estimate the ‘effective threshold’—a term to be defined more precisely in the next section—for all majoritarian systems to be about 35 per cent.

PR: SINGLE-TIER DISTRICTING AND D'HONDT

PR systems are the most common type of electoral systems: fifty-two of our total of seventy—almost three-fourths—unambiguously fit this category. Moreover, as I shall show later, the remaining six non-PR and non-majoritarian systems (in Japan, Greece, and France) are closer to PR than to majoritarian systems and five (in Japan and Greece) can be interpreted as PR systems. I shall present the fifty-two straightforward PR systems in four tables, two for the single-tier and two for the two-tier systems.

Table 2.2 lists the systems that, within the PR family, are the most common: those using one-tier districting and the d'Hondt formula. What was said about the majoritarian formulas also applies to PR formulas: many more have been invented—and even more can be imagined—than are in actual use. In addition to the most frequently used d'Hondt formula, only six PR formulas (and a few that closely resemble these) have been used in all of the PR systems during the 1945–90 period: modified Sainte-Lagu   (which,

like d'Hondt, is a highest averages or divisor system), four largest remainders or quota systems (using the Hare, Droop, and two Imperiali quotas), and the single transferable vote (STV, which always uses the Droop quota). The highest averages and largest remainders (LR) systems are list PR systems in which voters vote for lists of candidates (although they may also be able to express a preference for one or more candidates within their preferred list), in contrast with STV in which they cast a preferential vote for individual candidates.

Among the highest averages formulas, the d'Hondt method (which uses the divisor series 1, 2, 3, 4, etc.) is the least proportional and systematically favours the larger parties. It contrasts with the pure Sainte-Lagu   formula (using the odd-integer divisor series 1, 3, 5, 7, etc.) which approximates proportionality very closely and treats large and small parties in a perfectly even-handed way. In practice, the Sainte-Lagu   formula is used only in a modified form in which the first divisor is raised from 1 to 1.4, thereby making it harder for small parties to gain their first seats—and hence reducing the proportionality of the election result to some extent.²⁰

The oldest and best known of the LR systems uses the Hare quota, which is the total number of valid votes cast (V) divided by the district magnitude (M), the number of seats available in the district: V/M .²¹ Parties are given as many seats as they have won quotas, and any remaining seats are given to the parties with the largest remainders of votes. The Hare quota is impartial as between small and large parties and tends to yield closely proportional results. Less proportional outcomes are produced by the Droop quota which divides the votes by $M + 1$, the normal Imperiali quota which uses $M + 2$, and the reinforced Imperiali quota which uses $M + 3$ as the denominator. The use of these lower quotas means that there will be fewer remaining seats to be allocated—and hence also more wastage of remaining votes, which is especially harmful to the smaller parties and results in a decrease in proportionality. The Imperiali quotas are so low that there will often not be any remaining seats. Whenever the quota is lowered to such an extent that all seats can be assigned without the use of remaining votes, the outcome becomes exactly the same as that of the d'Hondt formula.²²

STV is a preferential rather than a list system but, if voters

^a See description of electorate systems on pp. 13–14, 16.

^b See description of integer used on p. 16.

^c See description of level at which the threshold is applied on p. 11.

Electoral system ^a	Number and years of elections	Electoral formula	District magnitude	Number of districts	Assembly size	Legislative threshold	Effective threshold	N/R/D ^c (%)
FRA1	3: 1945–Nov. 1946	d'Hondt	519	102	529.33	—	—	12.9
LUX2E	3: 1979–89	d'Hondt	5.79	96	556	5(D)	—	11.7
SPA1	5: 1977–89	d'Hondt	6	1	6	—	—	11.3
NOR1	2: 1945–9	d'Hondt	6.73	52	350	3(D)	—	10.2
SWI	11: 1947–87	d'Hondt	7.50	20	150	3(D)	—	9.2
BEL2E	3: 1979–89	d'Hondt	8.21	28	230	24	24	8.5
FIN	7: 1975–87	d'Hondt	12.00	2	20	248.00	248.00	5.9
LUX1	13: 1945–87	d'Hondt	12.40	13.21	15.15	200	56.10	5.4
DEN4E	3: 1979–89	d'Hondt	14.02	4	15.33	15.33	15.33	5.1
NET3E	2: 1979–89	d'Hondt	24	1	1	—	—	4.7
SPADE	3: 1979–89	d'Hondt	25	1	25	25	—	3.0
GER4E	2: 1987–9	d'Hondt	78	1	60	60	—	4
FRA4E	3: 1979–89	d'Hondt	78	1	60	60	—	4.2
NET1	3: 1946–52	d'Hondt	81	1	78	78	—	5
ISR1	1: 1949	d'Hondt	100	1	81	81	—	5
NET2	5: 1973–88	d'Hondt	120	1	100	100	—	0.6
ISR3	11: 1956–89	d'Hondt	120	1	120	120	—	0.67

Notes:

TABLE 2.2. Twenty-one PR systems with d'Hondt formula and single-tier districting, in increasing order of district magnitude, 1945–90

cast mainly party-line votes or if most of the inter-party cross-over votes offset each other—a simplifying but not unrealistic assumption—its results can be compared to those of LR. All STV systems need to select a quota that elects a candidate and, in principle, any of the quotas discussed above could be used. In practice, however, STV systems invariably use the Droop quota.

To sum up, as far as their effects on the proportionality of the electoral outcome and on multipartism are concerned, the differences cut across the broad categories of divisor, quota, and STV systems. The d'Hondt and LR-Imperiali systems are the least proportional and systematically favour the larger parties; modified Sainte-Lagu  , LR-Droop, and STV form an intermediate category, and LR-Hare is the most proportional formula. These tendencies are explained in greater detail in Appendix A, which also provides more detailed descriptions and examples of the operation of the different formulas.

By definition, PR requires multi-member districts, that is, a district magnitude of at least 2 seats.²³ In order to achieve a minimum of proportionality, however, the magnitude should be considerably larger than 2 and, as argued in the beginning of this chapter, magnitude impacts the degree of proportionality and the chances for small parties very strongly. Table 2.2 presents the twenty-one d'Hondt single-tier districting systems in increasing order of magnitude. The smallest average magnitude among these systems is above 5 seats, in the immediate post-war French elections, but magnitudes vary greatly—up to 150 seats in the Netherlands since 1956. About half have the maximum magnitude allowed by their assembly size: a single at-large (nation-wide) district. This means that they combine the least proportional formula with the most proportional magnitude. In the case of Luxembourg's Euro-elections, the magnitude is still only 6 seats, since only a total of 6 seats are available in this ‘assembly’—the smallest assembly size among all of our electoral systems. However, the other ten systems with at-large elections also have the largest magnitudes (and are all listed in the bottom half of the table); six of these are systems for Euro-elections, and the other four are the extremely large-magnitude Dutch and Israeli election systems. The number of districts in the other systems range widely, from 2 to 102.

The large magnitudes are partly offset again by the use of legal thresholds. Eight of the electoral systems shown in Table 2.2 have

such thresholds, but the majority do not. However, as already indicated in the beginning of this chapter, even in the absence of an explicit legal threshold, the district magnitude and the electoral formula, especially magnitude, effectively imply a barrier to smaller parties. For instance, in a small district with a magnitude of 5 seats (like the average district in France in 1945–6), it is easy to see that one-fifth of the votes is sufficient for winning a seat, but that this is very unlikely or even impossible with only one-tenth of the votes. It is more difficult, however, to find the exact equivalent: for a given average district magnitude, what is the effective threshold at the national level?

EFFECTIVE THRESHOLDS

There are three problems in determining the effective threshold. First, the threshold implied by district magnitude is not one specific percentage but a range of possibilities between the so-called thresholds of representation and exclusion. The threshold of representation (or inclusion) is the minimum percentage of the vote that can earn a party a seat under the most favourable circumstances; the threshold of exclusion is the maximum percentage of the vote that, under the most unfavourable conditions, may be insufficient for a party to win a seat. Another way of portraying these two thresholds is as a lower and an upper threshold: if a party passes the lower threshold, it becomes possible for it to win a seat; when it passes the upper threshold, it is guaranteed to win a seat.

Plurality single-member district systems can provide the simplest illustration of these thresholds. Assume such a district in which five candidates compete. The lower threshold is 20 per cent because a candidate can win with slightly more than this vote percentage in the most favourable situation of the other four candidates evenly splitting the other votes (each receiving just under 20 per cent of the vote). The higher threshold is 50 per cent in the most unfavourable situation of our candidate being faced by one very strong candidate; now only 50 per cent plus one vote guarantees election. A simple PR illustration is the following: a three-member district, three parties, and the d'Hondt formula.

The lower threshold is 20 per cent since it is possible for a party to win a seat with just over this percentage of the vote if the other two parties are kind enough to split the rest of the votes evenly, each receiving just below 40 per cent of the vote (or to receive just below 60 per cent and just below 20 per cent respectively). The higher threshold is 25 per cent; by exceeding this percentage slightly, a party will win a seat even in the most unfavourable case of one of the other parties garnering all of the other votes, that is, almost 75 per cent.

In addition to the problem of determining the exact threshold in the range between the upper and lower thresholds, there are two additional problems. One is that, while these thresholds are largely determined by the district magnitude, they are also influenced to some extent by the electoral formula and the number of political parties that compete. Second, both the magnitude and the number of parties may vary considerably from district to district. In order to deal with these problems, I shall follow Taagepera and Shugart's lead, although my final solution will be slightly different from theirs.²⁴ They suggest a series of useful and reasonable approximations: that the number of parties be assumed to be about the same as the district magnitude, that the average magnitude for the system as a whole be used, that the formulas also be roughly averaged, and, most importantly, that the effective threshold be assumed to be half-way between the upper and the lower thresholds. Under the first of these assumptions, the upper threshold is almost the same for all formulas: it is equal to or slightly below the Droop quota, that is (expressed as a percentage), $100\%/(M+1)$. Unfortunately, the lower threshold varies much more for the different formulas. Taagepera and Shugart pick the lower threshold for the LR-Hare formula: $100\%/Mp$ (where p is the number of parties). This yields too low an estimate for three reasons. One is that the LR-Hare threshold of representation is not only the lowest of all of the formulas but much lower than the others, especially d'Hondt. Second, the low LR-Hare threshold occurs only in the highly exceptional situation of all parties having very small remainders, which allows a small party to win a seat with a fraction of a Hare quota; for instance, in a district with 10 seats and 10 parties and a vote distribution of 91 per cent for one big party and about 1 per cent for the other 9 small parties, one of these small parties can win a seat with just above 1 per cent of the vote. The

more normal situation is for the average remainder to be half of a Hare quota—and therefore also for the lower threshold to be one-half the Hare quota: $100\%/2M$. Third, since LR-Hare is itself an unusual formula, it makes more sense to use the lower threshold of the most common formula, namely d'Hondt. As it happens, the d'Hondt lower threshold is only slightly higher than the more normal LR-Hare threshold just estimated.²⁵

This $100\%/2M$ threshold therefore appears to be the natural candidate to be used for the average lower threshold. The effective threshold now becomes the mean of the upper threshold— $100\%/(M+1)$ —and the lower threshold— $100\%/2M$ —or:

$$T_{\text{eff}} = \frac{50\%}{(M+1)} + \frac{50\%}{2M}.$$

It should be noted that the Taagepera-Shugart effective threshold, based on the same Droop quota that I use but on the much lower LR-Hare threshold of representation, turns out to be appreciably lower than my effective threshold: after some more streamlining, Taagepera and Shugart arrive at the attractively simple effective threshold of $50\%/M$. It is worth noting further that their effective threshold is the same as my lower threshold (the threshold of representation).

In order to determine which of the two alternatives offers the closest equivalent to the formal thresholds imposed by electoral laws, I compared two groups of PR systems. The first group consists of the twenty systems that have clear legal thresholds, independent of the values of their district magnitudes and independent of any assumptions about whether the lower or middle thresholds should be chosen as the effective thresholds.²⁶ The second group consists of thirty-seven systems whose effective thresholds are inferred entirely or partly from district magnitudes or where assuming a low threshold, like the threshold of representation, versus a middle threshold makes a difference in the calculations (as in the Belgian and first Austrian systems to be discussed later). In the first group, I regressed the percentage of disproportionality (using the least-squares index, my principal measure of disproportionality to be explained in the next chapter) on the effective threshold, and I found a regression coefficient of 0.42; this means that for every percentage increase in the effective threshold,

disproportionality increased by 0.42 per cent. I repeated this operation for the second group using alternatively the lower Taagepera–Shugart threshold and my effective threshold. The regression coefficients were 0.50 and 0.40 respectively—showing that the latter measure is the closer equivalent. When the electoral formula (d'Hondt and LR-Imperiali versus all other formulas) and assembly size (logged) were also entered into the equations, the regression coefficient was 0.42 in the first group and 0.54 and 0.42 respectively in the second group—confirming the better equivalence of my measure of effective magnitude.²⁷

Another way of judging the two alternative measures of effective threshold is to examine which one yields the higher correlations with the various measures of disproportionality and multipartism for all fifty-seven PR systems and for our universe of electoral systems. Here my findings are that it does not make a great deal of difference whether the Taagepera–Shugart measure or my measure is used (see Chapter 5). One plausible explanation of the relatively strong relationships between the Taagepera–Shugart threshold and multipartism is that small parties may be encouraged not just by the prospect of being proportionally represented but by the hope of gaining any representation at all, even if it is well below full proportionality.²⁸

Three further comments on effective thresholds are in order. One is that neither the Taagepera–Shugart nor my effective threshold works well for plurality and majority systems. For $M = 1$, both equations yield the value of 50 per cent—which is obviously the upper threshold, above which victory is guaranteed, instead of an average between upper and lower thresholds. As in the case of PR systems, it is much easier to determine the upper than the lower threshold because the latter is strongly influenced by the number of candidates in the race. If we assume a relatively small number of candidates, say four of five, the lower threshold is about 20 to 25 per cent—yielding an effective threshold, half-way between the upper and lower limits, of about 35 per cent. This rough but reasonable estimate is used for all of the majoritarian systems in Table 2.1—including the early Indian system with the slightly higher M of 1.21, and also including the Australian majority system where my assumption is that candidate with 35 per cent of the first preferences has a reasonable chance of being elected with the help of second preferences transferred from weaker candidates.²⁸ However,

in order to emphasize the roughness of this estimate, it is given as a round number without decimals.²⁹

The second comment concerns the effective thresholds in PR systems: in some cases, these can be given with a high degree of precision (particularly when there is a national legal threshold expressed in percentage terms), but when they have to be calculated from average district magnitudes or on the basis of other criteria (of which some examples will be discussed shortly), they are also rather rough estimates. Hence—in contrast with average district magnitudes, numbers of districts, and assembly sizes, which can all be determined very accurately—the values of the effective thresholds are given to only a single decimal place. The one exception is the Dutch electoral system since 1956 (at the bottom of Table 2.2) in which the national legal threshold, and therefore also the effective threshold, is exactly two-thirds of 1 per cent.

Finally, it is worth re-emphasizing that all effective thresholds except national legal thresholds are not only rough estimates but also midpoints in a range between no representation and full representation. Hence, falling short of such an effective threshold does not necessarily entail getting no representation at all—as it does when the threshold is a national legal barrier—but being substantially underrepresented.³⁰

In Table 2.2, the effective threshold for each system is the larger of the value computed from the average magnitude and the legal threshold, if any. The two district-level thresholds are applied in districts with such a low average magnitude that the national effective threshold is actually higher. In the 1986 French case, the 5 per cent district threshold was meaningless in the 93, out of the total of 96, districts with magnitudes of about 14 or fewer seats. In the Spanish parliamentary election system, the 3 per cent district threshold becomes effective only for district magnitudes above about 24 seats: of the 52 districts, only Barcelona and Madrid have greater magnitudes. Similarly, the national effective threshold has been much higher than the district-level legal threshold in the two French majority-plurality systems (see Table 2.1 above). The legal threshold here is the minimum vote in the first round that entities a candidate to compete in the second round.³¹

The six national legal thresholds in Table 2.2 are all higher than the effective thresholds implied by the district magnitudes, although in the Dutch and Israeli cases, the legal threshold does not raise

the barrier a great deal. The two Israeli systems near the bottom of Table 2.2 provide a good example: the 1 per cent legal threshold adopted after the 1949 election did raise the effective threshold, but only from 0.6 to 1 per cent.³² The French and German Euro-election systems are examples of a much stronger boost from an implied threshold of only around 1 per cent to a legal threshold of 5 per cent.

PR: SINGLE-TIER DISTRICTING AND NON-D'HONDRT FORMULAS

The other single-tier districting systems—those that do not use the d'Hondt formula—are presented in Table 2.3. The fact that there are only eleven systems in this table, compared with twenty-one in Table 2.2, is a good indication of the popularity of the least proportional d'Hondt method. And fewer than half of the non-d'Hondt systems use the most proportional LR-Hare formula. (For its Euro-elections, Greece has used a procedure not quite identical with, but closely akin to, LR-Hare.)³³ On the other hand, the district magnitudes of these non-d'Hondt systems, while displaying almost the same range as those using d'Hondt, are by and large appreciably lower. The lowest are in the four STV systems; one important reason is that, in these preferential systems, high magnitudes are impractical because these entail large numbers of candidates—which impose heavy burdens on the voters who have to rank order these candidates. We find the highest magnitudes, as before, in the systems with at-large elections.

The systems are listed in increasing order of district magnitude. Because most of them do not have legal thresholds, all but one of the effective thresholds shown in the table are in decreasing order. The one exception is the system for the 1989 German Euro-election: Germany switched from the d'Hondt to the LR-Hare formula but maintained the relatively high 5 per cent national threshold.

PR: TWO-TIER DISTRICTING SYSTEMS

The remaining twenty-one PR systems are somewhat more complicated, mainly because they use two tiers of districts but also

	Electoral system ^a	Number and years of introduction ^b	Electoral formula	District	Number of districts ^c	Assembly size	Legislature ^d	Effective threshold (%)	N/R/D ^e
IRE2E	14: 1948-89 STV	3.75	40.50	152.00	—	17.2	120	120	1(N)
IRE2E	3: 1979-89 STV	3.75	15.00	152.00	—	17.2	120	120	1(N)
MAL1	5: 1947-55 STV	5	4	15	40	13.3	120	120	1(N)
MAL2	5: 1962-81 STV	5	8	40	13.3	13.1	120	120	1(N)
CRI	2: 1953-8 LR-Hare	6.43	7	45	10.6	10.6	120	120	1(N)
NOR2	9: 1953-85 Modified Sainte-Lagu��e	7.80	19.56	152.44	8.9	8.9	120	120	1(N)
CR2	8: 1962-90 LR-Hare	8.14	7	57	8.5	8.5	120	120	1(N)
SW2	6: 1952-68 Modified Sainte-Lagu��e	8.27	28	231.67	8.4	8.4	120	120	1(N)
GRE3E	3: 1981-9 LR-Hare ^f	24	1	24	3.0	3.0	120	120	1(N)
GER6E	1: 1989 LR-Hare	78	1	78	5(N)	5	120	120	1(N)
ISR2	6: 1951-69 LR-Hare	1	1	78	5(N)	5	120	120	1(N)

- Notes:
- ^a See description of electoral systems on pp. 13-14, 16.
 - ^b See description of integers used on p. 16.
 - ^c See description of level at which the threshold is applied on p. 11.
 - ^d Approximation.

because many of them have legal thresholds that are not easy to translate into effective thresholds. The basic rationale for two-tier districting is to combine the advantage of reasonably close voter-representative contact offered by smaller districts with the advantage of greater proportionality and minority representation offered by larger districts.³⁴

Two types of two-tier methods can be distinguished: remainder-transfer and adjustment-seats systems. The first is used by the seven electoral systems in Table 2.4. In the lower-tier districts, one of the LR formulas is applied, but instead of allocating the remaining seats to the parties with the highest remainders of votes in these districts, all remaining votes and seats are transferred to, and allocated in, higher-tier districts. The fourteen systems shown in Table 2.5 belong to the second type: here the districts at the lower level are used for the initial allocation of seats, but the final allocation takes place at the higher level on the basis of all of the votes cast in all of the lower-tier districts that together make up the higher-tier district. Most commonly, a certain number of adjustment seats are provided at the higher level in order to even out the disproportionalities that may have occurred at the lower level. (The numbers of these adjustment seats can be calculated easily by subtracting the total of the lower-tier seats—the number of districts times the average magnitude at the lower level—from the total number of seats, i.e., the assembly size.)³⁵

The tables report the basic characteristics for both tiers, with the more important higher level listed first. In fact, with regard to the proportionality of the election outcome and the opportunities for small parties, the upper level is the *decisive* level. The one exception concerns the electoral formula in remainder-transfer systems. Here the formula at the lower level predominates: no higher-tier formula is able to favour systematically the larger over the smaller parties, since the parties with the highest totals of remaining votes are not necessarily the largest parties. What is of crucial importance for the proportionality of the outcome is how many seats will be available at the higher level—which is determined by the lower-tier formula. Only LR-Hare at the lower level produces a sufficient number of remaining seats for full proportionality. The seven remainder-transfer systems exhibit the entire range of LR formulas: in decreasing order of proportionality, LR-Hare, LR-Droop, partly LR-Droop and partly normal LR-Imperiali

Electoral system ^a	Number and years of elections ^b	Tier ^c	Electoral formula ^d	District magnitude ^e	Number of districts ^f	Assembly size ^g	Legal threshold N/R/D ^h (%)	Effective threshold (%)
AUT1	8: 1945-70	H	d'Hondt	41.25	4	165	SR(R)	8.5
GR5	3: June 1989-90	H	LR-Droop	6.60	25	—	—	3.3
AUT2	6: 1971-90	H	LR-Hare	22.15	13	300 ⁱ	—	3.3
ITTA3	8: 1958-87	H	LR-Hare	6.75	31	625.75	SR(N)	2.0
ITTA4E	3: 1979-89	H	LR-Imperiali	19.55	32	81	—	0.9
ITTA1	1: 1946	H	LR-Hare	16.20	5	556	—	0.1
		L	LR-Hare	5.56	1	556	LR-Droop/	—

TABLE 2.4. Seven PR systems with two-tier districting and remainder transfers, in decreasing order of effective threshold, 1945-90

- ^a See description of electoral systems on pp. 13-14, 16.
- ^b The lower-tier formulas are italicized because they are the decisive formulas in these two-tier districting systems.
- ^c See description of intergers used on p. 16.
- ^d See description of level at which the threshold is applied on p. 11.
- ^e See description of integer rules (as explained on pp. 38-9).
- ^f See approximation; the GR5 assembly size includes 12 seats allocated separately in a third, national, tier.
- ^g See description of intergers used on p. 16.
- ^h See description of imperial rules (as explained on p. 38-9).
- ⁱ Notes:

TABLE 2.5. Thirteen PR systems with two-tier districting and adjustment seats, in decreasing order of effective threshold, 1945-90

Electoral system ^a	Number and Tier	Electoral formula	District	Number	Assembly	Districts	size	threshold	N/R/D ^b (%)	(%)
ICE1	5: 1946-	H	d'Hondt	52	SR(N)	8.7				
ICE2	9: Oct.	H	d'Hondt	1.46	28	52	SR(N)	8.7		
	June 1959	L	Plurality/d'Hondt	60.33	1	60.33	SR(N)	5.8		
GER1	1: 1949	H	d'Hondt	6.14	8					
GER2	1: 1953	H	d'Hondt	36.55	11	402	SR(R)	5		
GER3	8: 1957-83	H	d'Hondt	54.11	9	487	5(N)	5		
GER5	1: 1987	H	d'Hondt	49.688	1	496.88	5(N)	5		
BEL1	15: 1946-87	H	d'Hondt	23.48	9	211.33	SR(R)	4.8		
		L	Plurality	1	248					
		L	LR-Hare	497	1	497	5(N)	5		
		L	LR-Hare	247.75						
		L	LR-Hare	7.04	30					
NOR3	1: 1989	H	Modified Sainte-Lagu��e	11.07	28					
DEN2	3: Sept.	L	Modified Sainte-Lagu��e	165	19	165	4(N)	4		
DEN3	12: 1964-88	H	Modified Sainte-Lagu��e	5.87	23					
DEN1	4: 1945-	L	Modified Sainte-Lagu��e	7.30	1	148.50	SR(N)	1.6		
		L	d'Hondt	4.83	23					
MA13	1: 1987	H	LR-Hare	69	1	69		1.1		
		L	LR-Hare	148.50	1	148.50				

Notes:

^a See description of electoral systems on pp. 13-14, 16.

^b See description of integers used on p. 16.

^c See description of level at which the threshold is applied on p. 11.

^d SR means special rules (as explained on pp. 38-9).

^e Approximation.

(in the smaller and larger districts respectively in the first post-war Italian election), normal LR-Imperiali, and reinforced LR-Imperiali—with only two countries, Italy and Austria, providing instances of all of these formulas.³⁶

In the adjustment-seats systems, the higher-tier formulas are decisive. Like the decisive formulas in the remainder-transfer systems, they range from the least proportional to the most proportional methods. Most are divisor methods (d'Hondt in Germany and Iceland, and modified Sainte-Lagu   in Sweden and Norway) but LR-Hare has also been used fairly frequently (in Germany since 1987 and in all Danish parliamentary elections). Malta introduced a contingent higher tier before the 1987 election: if the party winning a majority of the first preference votes does not win a majority of the lower-tier seats, it receives a sufficient number of upper-level adjustment seats to ensure it a parliamentary majority. This provision became operative in the 1987 election when the Nationalist Party had to be awarded four adjustment seats to turn its narrow national vote majority into a majority of parliamentary seats. This method does not fit any of the standard PR formulas, but it comes closer to LR-Hare than to any of the other methods.³⁷

In keeping with the basic rationale of two-tier districting, the district magnitudes at the lower level are fairly small, usually less than 10 seats; Italy and, since 1971, Austria are the major exceptions. Germany has taken the idea of small lower-tier districts, providing close voter-representative contact, to its logical extreme by adopting single-member districts at the lower level. The other side of the coin, however, is that this requires a relatively large number of upper-tier seats for the purpose of proportional adjustment.³⁸ In all of the two-tier systems (assuming that, in the adjustment-seats systems, there are enough adjustment seats), the effects of small magnitude at the lower level are overridden at the higher level. At the upper level, the district magnitudes are all sizeable, ranging from a minimum of well over 20 seats to the huge national district of more than 600 seats in recent Italian elections. In about two-thirds of the two-tier systems, the upper-tier district is a national at-large district.

Without legal thresholds, such large upper-tier districts offer from very good to near-perfect proportionality and excellent opportunities for even very small parties. Four of these systems have indeed operated without legal thresholds. In the case of the 1946

Italian upper-tier district of 556 seats, this yields the lowest effective threshold—only 0.1 per cent—of any of our electoral systems. It is therefore not surprising that most of the two-tier systems do have legal thresholds. These tend to be more complex than the thresholds in single-tier systems. In order to translate them into effective thresholds, two further assumptions need to be made. One is that party support is distributed evenly across a country instead of being regionally concentrated. The other concerns the frequent use of multiple criteria for barring small parties from participating in the allocation of seats at the higher tier. When these are alternative criteria (for instance, in recent German elections, winning either 5 per cent of the national vote or three seats in the lower-tier single-member districts), the criterion that is the easiest to satisfy becomes the basis for determining the effective threshold. When they are joint criteria (for instance, in recent Italian elections, winning both 300,000 votes nationally and at least one seat at the lower tier), the effective threshold must be based on the stricter requirement.

On the basis of these assumptions, about half of the two-tier systems can be assigned effective thresholds fairly easily. For the four systems without any legal thresholds, the effective thresholds can be calculated simply from the upper-tier district magnitude (Italy in 1946, the Italian Euro-election system, Greece in 1989–90, and Malta in 1987). For the six systems with legal thresholds expressed in terms of a minimum percentage of the national vote, this percentage automatically becomes the effective threshold (the three German systems from 1953 on, Denmark since 1964, Sweden since 1970, and Norway in 1989). For Denmark from 1953 to 1960, the national threshold of 60,000 votes represented an average of approximately 2.6 per cent of the total valid vote in these three elections and hence a 2.6 per cent effective threshold. And for the first German electoral system in 1949, the 5 per cent threshold applied at the regional (*Land*) level translates, on the assumption of an even spread of party support, into a national effective threshold of 5 per cent. (This example shows that the assumption of even distribution of party support is based on an average situation. Uneven support can obviously help a small party: with 6 per cent support in one half and 3 per cent support in the other half of a country, a party would not meet a national 5 per cent threshold but would meet the regional 5 per cent barrier in half of

the country. But it could also hurt: if the percentages were 7 per cent and 4 per cent respectively, the full national minimum would be met, but the regional minimum would be met in only half of the country.)

The remaining eight systems have legal thresholds formulated in more complex special rules (marked 'SR' in Tables 2.4 and 2.5). Four patterns can be distinguished:

1. The legal threshold for receiving seats in the national higher-level district is that a party has already won at least one seat at the lower level. In the two Italian systems since 1948, a small party has been able to do so by receiving at least the respective Imperiali quota of the votes in the largest lower-level district, namely Rome; this required an average of 2.6 per cent of the vote in 1948 and 1953, but only an average of 2.0 percent later when the quota was changed from the reinforced Imperiali to the slightly higher normal Imperiali quota, but the magnitude of the Rome district was increased considerably. In the two Icelandic systems, the requirement of winning at least one lower-level seat could be achieved most easily by winning a seat in the Reykjavik district with respectively 8 and an average of 12.22 seats. The effective thresholds for these magnitudes are 8.7 and 5.8 per cent.
2. The legal threshold for receiving seats in the national district is to have won a certain minimum number of votes in one or more specified areas. The one example here is Denmark from 1945 to 1953: parties needed to win a Hare quota of the total national vote in one of the country's three regions. This could be achieved most easily in Jutland, where about 42 per cent of all votes were cast, and where about 1.6 per cent of the regional vote equalled the national Hare quota.
3. The legal threshold for receiving seats in higher-level regional districts—not a national district, in contrast with the first pattern—is winning at least one seat in one of the region's lower-level districts. The two Austrian electoral systems, with initially four and later two upper-tier districts, belong to this type. In order to convert this rule into a national effective threshold, another average assumption has to be made: between the situation where a party barely fails to win any lower-tier seats and is hence completely excluded from representation, and the situation where the party just manages to win such seats in all of the higher-tier districts and therefore fully participates in the proportional allocation of seats.

The midway point is meeting this requirement in half of the upper-tier districts (i.e. from which about half of the total assembly seats are filled) that have the largest-magnitude lower districts. In the first Austrian system, this required enough strength to win a Droop quota in a ten-member and later in an eleven-member district—yielding an effective threshold of 8.5 per cent; this threshold decreased sharply to about 2.6 per cent in the second Austrian system when a Hare quota in a much larger district varying from 36 to 42 seats in six elections was sufficient.

4. Finally, the Belgian system resembles the Austrian except for the lower minimum required at the lower tier—0.66 of a Hare quota instead of a full Hare or Droop quota—and the larger number of both lower-tier and upper-tier districts. For the rest, the logic for converting the Belgian rules into an effective threshold is the same as in the Austrian case. Meeting this requirement in a thirteen-member or, more usually, a fourteen-member district permits a party to share in the allocation of about half of the available upper-tier seats.³⁹

The earlier Tables 2.2 and 2.3 were organized in terms of increasing district magnitude. This corresponds with decreasing effective thresholds except where these are overridden by higher legal thresholds. Because the various legal thresholds are so common in two-tier systems and because they clearly and strongly override the effects of the high-magnitude upper-tier districts, the electoral systems in Tables 2.4 and 2.5 are listed in decreasing order of effective threshold—which is the most important feature that distinguishes these systems from each other.

INTERMEDIATE SYSTEMS: SEMI-PR, REINFORCED PR, AND MIXED PR-MAJORITY

The remaining six electoral systems do not fit either the majoritarian or the PR categories: semi-PR in the two Japanese systems, reinforced PR in three Greek systems from 1974 to 1985, and a mixture of PR and majority in the French system in 1951 and 1956. However, I shall argue that five of the six can be regarded as sufficiently similar to PR that they can be included in the comparative analyses of all PR systems.

The Japanese limited vote (LV) and single non-transferable vote (SNTV) systems are usually referred to as semi-PR systems, and SNTV is usually regarded as a special case of LV. 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); this is the reason why the formula is called the 'limited' vote. The more limited the number of votes each voter has, and the larger the number of seats at stake, the more LV tends to deviate from plurality and the more it resembles PR. In the 1946 LV election in Japan, each voter had only two votes in districts with 4 to 10 seats, and only three in districts with 11 to 14 seats. SNTV is the special case of LV where the number of votes cast by each voter is reduced to one. In Japan from 1947 on, SNTV has been applied in districts with an average of almost four seats. Table 2.6 presents the vital statistics of the two Japanese electoral systems.

LV and SNTV offer good opportunities for minority representation. The SNTV threshold of exclusion (the upper threshold, above which a candidate is guaranteed a seat) is the Droop quota: 20.2 per cent in the average Japanese electoral district in all elections from 1947 on. The LV upper threshold in the 1946 election was a similar 20.5 per cent.⁴⁰ LV and SNTV have the unusual property of having an extremely low threshold of representation (the threshold above which it becomes possible to win a seat): the most extreme example in, say, a three-member district would be one candidate receiving all but two of the votes, and hence obviously being elected, and two other candidates receiving one vote each—and also winning seats! For this reason, Japan has imposed a legal threshold equalling one-fourth of a Hare quota at the district level. These are still relatively low thresholds—and much lower than the effective thresholds calculated on the basis of the average district magnitudes.

In many respects, including the average district magnitude, Japanese SNTV resembles Irish STV. The principal difference, of course, is that SNTV appears to be less proportional because no votes can be transferred. However, this disproportionality does not stem from the usual cause of discrimination against the smaller parties. In fact, the non-transfer of votes among candidates tends to present a considerable problem for the larger parties: a large

TABLE 2.6. The Japanese limited vote and single non-transferable vote systems, 1946-90

Electoral system ^a	Number and years of elections	Electoral formula	Districts	Number of districts	Assembly size	Legal threshold N/R/D ^b (%)	Effective threshold (%)
JPNI	1: 1946 17: 1947-90	Limited vote	8.75	53	464	2.9(D)	8.0
JPN2		SNTV	3.95	122.94	486.06	6.3(D)	16.4

^a See description of electoral systems on pp. 13-14, 16.

^b See description of integers used on p. 16.

^c See description of level at which the threshold is applied on p. 11.

Notes:

party has to make sure not to nominate too many candidates (which may cause these candidates to lose in spite of a high total vote for the party's candidates) and to have its voters cast their votes as evenly as possible for its candidates. In contrast, a small party only needs to nominate one candidate in order to maximize its chances of winning a seat. And, in LV systems, a small party only needs to nominate as many candidates as the number of votes that each voter has. Therefore, as far as their political effects are concerned, SNTV and LV can be regarded more legitimately as unusual forms of PR and not highly proportional forms of PR—but more as a result of their relatively small magnitudes and high effective thresholds than because of their electoral formulas—than as non-PR systems. Unless specifically stated otherwise, I shall include them in all future comparisons of PR systems, and I shall group them together with the Irish and Maltese STV systems.⁴¹

As noted in Chapter 1, PR systems are all too readily characterized as highly complex. But this description does fit Greek reinforced PR from 1974 to 1985.⁴² These three systems are also quite idiosyncratic, but they can still be made comparable to the mainstream PR systems. Let me use the first Greek system, used in the 1974 election, as the basic example. For clarity's sake, I shall focus on the principal rules and omit the many minor details and special provisions.

Superficially, the system looks like a four-tier remainder-transfer system: seats not allocated at lower tiers by the Hare quota are transferred to higher tiers (with the exception of the fourth tier, consisting of the 12 so-called 'State seats', which are awarded separately on the basis of the parties' national vote totals). The big difference with remainder-transfer systems is that the remaining seats are transferred, but not the remaining votes. At the middle and high tiers, the remaining seats are allocated on the basis of the parties' vote totals instead of their remaining votes. This means that, in a typical lower-tier district with five seats and four sizeable parties (a reasonable assumption for the Greek situation), the average remainder would be half a Hare quota, and the total remaining votes would add up to two Hare quotas: only three seats would be allocated, and all of the remaining votes would be lost. The crucial point to understand here is that this system effectively operates like d'Hondt (which, as explained earlier in this chapter and in Appendix A, also disregards all remaining

votes) in a district that is considerably smaller than its formal district magnitude.

At the middle tier, this process is repeated: the seats transferred to this level are allocated on the basis of the parties' votes and Hare quotas in nine districts. And, at the third tier, the transferred seats are again allocated on the same basis, but now all still remaining seats are given to the largest party—a formula much closer to d'Hondt than LR-Hare. At these two levels, an additional disadvantage for small parties is the 17 per cent national threshold.⁴³

At each tier (including, as indicated above, the highest tier of State seats), the results are calculated on the basis of the parties' vote totals. This means—the second crucial point that must be emphasized—that the parliamentary election takes the form of four separate and parallel elections of four mini-assemblies.

The 1974 Greek system is presented in these terms in Table 2.7. The lower districts have a formal average magnitude of 5.14 seats (the total assembly size of 300 seats less the 12 State seats, divided by the 56 districts), but 2 seats are assumed to go to the second level—which means that the estimated true district magnitude is only 3.14 and that, while the quota that is applied is the Hare quota, the true formula is not LR-Hare but d'Hondt. At the next level, there are now assumed to be 112 seats in 9 districts—an average formal magnitude of 12.44 but an estimated true magnitude of only 10.44. And, at the third level, the still remaining estimated number of 18 seats are allocated.⁴⁴ The effective threshold at each level is based on the district magnitude or the legal threshold of 17 per cent, whichever is higher. The overall characteristics of the system are the dominant formula (d'Hondt) and the weighted averages (weighted according to the number of seats allocated at each level) of the effective thresholds and the 'assembly sizes' of the four parallel mini-assemblies.

The description of the second and fourth Greek systems in Table 2.7 follows the same logic. The only important change in the second system was the substitution of the Droop for the Hare quota at the lower tier. Assuming the same typical lower-tier district with five seats and four sizeable parties, the average remainder is now half a Droop quota and the total remaining votes, adding up to two Droop quotas, are still lost, but, because of the lower quota, four instead of three seats can be allocated. This was a major change because it made the system considerably less disproportional—by

increasing the lower-tier magnitude by an estimated one seat (and hence decreasing the effective threshold at this tier as well as the weighted mean for the whole system) and by increasing the weighted assembly size by more than a third. The main change in the fourth Greek system was the abolition of the 17 per cent legal threshold—again a substantial shift away from disproportionality because it lowered the effective thresholds at the three higher levels and, as a result, also the weighted average.⁴⁵ Recast in terms of these measurements, the three Greek systems can be compared with the other PR systems. In spite of the deceptive label of ‘reinforced’ PR, these systems are not highly proportional—as a result of the use of d’Hondt, low district magnitudes, and high effective thresholds—but still, like the Japanese systems, permitting an appreciable degree of proportionality and minority representation.

Finally, the French electoral system used in the 1951 and 1956 elections may also be called a reinforced PR system—reinforced not to help the largest parties, as in Greece, but the medium-sized parties in the political centre. Unlike the Greek systems, unfortunately, it cannot be made amenable to comparative analysis together with the other PR systems.

It was engineered by the centre parties in order to maximize their own representation and to discriminate against the big parties on the left and right, the Communists and Gaullists. One of the devices they used for this purpose was *apparement*: the possibility of linking two or more party lists, and of thereby gaining the advantage that majoritarian and most PR systems give to large parties, but without having to present joint lists. And while *apparements* could in principle be negotiated between any two or more parties, they constituted a much more feasible option for the centre parties than for the extreme right and left. The second device was the majority principle: if one party would win an absolute vote majority in a multi-member district, that party would win all seats; failing a one-party victory (an unlikely outcome in a multi-party system), all seats would be given to the *apparentement* with a majority of the votes. If neither type of majority materialized, the system would revert to PR with the d’Hondt formula, but their *apparements* would still give the centre parties the same advantage that d’Hondt gives to the larger parties. This was the system everywhere except in the eight electoral districts in the Paris

Electoral system ^a	Number and Tier	Electoral District	Years of elections	Assembly size, 1974–85	Effective formula ^b	Magnitude ^c	Number of districts	Size ^d	Threshold	Effective threshold (%)	Weighted mean	
											GRE1	1: 1974
GRE1					H	d'Hondt	10.44	9	94	17(N)	GRÉ2	2: 1977–81
					M	d'Hondt	18.00	1	18	17(N)		L
					S	LR-Hare	12	1	12	17(N)		d'Hondt
					H	d'Hondt	4.22	9	38	17(N)		4.14
					M	d'Hondt	18.00	1	18	17(N)		5.30
					S	LR-Hare	12	1	12	17(N)		184.77
					H	d'Hondt	4.22	9	38	17(N)		16.1
					M	d'Hondt	18.00	1	18	17(N)		14.7
					S	LR-Hare	12	1	12	17(N)		17(N)
					H	d'Hondt	4.22	9	38	17(N)		17(N)
					M	d'Hondt	18.00	1	18	17(N)		17(N)
					S	LR-Hare	12	1	12	17(N)		17(N)
					H	d'Hondt	4.22	9	38	17(N)		17(N)
					M	d'Hondt	18.00	1	18	17(N)		17(N)
					S	LR-Hare	12	1	12	17(N)		17(N)
					H	d'Hondt	4.22	9	38	17(N)		17(N)
					M	d'Hondt	18.00	1	18	17(N)		17(N)
					S	LR-Hare	12	1	12	17(N)		17(N)
					H	d'Hondt	4.22	9	38	17(N)		17(N)
					M	d'Hondt	18.00	1	18	17(N)		17(N)
					S	LR-Hare	12	1	12	17(N)		17(N)
					H	d'Hondt	4.22	9	38	17(N)		17(N)
					M	d'Hondt	18.00	1	18	17(N)		17(N)
					S	LR-Hare	12	1	12	17(N)		17(N)
					H	d'Hondt	4.22	9	38	17(N)		17(N)
					M	d'Hondt	18.00	1	18	17(N)		17(N)
					S	LR-Hare	12	1	12	17(N)		17(N)
					H	d'Hondt	4.22	9	38	17(N)		17(N)
					M	d'Hondt	18.00	1	18	17(N)		17(N)
					S	LR-Hare	12	1	12	17(N)		17(N)
					H	d'Hondt	4.22	9	38	17(N)		17(N)
					M	d'Hondt	18.00	1	18	17(N)		17(N)
					S	LR-Hare	12	1	12	17(N)		17(N)
					H	d'Hondt	4.22	9	38	17(N)		17(N)
					M	d'Hondt	18.00	1	18	17(N)		17(N)
					S	LR-Hare	12	1	12	17(N)		17(N)
					H	d'Hondt	4.22	9	38	17(N)		17(N)
					M	d'Hondt	18.00	1	18	17(N)		17(N)
					S	LR-Hare	12	1	12	17(N)		17(N)
					H	d'Hondt	4.22	9	38	17(N)		17(N)
					M	d'Hondt	18.00	1	18	17(N)		17(N)
					S	LR-Hare	12	1	12	17(N)		17(N)
					H	d'Hondt	4.22	9	38	17(N)		17(N)
					M	d'Hondt	18.00	1	18	17(N)		17(N)
					S	LR-Hare	12	1	12	17(N)		17(N)
					H	d'Hondt	4.22	9	38	17(N)		17(N)
					M	d'Hondt	18.00	1	18	17(N)		17(N)
					S	LR-Hare	12	1	12	17(N)		17(N)
					H	d'Hondt	4.22	9	38	17(N)		17(N)
					M	d'Hondt	18.00	1	18	17(N)		17(N)
					S	LR-Hare	12	1	12	17(N)		17(N)
					H	d'Hondt	4.22	9	38	17(N)		17(N)
					M	d'Hondt	18.00	1	18	17(N)		17(N)
					S	LR-Hare	12	1	12	17(N)		17(N)
					H	d'Hondt	4.22	9	38	17(N)		17(N)
					M	d'Hondt	18.00	1	18	17(N)		17(N)
					S	LR-Hare	12	1	12	17(N)		17(N)
					H	d'Hondt	4.22	9	38	17(N)		17(N)
					M	d'Hondt	18.00	1	18	17(N)		17(N)
					S	LR-Hare	12	1	12	17(N)		17(N)
					H	d'Hondt	4.22	9	38	17(N)		17(N)
					M	d'Hondt	18.00	1	18	17(N)		17(N)
					S	LR-Hare	12	1	12	17(N)		17(N)
					H	d'Hondt	4.22	9	38	17(N)		17(N)
					M	d'Hondt	18.00	1	18	17(N)		17(N)
					S	LR-Hare	12	1	12	17(N)		17(N)
					H	d'Hondt	4.22	9	38	17(N)		17(N)
					M	d'Hondt	18.00	1	18	17(N)		17(N)
					S	LR-Hare	12	1	12	17(N)		17(N)
					H	d'Hondt	4.22	9	38	17(N)		17(N)
					M	d'Hondt	18.00	1	18	17(N)		17(N)
					S	LR-Hare	12	1	12	17(N)		17(N)
					H	d'Hondt	4.22	9	38	17(N)		17(N)
					M	d'Hondt	18.00	1	18	17(N)		17(N)
					S	LR-Hare	12	1	12	17(N)		17(N)
					H	d'Hondt	4.22	9	38	17(N)		17(N)
					M	d'Hondt	18.00	1	18	17(N)		17(N)
					S	LR-Hare	12	1	12	17(N)		17(N)
					H	d'Hondt	4.22	9	38	17(N)		17(N)
					M	d'Hondt	18.00	1	18	17(N)		17(N)
					S	LR-Hare	12	1	12	17(N)		17(N)
					H	d'Hondt	4.22	9	38	17(N)		17(N)
					M	d'Hondt	18.00	1	18	17(N)		17(N)
					S	LR-Hare	12	1	12	17(N)		17(N)
					H	d'Hondt	4.22	9	38	17(N)		17(N)
					M	d'Hondt	18.00	1	18	17(N)		17(N)
					S	LR-Hare	12	1	12	17(N)		17(N)
					H	d'Hondt	4.22	9	38	17(N)		17(N)
					M	d'Hondt	18.00	1	18	17(N)		17(N)
					S	LR-Hare	12	1	12	17(N)		17(N)
					H	d'Hondt	4.22	9	38	17(N)		17(N)
					M	d'Hondt	18.00	1	18	17(N)		17(N)
					S	LR-Hare	12	1	12	17(N)		17(N)
					H	d'Hondt	4.22	9	38	17(N)		17(N)
					M	d'Hondt	18.00	1	18	17(N)		17(N)
					S	LR-Hare	12	1	12	17(N)		17(N)
					H	d'Hondt	4.22	9	38	17(N)		17(N)
					M	d'Hondt	18.00	1	18	17(N)		17(N)
					S	LR-Hare	12	1	12	17(N)		17(N)
					H	d'Hondt	4.22	9	38	17(N)		17(N)
					M	d'Hondt	18.00	1	18	17(N)		17(N)
					S	LR-Hare	12	1	12	17(N)		17(N)
					H	d'Hondt	4.22	9	38	17(N)		17(N)
					M	d'Hondt	18.00	1	18	17(N)		17(N)
					S	LR-Hare	12	1	12	17(N)		17(N)
					H	d'Hondt	4.22	9	38	17(N)		17(N)
					M	d'Hondt	18.00	1	18	17(N)		17(N)
					S	LR-Hare	12	1	12	17(N)		17(N)
					H	d'Hondt	4.22	9	38	17(N)		17(N)
					M	d'Hondt	18.00	1	18	17(N)		17(N)
					S	LR-Hare	12	1	12	17(N)		17(N)
					H	d'Hondt	4.22	9	38	17(N)		17(N)
					M	d'Hondt	18.00	1	18	17(N)		17(N)
					S	LR-Hare	12	1	12	17(N)		17(N)
					H	d'Hondt	4.22	9	38	17(N)		17(N)
					M	d'Hondt	18.00	1	18	17(N)		17(N)
					S	LR-Hare	12	1	12	17(N)		17(N)
					H	d'Hondt	4.22	9	38	17(N)		17(N)
					M	d'Hondt	18.00	1	18	17(N)		17(N)
					S	LR-Hare	12	1	12	17(N)		17(N)
					H	d'Hondt	4.22	9	38	17(N)		17(N)
					M	d'Hondt	18.00	1	18	17(N)		17(N)
					S	LR-Hare	12	1	12	17(N)		17(N)
					H							

region, where the centre parties were too weak to be able to profit from the majority rule. Hence the very opposite system was engendered: no *apparentements*, no majority rule, and LR-Hare in relatively large districts.

Table 2.8 provides the basic facts for the 1951–6 French system. For Paris, the system was a straightforward LR-Hare system. For the rest of the country, the results are broken down according to whether PR-d'Hondt or the majority rule operated in the districts. The figures are averages for the two elections. The majority rule came into force in 40 districts, with 173 seats, in 1951, but in only 11 districts, with 59 seats, in 1956.⁴⁶ The average district magnitude of the majority-rule districts (4.84 seats) as well as the range of magnitudes of these districts (from 2 to 10 seats) appear to contradict my earlier statement concerning the rarity of the use of majoritarian formulas in larger than single-member districts. However, in only one case was there a majority party that won all the seats—in a two-member district in 1951; all other majority winners were majority *apparements* of two or more parties which then divided up the seats won among themselves according to the respective strengths of their separate party lists. (For this reason, I have computed the effective threshold for the majority districts as if they were PR districts, instead of assigning them the arbitrary 35 per cent attributed to the other majoritarian systems.)

Although more than three-fourths of the seats were allocated by PR, the majority-rule component in these elections was still so strong and its application so interwoven with PR in the areas outside of Paris, that it is impossible to disentangle them. Moreover, the two PR formulas belong to opposite extremes. For these reasons, the mixed French system used in the 1951 and 1956 elections will have to be left out of most of the analyses in Chapters 4 and 5, for instance, when the effects of PR and majoritarian systems are compared and when PR systems are compared with each other.

TABLE 2.8. The French mixed PR-majority system, 1951–6

FR2		2: 1951-6	Paris	LR-Hare	9.38	8	75	France	Mixed	5.28	103	544	12.7
			Other	d'Hondt	5.13	69.50	353.00	Majority	4.84	25.50	116.00	13.0	
			Other	d'Hondt	5.13	69.50	353.00	Majority	4.84	25.50	116.00	13.0	
			Other	d'Hondt	5.13	69.50	353.00	Majority	4.84	25.50	116.00	13.0	
			Other	d'Hondt	5.13	69.50	353.00	Majority	4.84	25.50	116.00	13.0	

Notes:

^a See description of electoral systems on pp. 13–14, 16.

^b See description of integer used on p. 16.

^c Approximation.

^d See description of level at which the threshold is applied on p. 11.

GENERAL PATTERNS

By presenting the seventy electoral systems in terms of groups of systems with similar key characteristics (majoritarian versus

PR systems, d'Hondt versus other PR formulas, one-tier versus two-tier systems) and, within each group, according to other important features (district magnitude and effective threshold), I have already implicitly pointed at some of the general patterns in the electoral systems used by the twenty-seven stable democracies in the 1945–90 period (for their national first-chamber or only-chamber elections). In this section, I shall treat these general patterns in an explicit and systematic manner.

The most striking general aspect of the electoral formulas is their widely different frequency of application. Of the three major categories, PR has been used in about three-fourths of the systems: of the seventy systems, fifty-two are unambiguously PR, and this number rises to fifty-five if the three reinforced PR systems of Greece are added. Majoritarian formulas have been used in twelve systems, and semi-PR only twice, in Japan. Within the broad majoritarian and PR categories, some formulas have never been used—even such well-known possibilities as the majority run-off,⁴⁷ the pure Sainte-Laguë, the STV with a quota other than the Droop quota, and the cumulative vote⁴⁸—while, among those that have been in use, two account for more than half of the cases: plurality has been far more prevalent than the other two majoritarian formulas together (in seven out of twelve systems and, even more strikingly, in five out of seven countries), and d'Hondt has been used more often than all of the other divisor, quota, and STV systems combined (in twenty-seven out of fifty-two PR systems and, if reinforced PR is added, in thirty out of fifty-five PR systems). The same general pattern of uneven usage also occurs with regard to district magnitudes. Majoritarian formulas can in principle be applied in districts ranging from single-member to at-large. In practice, single-member districts have been the rule; two-member districts have been rare, larger multi-member districts even more exceptional, and at-large elections have never been used. The theoretical range for PR systems is from two-member districts to at-large, and most of this range has actually been used, but the lowest magnitudes of between 2 and 5 seats have been rare. Of the fifty-two unambiguous PR systems, only two have used average magnitudes (the higher-tier magnitudes in the case of two-tier districts) of less than 5 seats, and only fifteen have used average magnitudes of less than 10 seats. This means that both majoritarian and PR systems have avoided district magnitudes that seriously

limit proportionality and raise disproportionality. Two general conclusions emphasized by Rae are that all electoral systems tend to be disproportional, but that some (especially majoritarian ones) tend to be more disproportional than others (especially PR).⁴⁹ A third, partly contradictory, conclusion could be added: as a result of their choice of district magnitudes, all electoral systems are reasonably proportional—or at least far less disproportional than they could potentially be made to be.

We do find many relatively small lower-tier districts in two-tier PR systems, but their effects are overridden at the higher level. As stated earlier, the most important reason for instituting two-tier districting is to combine the advantage of closer voter-representative contact in smaller districts with the greater proportionality of larger districts. Comparing single-tier and two-tier systems, we would therefore generally expect lower-tier magnitudes to be lower and upper-tier magnitudes to be higher than the magnitudes of one-tier systems. This is indeed the case. The means for the twenty two-tier systems are 8.28 and 207.83 seats, compared with a mean of 35.70 seats in the thirty-two one-tier systems. The medians can express these differences more sensitively; they are 6.37 and 91.50 in the two-tier systems, and 12.20 in the single-tier systems.

Legal thresholds can take away the proportionalizing effect of large district magnitude again and, not surprisingly, thresholds are most common in two-tier systems and in high-magnitude single-tier systems. These legal thresholds tend not to be excessively high, however; the 17 per cent thresholds in the Greek reinforced PR systems are exceptional. The highest legal threshold among the fifty-two unambiguous PR systems is only 8.7 per cent. It is instructive to compare the effective thresholds of these systems: the average effective threshold of the twenty-eight PR systems that do not have legal thresholds (that is, where the effective threshold is entirely based on the district magnitude) is 7.5 per cent; in the twenty-four systems with legal thresholds it is 3.8 per cent. The medians are 8.4 and 4.0 per cent respectively. This means that while legal thresholds do raise the effective thresholds, they do not raise them to the level, or even close to the level, of the systems without legal thresholds.

The fourth and final major dimension of the electoral system on which this study focuses—assembly size—varies a great deal.

The parliaments (lower or only houses) range in total membership from 40 in Malta until the mid-1950s to an average of 632.85 in the United Kingdom during the entire 1945–90 period (650 in the 1987 election). The sizes of the national delegations to the European Parliament range from 6 to 81. These numbers are closely related to population sizes: large countries tend to have larger parliaments than smaller countries, and the larger members of the European Community have larger Euro-delegations than the smaller members—although the smaller countries are still considerably overrepresented. Taagepera has suggested and proved an even more specific and quite remarkable relationship: the cube root law of assembly sizes. This law holds that assembly size tends to be roughly the cube root of the population size.⁵⁰ The delegations to the European Parliament are all considerably smaller than the national Parliaments, of course—closer to a fourth root than a cube root relationship.⁵¹

EMPIRICAL LINKS AMONG THE DIMENSIONS

In Chapters 4 and 5, I shall analyse the influence of the electoral system dimensions on proportionality and multipartism. I shall do so by means of multivariate comparisons in order to control for any empirical relationships among the independent variables themselves. At this point, however, let us take a direct look at the mutual relations of these independent variables: the electoral formula, the effective threshold (as a composite variable based on legal thresholds and district magnitudes), and assembly size. As in later chapters, I shall include Japanese semi-PR and Greek reinforced PR among the PR systems (reinforced PR as a d'Hondt and semi-PR as a non-d'Hondt formula), but I shall also report the results for the fifty-two unambiguous PR systems without semi-PR and reinforced PR (by means of endnotes); the latter option never materially affects the results. The mixed system used by France in the 1951–6 period will be omitted.

The strongest relationship is between the two major categories of electoral formula (majoritarian versus PR systems) on the one hand and the effective threshold on the other. The twelve majoritarian systems all have an effective threshold of 35 per cent

compared with an average effective threshold of only 6.6 per cent for the fifty-seven PR systems; the respective medians are 35 and 5 per cent.⁵² As explained earlier, the 35 per cent threshold for the majoritarian systems is an arbitrarily assigned estimate, and a reasonable argument could be made that the estimate should be lower, perhaps as low as 30 per cent. However, even this lower percentage clearly does not change the stark contrast between the majoritarian and PR systems in this respect.

One might plausibly surmise that, within the broad category of PR systems, there would be a similar difference between the less proportional (d'Hondt and LR-Imperial) and the more proportional formulas (all other formulas, including the combination of LR-Droop and LR-Imperiali used in Italy in 1946). This turns out not to be the case. The average effective threshold of 6.5 per cent in the d'Hondt and LR-Imperiali systems is actually lower than the 6.7 per cent threshold in the other PR systems, but the difference is slight and not statistically significant. The medians are an identical 5.0 per cent.⁵³

The majoritarian-PR dichotomy is also related, but much less strongly, to assembly size. Table 2.1, which lists the majoritarian systems, suggests such a relationship because it includes some of the largest countries with, consequently, the largest assemblies: India, the United States, the United Kingdom, and France. The average assembly size of the majoritarian systems is indeed well above that of the PR systems: about 323 compared with about 202 members. The respective medians are even farther apart: about 352 versus 152 members.⁵⁴ However, the correlation coefficient between the majoritarian-PR contrast as a dummy variable and assembly size is only 0.25 (statistically significant at the 5 per cent level in a two-tailed test, but only barely). Because of the wide range of assembly sizes with a concentration of cases at the lower end of the range, it is more appropriate to use the logged than the raw assembly sizes. This reduces the correlation coefficient slightly to 0.23 (which is no longer statistically significant). Nevertheless, the important substantive conclusion is that the tendency to dispropportionality of systems with majoritarian formulas is to a small extent compensated by their larger assembly sizes.

Again, there is no corresponding difference between the more and less proportional PR formulas. The mean assembly size of the d'Hondt and LR-Imperiali systems is about 211, and of the other

PR systems about 191 members. The medians are an almost identical 150 and 152 respectively.⁵⁵

To turn to the third leg of the triad, we would expect a positive relationship between the effective threshold and assembly size on the basis of our earlier findings of positive relationships between the majoritarian-PR difference and both effective threshold and assembly size. For all 69 cases, the correlation coefficient is indeed a positive 0.22, and the correlation between logged assembly size and effective threshold is a similarly positive 0.19, but neither correlation is statistically significant. Among the fifty-seven PR systems, the two dimensions are almost completely unrelated. The only strong relationship that we have discovered among our three electoral system dimensions, therefore, is the link between electoral formula and effective threshold, and this relationship is strong only if the formula is defined in terms of the majoritarian-PR dichotomy. On the other hand, the relationship is so strong (the correlation coefficient is a highly significant 0.92) that this finding has major consequences for the multivariate analysis in Chapter 5: in order to avoid the problem of multicollinearity, the two variables cannot be entered together as independent variables in any multivariate regression equations.

TRENDS

One of the best-known generalizations about electoral systems is that they tend to be very stable and to resist change. In particular, as Dieter Nohlen has emphasized, ‘fundamental changes are rare and arise only in extraordinary historical situations’.⁵⁶ The most fundamental change that Nohlen has in mind is the shift from plurality to PR or vice versa. Indeed, in our universe of twenty-seven countries from 1945 to 1990, this kind of change has not just been rare but completely absent. And only one country—France—has experienced changes back and forth between a majoritarian system and PR.

As far as less fundamental changes are concerned, our twenty-seven countries do show considerable variability by producing seventy different electoral systems—an average of more than two and a half electoral systems per country. And, while these may not

be what Nohlen calls ‘fundamental’ changes, they are not minor changes either: they entail clear changes in electoral formula and/or changes of at least 20 per cent on the other dimensions. But the countries differ considerably with regard to their predilection for change: the number of electoral systems per country ranges from one to six.

Three broad categories, based on the presentation of the electoral system characteristics in Tables 2.1 to 2.8, can be distinguished. The first consists of countries that had only one electoral system during the entire 1945–90 period: three plurality countries (Canada, New Zealand, and the United States) and two PR countries (Finland and Switzerland). To these should be added the six countries in which the only change was the adoption of a new system for the European Parliament elections: Belgium, Ireland, Luxembourg, Portugal, Spain, and the United Kingdom. Because the sizes of the Euro-delegations was set at a level far below the sizes of the national parliaments, this change necessarily produced a new electoral system according to my criteria. It should be noted, however, that only Ireland and the United Kingdom adopted Euro-election systems that are true miniatures of their parliamentary election systems; the other four also adjusted their effective thresholds.

The second broad group consists of countries that changed but did not completely overhaul their electoral systems: two with majoritarian systems (Australia and India), one with semi-PR (Japan), and five PR countries (Austria, Costa Rica, Iceland, Italy, and the Netherlands). Each of these countries could be easily accommodated within the same table earlier in this chapter. Two countries fit this description except for their Euro-elections: Denmark and Germany. They can therefore also be placed in this middle category (although Germany had no less than six different electoral systems). Six countries that experienced the most radical changes, and whose parliamentary election systems had to be included in more than one table, make up the final group. France and Greece are the clear leaders with major shifts from PR to majority-plurality systems and vice versa (France) and from reinforced PR to a highly proportional form of PR (Greece); moreover, Greece used five different systems from 1974 to 1990—which is, in relative terms, a much larger number than the six used by France (and by Germany) in a time-span of more than forty years. The others are

Israel, Malta, Norway, and Sweden. The Norwegian and Swedish cases are especially important because their reforms represent broader trends: the establishment of two-tier districting systems (also adopted by Malta on a contingency basis), the abandonment of the d'Hondt in favour of a more proportional formula (as in Germany and Greece), and the adoption of a 4 per cent national threshold. As far as the last reform is concerned, Germany was the only country in the 1950s that had a 5 per cent national threshold for its parliamentary elections; since then, national thresholds of 4 or 5 per cent have been adopted not only by Norway and Sweden but also, for their Euro-elections, by France, Germany, and the Netherlands.

The above changes point to a trend of greater proportionality in electoral systems. Let us examine these trends systematically in terms of the three basic dimensions. The clearest patterns appear with regard to assembly size. The only significant (that is, 20 per cent or greater) changes in the total memberships of the national parliaments are increases: in Australia (twice), Germany, Malta, the Netherlands, and Sweden.⁵⁷ On the other hand, all of the new systems adopted for the Euro-elections entailed substantial decreases.

The patterns of changes in electoral formula and significant (20 per cent or greater) changes in effective threshold are more complex. They are shown in Table 2.9, subdivided according to (1) changes in parliamentary election systems versus changes to or in Euro-election systems and (2) changes to more versus less proportional features. Several instances of change appear twice; for instance, the shift from the first to the second Austrian electoral system entailed the adoption of both a more proportional formula and a lower threshold. For the sake of simplicity, however, the major system shifts in France are listed only as changes in formula. Overall, the trend has been to greater proportionality: adoptions of more proportional formulas and thresholds for parliamentary elections have been twice as numerous as the adoption of less proportional rules, and almost the same statement can be made for the adoption of Euro-election rules. No plurality countries are included in Table 2.9, but it is worth recalling that plurality systems have also tended to greater proportionality—or, more accurately, less disproportionality—as a result of the universal abolition of multi-member districts.

TABLE 2.9. Changes in ectoral formulae and effective thresholds in 21 countries, 1945-90

Dimension of change	Parliamentary elections	European elections	Less proportional	More proportional	Less proportional	More proportional	Less proportional	More proportional
Electoral formula	FRA1-2	AUT1-2	DEN3-4E	FRA3-4E	FRA4-6E	GER4E-6E	FRA2-3	GER2-3E
threshold	FRA1-2	FRA2-3	FRA3-5	GER3-5	GR4-5	GR2-3	ITR1-2	ITR3-4E
Effective	DEN1-2	BEL1-2E	AUT1-2	SWE1-2	NOR1-2	MAL2-3	ITA2-3	GRE2-3E
	GRE2-3E	ITR3-4E	CR1-2	DEN2-3	LUX1-2E	DEN2-3	ITR1-2	POR1-2E
	ISRI-2	ISRI-2	DEN3-4E	GR4-5	NET2-3E	NET2-3E	PN1-2	SPA1-2E
	ITR1-2	ITR1-2	ITR1-2	GR4-5	ICEL-2	ICEL-2		
					NET1-2	MAL2-3		
					NET1-2	NOR2-3		
						SWE2-3		

Another way of summarizing the major trends in systems for parliamentary elections is to compare the system used for the first with that for the last election in each country in the 1945–90 period. Of the sixteen countries that underwent changes, only five ended up with a less proportional system than they started out with: France, Denmark, Israel, Italy, and Japan. Moreover, with the exception of France and Japan, the shifts away from proportionality were relatively small, mainly involving minor increases in effective thresholds. Eleven countries ended up with more proportional systems: Australia, Austria, Costa Rica, Germany, Greece, Iceland, India, Malta, the Netherlands, Norway, and Sweden.

It is by no means certain, of course, that these trends will persist. For the 1992 elections, Israel increased its national threshold from 1 to 1.5 per cent, and Malta did not have to use its contingent upper tier. Following its highly proportional 1990 election, Greece has already changed its electoral law back to reinforced PR. And in 1992 Austria adopted a new electoral law with a national threshold of 4 per cent—higher than its previous effective threshold of 2.6 per cent (see Table 2.4). However, regardless of the strength of the trend towards greater proportionality, it is clear that many countries are making, if not fundamental reforms, at least major adjustments in their electoral laws. It is important to describe these not just in terms of their basic tendencies towards proportionality or disproportionality—as I have done throughout this chapter—but to measure the influence of the three electoral system dimensions on the proportionality of election outcomes and on multipartism as precisely as possible. This will be the task of Chapters 4 and 5, after the various indices of proportionality and multipartism are presented in Chapter 3.

Disproportionality, Multipartism, and Majority Victories

THE two main political consequences of electoral systems on which this study focuses are (1) their effects on the proportionality or disproportionality of the electoral outcomes and (2) their effects on the party system, particularly the degree of multipartism and the tendency to generate majority victories. Four measures will be proposed and applied for each of these effects.

Disproportionality means the deviation of parties' seat shares from their vote shares, and it appears *prima facie* to be a simple and straightforward concept, while multipartism and other party system characteristics appear to be considerably more complex and multifaceted. Rather surprisingly, however, the question of how best to measure disproportionality has been much more difficult and controversial than the question of how to measure the key party system characteristics. As a consequence, the four indices of disproportionality that I shall present in this chapter are alternative ways of trying to measure the same phenomenon. I shall argue that one of them—the least-squares measure—is preferable to the others, and I shall rely on it as my principal measure of disproportionality in Chapters 4 and 5. But I shall also occasionally report the results for the other indices, and the values of all four are listed in Appendix B—allowing readers who prefer one of the alternatives to do their own reanalysis of the data with their favourite index. In contrast, the four measures of party system characteristics are measures of different, albeit not unrelated, aspects of the party systems: the effective number of elective parties, the effective number of parliamentary parties, the tendency of the electoral system to manufacture a parliamentary majority for parties that have not received majority support from the voters, and the tendency to generate a parliamentary majority party regardless of whether the party's majority of the seats was manufactured or earned.

MEASURES OF DISPROPORTIONALITY

The measures of the deviation of seat shares from vote share may be alternatively referred to as measures of proportionality-disproportionality—two sides of exactly the same coin. I shall generally use the latter term because the values of all indices increase with increasing disproportionality. All of the measures have the same point of departure: they begin by noting the differences between the percentages of the seats and the percentages of the votes received by the different parties; these (absolute) differences are listed for each party in the three hypothetical election results presented in Table 3.1. But the measures disagree on how these seat and vote share deviations should be aggregated. The oldest measure (I), proposed by Douglas W. Rae,¹ simply uses the average of the deviations; that is, it sums the absolute differences between the vote percentages (v_i) and seat percentages (s_i), and then divides by the number of parties (n):

$$I = \frac{1}{n} \sum |v_i - s_i|$$

A big problem with the Rae index is that it is overtly sensitive to the presence of very small parties. Examples A and B in Table 3.1 both have two large parties that are equally overrepresented or underrepresented, but in B ten small parties have also participated although quite unsuccessfully—receiving only 1 per cent of the vote each and no seats. As a result, the average deviation goes down considerably—and quite deceptively—from 5 per cent to 1.67 per cent. In general, the Rae index has the tendency to underestimate the disproportionality of systems with many small parties and, as a result, tends to underestimate the disproportionality of PR systems which generally have more small parties than non-PR systems. As Richard S. Katz has pointed out, ‘at the extreme, if the infinite number of (hypothetical) parties that receive no votes and obtain no seats is included, every electoral system would appear perfectly proportional’.² Rae tries to avoid this problem by regarding parties with less than 0.5 per cent of the vote, but an arbitrary cut-off point is still quite low; it does not change the calculation of his index in hypothetical situation B at all. Rae is also forced to exclude any small parties that are lumped together.

Example	Number of parties	Votes (%)	Seats (%)	Difference (%)
A	1	55	60	5
		I (Rae index) = 5.00	D (Loosmore-Hanby index) = 5.00	
B	10	50	55	5
		I (Rae index) = 1.67	D (Loosmore-Hanby index) = 10.00	
	1	40	45	5
		I (Rae index) = 2.00	D (Loosmore-Hanby index) = 5.00	
C	5	10	11	1
		I (Rae index) = 1.00	D (Loosmore-Hanby index) = 5.00	
	1	16	16	0
		I (Rae index) = 1.13	D (Loosmore-Hanby index) = 5.48	
	5	15	16	1
		I (Rae index) = 1.20	D (Loosmore-Hanby index) = 2.24	

TABLE 3.1. Three hypothetical election results and five measures of disproportionality

as 'other' parties in election statistics, because it is impossible to calculate the individual differences between vote and seat share of these parties, and it would be incorrect and lead to misleading results to treat these 'other' parties like a single party.

An index that avoids Rae's problem and that has become the most widely used measure of disproportionality was proposed by John Loosemore and Victor J. Hanby.³ Their index (D) is the total percentage by which the overrepresented parties are overrepresented—which is, of course, the same as the total percentage of underrepresentation. In contrast with the Rae index, which registers the average deviation from proportionality per party, the Loosemore–Hanby index registers the total deviation. In order to calculate the Loosemore–Hanby index, the absolute values of all vote–seat share differences are added, as for the Rae index, but then divided by 2, instead of Rae's division by the number of parties:

$$D = \frac{1}{2} \sum |v_i - s_i|$$

Hence, except in the hypothetical case of a pure two-party system such as example A in Table 3.1, the Loosemore–Hanby index will always yield higher values than the Rae index.

The Loosemore–Hanby index represents the difference between examples A and B much more satisfactorily than the Rae index since the value of the index goes up instead of down. On the other hand, it tends to err in the opposite direction of exaggerating the disproportionality of systems with many parties—and hence of overstating the disproportionality of PR systems; for instance, it yields exactly the same value of 5 per cent for the highly disproportional situation A and the highly proportional situation C in Table 3.1. One minor but attractive advantage of the Loosemore–Hanby index is that it does not have to disregard the 'other' small parties, since these can all be safely assumed to be underrepresented instead of overrepresented parties.

An excellent solution was proposed recently by Michael Gallagher. His least-squares index (LSq) steers a middle course between the Rae and Loosemore–Hanby indices. Its key feature is that it registers a few large deviations much more strongly than a lot of small ones. Its computation is as follows: the vote-seat share differences for each party are squared and then added;

total is divided by 2; and finally the square root of this value is taken:⁴

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

Another way of thinking about what the least-squares index does is that it weights the deviations by their own values, making the larger deviations account for a great deal more in the summary index than small deviations. When there are only two parties, the least-squares index yields exactly the same values as the Rae and Loosemore–Hanby indices, as example A in Table 3.1 illustrates. For the somewhat more disproportional situation in example B, the least-squares index gives a suitably higher value. And, for the much more proportional situation in example C, it gives a much lower value that also intuitively appears to be a correct representation of the degree of disproportionality.

In the computational example that Gallagher supplies for his index, he includes the votes and seats of the 'other' parties as if they were the seats and votes of one additional party. For the reason indicated above in connection with the discussion of the Rae index, I believe that this is an incorrect procedure; especially because of the squaring of the deviations in the calculation of his index, treating the deviations of two or more parties like one deviation of one party can lead to a considerable overstatement of the extent of disproportionality. Therefore, in all of my calculations of the least-squares index, the 'other' parties are disregarded.

These three indices obviously do not exhaust the possibilities; several others have been proposed and still more could, and probably will, be designed. Typically, these have also represented efforts to find a middle course between the Rae and Loosmore–Hanby indices. For instance, Bernard Grofman has suggested that the total percentage of vote–seat share deviation be divided not by the number of parties, as Rae does, nor by 2, as prescribed by Loosmore–Hanby, but by the effective number of parties; this number, which will be explained in the next section, weights the parties by their relative sizes, and is almost always a number between 2 and the raw number of parties. Another similar measure is the two-major-parties index which I have proposed and used myself. Its rationale is that the discrepancy between the Rae and

Loosemore-Hanby indices can be alleviated by averaging the seat share differences of the larger parties only (e.g. those more than, say, 5 or 10 per cent of the vote) and solved completely by averaging the deviations of exactly the same number of parties in different elections in different countries; in order to apply this measure to both two-party and multi-systems, this 'same number' should be set at two. How the largest parties fare is assumed to be a good reflection of the disproportionality of the election results.⁵

To take this line of reasoning one step further—the ultimate step—is simply to use the largest deviation in an election (which will generally be the percentage of overrepresentation of one of the largest parties) as the overall index of disproportionality. The beauty of this index is that it not only makes good sense that it is also the simplest possible way of measuring disproportionality. For this reason, I shall use it as my fourth index of disproportionality in this study. But I shall rely mainly on least-squares index which I regard as the most sensitive and ful reflection of the disproportionality of election results, counterbalancing the disadvantage of its greater computational complexity—although it would be quite wrong to think a least-squares measure as an unduly complicated measure.

is also correct to observe that my four measures of disproportionality are all based on absolute differences between vote and seat percentages—and hence not only reflect the same notion of proportionality that inspires LR-Hare but, as a logical consequence, also display a systematic bias in favour of LR-Hare systems. However, this is a serious flaw only if one focuses on the different outcomes exclusively at the district level. As Cox and Shugart concede, 'whether *national* seat totals will be proportional to *national* vote totals depends on many factors—such as additional seats, thresholds, malapportionment, and the geographical distribution of party support—in addition to the formula used to allocate seats within districts'.⁷

The second objection is not just that my measures of disproportionality are biased in favour of a particular PR formula, but that they reflect the general normative perspective that what matters are absolute instead of relative differences between vote and seat shares. For instance, a 1 per cent overrepresentation for a party winning 40 per cent of the votes and 41 per cent of the seats is counted on a par with a 1 per cent overrepresentation of a party with 10 per cent of the vote and 11 per cent of the seats. The opposite perspective, which underlies the d'Hondt method, would argue that the degrees of deviation are very different in the two cases: relatively speaking, the deviation from proportionality is only one-fourth as pronounced for the larger party because it is four times as large as the smaller party. I believe that most people would agree that, in these illustrative cases of $v_1 = 40\% / s_1 = 41\%$ and $v_2 = 10\% / s_2 = 11\%$, the larger party's deviation from proportionality is indeed not as serious as the smaller party's, because it is a smaller relative deviation. But I would also suggest that this criterion becomes operative only in a *ceteris paribus* situation, that is, only when the absolute deviations are the same. When, for instance, the two situations of $v_1 = 40\% / s_1 = 42\%$ and $v_2 = 10\% / s_2 = 11\%$ are compared, I submit that the most commonly accepted notion of proportionality would judge that it is the larger rather than the smaller party that has a worse deviation. And I think that few people would agree that a 4 per cent deviation in the case of $v_1 = 40\% / s_1 = 44\%$ is normatively on par with $v_2 = 10\% / s_2 = 11\%$, or $v_3 = 5\% / s_3 = 5.5\%$, or $v_4 = 1\% / s_4 = 1.1\%$, as the d'Hondt notion of proportionality would maintain.

To take this argument one step further, let us look at the

ABSOLUTE VERSUS RELATIVE VOTE-SEAT SHARE DEVIATIONS

Three general objections can be raised to the entire family of disproportionality measures discussed above. One is based on the important and *prima facie* highly pertinent observation of Gary W. Cox and Michael S. Gallagher, and further developed by Gary W. Cox and Michael S. Shugart, that instead of one generally accepted notion of proportionality there are many divergent notions, and that the various PR formulas described in the previous chapter embody different notions: what each PR formula does is to define proportionality in a particular way, and it then allocates seats to do so as to maximize proportionality on the basis of its particular definition.⁶ There is an especially wide gap between the notion of proportionality underlying the LR-Hare and d'Hondt formulae.

hypothetical example of two parties with 41,000 and 10,000 votes in a four-member district. The d'Hondt formula would award all 4 seats to the larger party because of its concern with minimizing relative disproportionality, whereas LR-Hare would reason that the larger party had won 3.2 quotas and the smaller party 0.8 quotas, and that the seat distribution should therefore be 3 to 1. Here again, I would submit that the most widely held view of proportionality would consider the second result to be the more just and equitable. The principles on which the different PR formulas are based are not normatively neutral, and the formulas themselves cannot be considered equally proportional on the basis of merely diverging notions of proportionality. The d'Hondt method is still basically a PR formula, but with a built-in advantage for larger parties—not a formula that can be argued to be just as proportional as LR-Hare.

This does not mean that d'Hondt is inferior to LR-Hare, of course, and it may well be considered to have some clear advantages over LR-Hare. In fact, its very bias in favour of large parties may be regarded as an advantage since this reduces party system fragmentation. And because it favours the larger parties, it is also free from two drawbacks of LR-Hare: d'Hondt will never reward a party for splitting or for tactically presenting two separate lists, and it will never deny a majority of the seats to a party with a vote majority (in a district with an odd number of seats). But these are advantages that are conceptually distinct from the idea of proportionality. D'Hondt is simply not as proportional a formula as LR-Hare. This reinforces my response to the first objection: to the extent that the least-squares index and the other measures of proportionality are biased in favour of LR-Hare, this is not an arbitrary prejudice but a proper reflection of the inherently greater proportionality of the LR-Hare formula.⁸

The third objection is that disproportionality, however measured, should not be the focus of attention, and that the focus should be on the type or, in Cox and Shugart's words, the 'political character' of disproportionality: 'the extent to which different methods of PR favour large parties over small'.⁹ My response here is that all of my measures of disproportionality already do exactly that. Disproportionality is not a random phenomenon but a pattern in which larger parties are systematically overrepresented and smaller parties are systematically underrepresented. As shown

above, big-party bias is logically inherent in the d'Hondt formula, and it is just as logical a consequence of decreasing district magnitudes or increasing electoral thresholds. And it is amply confirmed by empirical analysis of election results. For instance, in the next section I shall show that the effective number of parties in the legislature is almost invariably smaller than their effective number in the electoral arena as a result of the systematic advantages enjoyed by the larger parties and the systematic disadvantages suffered by the smaller ones.

Moreover, it turns out to be very hard to develop a satisfactory measure of big-party bias that can compete successfully with the measures of disproportionality. Cox and Shugart offer one intriguing proposal. They regress the parties' seat percentages on the vote percentages, and argue that the unstandardized slope (regression coefficient) of the regression line provides a simple index of big-party bias. A slope (*b*) of 1.00 indicates an absence of bias; higher values indicate a systematic advantage for larger parties, and lower values would mean a small-party bias.

In addition to the four indices of disproportionality, Table 3.1 presents the values of big-party bias *b* for the three hypothetical election outcomes. For example *A*, the value of *b* is a suitable 2.00, but for examples *B* and *C* the values of 1.13 and 1.20 run counter to common sense: the highly disproportional situation in *B* with a big-party bias similar to *A* is registered not only as much less biased than *A*, but also less biased than the highly proportional situation in *C*, in which the big parties do not appear to be extremely favoured. The obvious problem is that, like the Rae index of disproportionality, Cox and Shugart's *b* is overly sensitive to the presence of small parties: they force the regression line to go through, or close to, the origin and, as a result, greatly reduce its slope. Since this measure of big-party bias is less accurate than the indices of disproportionality (with the possible exception of the Rae index) and since it does not add any crucial feature—in particular, the tendency to overrepresent large parties—that is not already implicit in the indices of disproportionality, there is no reason to switch from these four indices to a more 'refined' measure of big-party bias.

Table 3.2 presents two sets of correlation coefficients among the four indices of disproportionality: for all seventy electoral systems, including the mixed French system in 1951 and 1956, and for the

fifty-seven PR systems; removing France from the first set does not change any of the coefficients. Four aspects of these matrices stand out. First and most obviously, all four indices are all highly and significantly correlated. Second, the nature of the least-squares index as a compromise between the Rae and Loosmore-Hanby indices is confirmed: its correlations with both indices is strong, while the correlations between Rae and Loosmore-Hanby are the weakest in both sets. Third, among all the impressively high correlations, those of the Rae index with the other indices are the least strong. Fourth, the strongest correlations (0.99 in both sets) are between the least-squares and the largest-deviation indices—confirming the latter as a useful and attractively simple measure of disproportionality.

THE EFFECTIVE NUMBER OF PARTIES

The most important difference among democratic party systems is that between two-party and multi-party systems. In parliamentary types of government, two-party systems make one-party majority cabinets possible, whereas such cabinets are not impossible but much less likely in multi-party systems. In presidential forms of government, two-party systems may have two quite different but equally significant results: either the president will enjoy majority support from the legislature or he or she will be faced by a hostile legislative majority. In addition to the distinction between two-party and multi-party systems, a further distinction must be made between moderate and extreme multi-party systems—with commensurate consequences for cabinet formation in parliamentary systems and legislative support for presidents in presidential systems. The variable that underlies both of the distinctions is the number of parties.

The practical problem in measuring the number of parties is how to count parties of unequal size and, in particular, how to count very small parties. The assumption in the comparative politics literature has long been that some kind of weighting is necessary. For instance, the British party system has long been described as a two-party system even though, throughout the twentieth century, there have always been more, and usually quite a few more,

Note: All of the correlation coefficients are statistically significant at the 1 per cent level (one-tailed test).

Systems	Rae index	Loosmore-Hanby index	Least-squares index	Largest-deviation index
70 electoral systems	1.00	0.77	0.85	0.97
70 PR systems	1.00	0.80	0.80	0.95
57 PR systems	1.00	0.84	0.94	1.00
Rae index	1.00	0.84	0.94	1.00
Loosmore-Hanby index	1.00	0.97	0.97	1.00
Least-squares index	1.00	0.95	0.95	1.00
Largest-deviation index	1.00	0.99	0.99	1.00
Rae index	1.00	0.93	0.96	1.00
Loosmore-Hanby index	1.00	0.94	0.94	1.00
Least-squares index	1.00	0.96	0.96	1.00
Largest-deviation index	1.00	0.99	0.99	1.00

TABLE 3.2. Correlation matrices for four indices of disproportionality in 70 electoral systems and 57 PR systems

than two parties in the House of Commons—which means that third parties have simply been discounted.

In modern comparative politics, a high degree of consensus has been reached on how exactly the number of parties should be measured. Here, too, Rae has played a pioneering role. He proposed an index of party system fractionalization based both on the numbers of parties and on their relative sizes. If v_i is the vote proportion of the i -th party, the party system fractionalization based on the parties' vote shares (F_v) is:

$$F_v = 1 - \sum v_i^2.$$

The theoretical rationale for F_v is that it represents ‘the frequency with which pairs of voters would disagree [in their choice of parties] if an entire electorate interacted randomly’.¹⁰ In a pure one-party system, all voters would agree on their choice of this one party, and fractionalization would be zero; in the most extreme case of fractionalization, each voter would have his or her own party, and fractionalization would reach the maximum value of 1. A similar index can be constructed on the basis of the parties' seat shares, that is, the party system fractionalization in parliament instead of among the voters (F_s):

$$F_s = 1 - \sum s_i^2,$$

in which s_i is the seat proportion of the i -th party.

Markku Laakso and Rein Taagepera improved these indices by transforming them into the ‘effective number of parties’, which again can be calculated either on the basis of vote shares or seat shares.¹¹ The two equations are:

$$N_v = \frac{1}{\sum v_i^2}$$

and

$$N_s = \frac{1}{\sum s_i^2}.$$

The effective number of parties carries the same information as the Rae index of party system fractionalization. In fact, N can easily be calculated from F as follows:

$$N = \frac{1}{1 - F}.$$

The big advantage of N is that it can be visualized more easily as the number of parties than the Rae abstract index. In a two-party system with two equally strong parties, the effective number of parties is exactly 2.00 ($F = 0.50$). If one party is considerably stronger than the other, with, for instance, respective vote or seat shares of 70 and 30 per cent, the effective number of parties is 1.72—in accordance with our intuitive judgement that we are moving away from a pure two-party system in the direction of a one-party system ($F = 0.42$). Similarly, with three exactly equal parties, the effective number formula yields a value of 3.00 ($F = 0.67$). If one of these parties is weaker than the other two, the effective number of parties will be somewhere between 2.00 and 3.00, depending on the relative strength of the third party (F would be between 0.50 and 0.67).

There are two major alternatives to the effective number of parties—measures proposed by John K. Wildgen and by Juan Molinar—but neither is very different from the effective number of parties.¹² Wildgen's index of ‘hyperfractionalization’ accords special weight, as its name indicates, to small parties. Molinar's index does the opposite: it gives special weight to the largest party. In cases where all parties have equal strength, the three measures yield exactly the same values: 2.00 for a two-party system, 3.00 for a three-party system, and so on. For party systems with unequal parties, Wildgen's index generally has the highest values, the effective number of parties lower values, and Molinar's index the lowest values. For instance, when there are two large parties and one considerably smaller party—with respective strengths of 45, 45, and 10 per cent—the Wildgen index is 2.58 parties; the effective number of parties is 2.41; and the Molinar index is 2.23.

The above hypothetical example, which looks more like a two-and-a-quarter than a two-and-a-half party system, shows one advantage of the Molinar index: it often appears to be closer to what one intuitively thinks of as the number of parties than the other two indices. On the other hand, the Molinar index can also produce values that appear to be too low. For instance, when in a pure two-party system one party splits down the middle, so that the distribution of votes or seats changes from 50–50 to 50–25–25,

most people would say that the number of parties has increased from 2 to a higher number, but, measured by the Molinar method it goes down to 1.89.¹³ The reason is that Molinar measures not just the number of parties but also the saliency of the largest party. Because the effective number of parties is the purest measure of the number of parties, because it has become the most widely used measure, because the alternative measures are quite similar to it in most respects, and, last but not least, because it is computationally much simpler than the alternatives, it will be my number-of-parties measure in this study.

As indicated above, the effective number of parties can be based either on the parties' vote shares or on their seat shares, yielding the two distinct measures of the effective number of elective parties and the effective number of parliamentary parties. Because electoral systems tend to favour the larger and to discriminate against the smaller parties, the effective number of parliamentary parties should be expected to be lower than the effective number of elective parties. At the same time, we would expect the two measures to be strongly correlated, especially in PR systems. Both expectations are correct for our electoral systems. The correlation coefficient for all seventy systems is 0.91 and for the fifty-seven PR systems 0.94 (see Table 3.3). And, in sixty-eight of the seventy systems, the effective number of parliamentary parties is lower than the number of elective parties; the two exceptions are the French 1951–6 system which was deliberately engineered against the largest parties and in favour of the medium-sized parties, and the highly proportional Italian system for Euro-elections (LR-Hare, large district magnitude, and no legal threshold) which has happened to work out slightly less favourably for the two largest parties than for the other parties. In these two exceptional cases, however, the effective number of parliamentary parties is only slightly higher than the number of elective parties: 5.83 compared with 5.75 parties in the French case, and 4.42 compared with 4.31 parties in the Italian Euro-elections.

The distinction between the two measures is also theoretically very important, because they are affected differently by what Maurice Duverger has called the 'mechanical' and 'psychological'¹⁴ and Rae the 'proximal' and 'distal' effects of electoral systems. The mechanical or proximal effects are simply the immediate effects of the translation of votes into seats in a particular election.

TABLE 3.3. Correlation matrices for four party system characteristics in 70 electoral systems and 57 PR systems

Systems		Effective number of elective parties	Effective number of parliamentary parties	Frequency of parliamentary majorities	Frequency of elective majorities	70 electoral systems
Effective number of elective parties	1.00					
Effective number of parliamentary parties	0.91**	1.00				
Frequency of parliamentary majorities	-0.56**	-0.71**	1.00			
Frequency of elective majorities	0.91**	1.00	1.00			
70 electoral systems						
PR systems						
Majorities						
Manufactured majorities	-0.34**	-0.54**	-0.34**	1.00		
Parliamentary parties	-0.56**	-0.71**	-0.56**	1.00		
Elective parties	0.91**	1.00	1.00	1.00		
70 PR systems						
Majorities						
Manufactured majorities	-0.34**	-0.54**	-0.34**	1.00		
Parliamentary parties	-0.56**	-0.71**	-0.56**	1.00		
Elective parties	0.91**	1.00	1.00	1.00		
70 electoral systems						
PR systems						
Majorities						
Manufactured majorities	-0.34**	-0.54**	-0.34**	1.00		
Parliamentary parties	-0.56**	-0.71**	-0.56**	1.00		
Elective parties	0.91**	1.00	1.00	1.00		
70 PR systems						
Majorities						
Manufactured majorities	-0.34**	-0.54**	-0.34**	1.00		
Parliamentary parties	-0.56**	-0.71**	-0.56**	1.00		
Elective parties	0.91**	1.00	1.00	1.00		
70 PR systems						
Majorities						
Manufactured majorities	-0.34**	-0.54**	-0.34**	1.00		
Parliamentary parties	-0.56**	-0.71**	-0.56**	1.00		
Elective parties	0.91**	1.00	1.00	1.00		
70 electoral systems						
PR systems						
Majorities						
Manufactured majorities	-0.34**	-0.54**	-0.34**	1.00		
Parliamentary parties	-0.56**	-0.71**	-0.56**	1.00		
Elective parties	0.91**	1.00	1.00	1.00		
70 electoral systems						
Majorities						
Manufactured majorities	-0.34**	-0.54**	-0.34**	1.00		
Parliamentary parties	-0.56**	-0.71**	-0.56**	1.00		
Elective parties	0.91**	1.00	1.00	1.00		
70 electoral systems						
Majorities						
Manufactured majorities	-0.34**	-0.54**	-0.34**	1.00		
Parliamentary parties	-0.56**	-0.71**	-0.56**	1.00		
Elective parties	0.91**	1.00	1.00	1.00		
70 electoral systems						
Majorities						
Manufactured majorities	-0.34**	-0.54**	-0.34**	1.00		
Parliamentary parties	-0.56**	-0.71**	-0.56**	1.00		
Elective parties	0.91**	1.00	1.00	1.00		
70 electoral systems						
Majorities						
Manufactured majorities	-0.34**	-0.54**	-0.34**	1.00		
Parliamentary parties	-0.56**	-0.71**	-0.56**	1.00		
Elective parties	0.91**	1.00	1.00	1.00		
70 electoral systems						
Majorities						
Manufactured majorities	-0.34**	-0.54**	-0.34**	1.00		
Parliamentary parties	-0.56**	-0.71**	-0.56**	1.00		
Elective parties	0.91**	1.00	1.00	1.00		
70 electoral systems						
Majorities						
Manufactured majorities	-0.34**	-0.54**	-0.34**	1.00		
Parliamentary parties	-0.56**	-0.71**	-0.56**	1.00		
Elective parties	0.91**	1.00	1.00	1.00		
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Manufactured majorities	-0.34**	-0.54**	-0.34**	1.00		
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Elective parties	0.91**	1.00	1.00	1.00		
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Manufactured majorities	-0.34**	-0.54**	-0.34**	1.00		
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Elective parties	0.91**	1.00	1.00	1.00		
70 electoral systems						
Majorities						
Manufactured majorities	-0.34**	-0.54**	-0.34**	1.00		
Parliamentary parties	-0.56**	-0.71**	-0.56**	1.00		
Elective parties	0.91**	1.00	1.00	1.00		
70 electoral systems						
Majorities						
Manufactured majorities	-0.34**	-0.54**	-0.34**	1.00		
Parliamentary parties	-0.56**	-0.71**	-0.56**	1.00		
Elective parties	0.91**	1.00	1.00	1.00		
70 electoral systems						
Majorities						
Manufactured majorities	-0.34**	-0.54**	-0.34**	1.00		
Parliamentary parties	-0.56**	-0.71**	-0.56**	1.00		
Elective parties	0.91**	1.00	1.00	1.00		
70 electoral systems						
Majorities						
Manufactured majorities	-0.34**	-0.54**	-0.34**	1.00		
Parliamentary parties	-0.56**	-0.71**	-0.56**	1.00		
Elective parties	0.91**	1.00	1.00	1.00		
70 electoral systems						
Majorities						
Manufactured majorities	-0.34**	-0.54**	-0.34**	1.00		
Parliamentary parties	-0.56**	-0.71**	-0.56**	1.00		
Elective parties	0.91**	1.00	1.00	1.00		
70 electoral systems						
Majorities						
Manufactured majorities	-0.34**	-0.54**	-0.34**	1.00		
Parliamentary parties	-0.56**	-0.71**	-0.56**	1.00		
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Manufactured majorities	-0.34**	-0.54**	-0.34**	1.00		
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Elective parties	0.91**	1.00	1.00	1.00		
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Majorities						
Manufactured majorities	-0.34**	-0.54**	-0.34**	1.00		
Parliamentary parties	-0.56**	-0.71**	-0.56**	1.00		
Elective parties	0.91**	1.00	1.00	1.00		
70 electoral systems						
Majorities						
Manufactured majorities	-0.34**	-0.54**	-0.34**	1.00		
Parliamentary parties	-0.56**	-0.71**	-0.56**	1.00		
Elective parties	0.91**	1.00	1.00	1.00		
70 electoral systems						
Majorities						
Manufactured majorities	-0.34**	-0.54**	-0.34**	1.00		
Parliamentary parties	-0.56**	-0.71**	-0.56**	1.00		
Elective parties	0.91**	1.00	1.00	1.00		
70 electoral systems						
Majorities						
Manufactured majorities	-0.34**	-0.54**	-0.34**	1.00		
Parliamentary parties	-0.56**	-0				

To the extent that this translation discriminates against the small parties, voters as well as politicians, political activists, and financial backers—not wanting to waste their votes, energies, money—will tend to favour the larger parties. Such strategic behaviour underlies the psychological or distal effects of electoral systems. The effective number of elective parties is affected solely by the psychological effects of electoral systems—*expectations* about how votes will be translated into seats—whereas the effective number of parliamentary parties is influenced both by these expectations (psychological effects) and the actual (mechanical) process of translating votes into seats. Put another way, the effective number of elective parties is likely to be reduced by psychological effects, but any further reduction from the effective number of elective to the effective number of parliamentary parties is exclusively the work of the mechanical factors.

GENERATING MAJORITY VICTORIES

The second pair of indicators of party system characteristics are the generation of majority parties in the legislature and the artificial generation of such majority parties out of parties that have not won vote majorities. Like the effective number of parties, these measures may be thought of as improvements of the classic, but very rough and simple, distinction between two-party and multi-party systems. The rationale is that the importance of two-party systems is that they make one-party majority cabinets in parliamentary systems (or one-party majorities supporting or opposing presidents in presidential systems) possible; if this is the crucial concern, why not measure it directly instead of merely as a probable consequence of two-party systems? The most straightforward measure, therefore, is simply whether or not electoral systems generate majority parties in the legislature; for a series of elections, the measure is the percentage of elections that produce such majorities, to which I shall henceforth refer as the percentage of parliamentary majorities.

The second measure is the percentage of ‘manufactured majorities’. This is one of the terms coined by Rae to describe the four possible outcomes of elections: (1) an ‘earned majority’ of seats

won by a party that has also won a majority of the votes; (2) a ‘manufactured majority’ in the legislature won by a party that has won less than a vote majority; (3) a ‘natural minority’ where no party wins either a vote or a seat majority; and (4) an ‘artificial minority’ where one of the parties does win a vote majority but not a majority of the seats.¹⁵ The categories of this typology are exhaustive but not quite mutually exclusive: an election may result in both a manufactured majority for one party and the reduction of the winner of the popular vote to an artificial minority.

Given the tendencies of most electoral systems to favour the larger parties, artificial minorities are not very likely. Rae even suggests that ‘no such electoral system exists’, because ‘it would be intolerable if an electoral law robbed leading parties of their majorities’.¹⁶ Actually, two elections included in this study do exemplify the phenomenon: in the 1954 Australian election, the Labour Party won a narrow vote majority but fell short of a majority in the legislature, and in the 1981 election in Malta, the Labour Party won a manufactured majority while the Nationalists were reduced to an artificial minority. The fact that there are only two examples does prove the rarity of artificial minorities, and the latter example also shows that artificial minorities are hard to tolerate: the institution of the contingent upper tier in the Maltese election law after 1981 was designed to prevent a repetition of the 1981 anomaly.

Mechanical and psychological factors also affect the generation of parliamentary majorities and manufactured majorities differently. In the artificial manufacturing of a majority, the psychological factors may play a certain role by increasing the votes for the largest parties, but the mechanical factors obviously play the crucial role. Since parliamentary majorities can be either earned or manufactured majorities, both psychological and mechanical factors may contribute to them and their effects are much harder to disentangle.

Because both types of majorities are likely to be associated with electoral systems that favour large parties, and because they are partly related by definition (that is, a manufactured majority is also automatically a parliamentary majority), we would expect the two measures to be closely correlated. As Table 3.3 shows, this is indeed the case: the correlation coefficient is 0.82 for all electoral systems (excluding the French 1951–6 system does not change this

figure) and 0.75 for the PR systems. The reason why these efficiencies are not even higher is that, while both types of majorities are concentrated among the plurality systems and both types much rarer among PR systems, the measures may assume extreme values (for instance, in an electoral system used for one election the values will be either 100 per cent or 0 per cent), and plural systems may show quite different patterns of majority generation; for instance, US Congressional elections have resulted in 100 per cent majorities but only 8.7 per cent manufactured majorities whereas British parliamentary elections have produced 92.3 per cent majorities, all of which have been manufactured majorities.

POLITICAL PARTIES, PARTY ALLIANCES, AND FACTIONS

A short comment is required about the definition of political parties. All eight of the basic measures of disproportionality and party system characteristics introduced in this chapter crucially depend on which entities are counted as parties: the vote and seat shares of these parties, their effective number (also calculated on the basis of their vote and seat shares), and whether or not one of them attains majority status. In practice, there is usually not much disagreement on the identification of the parties, but problems arise in two situations. The first is the problem of highly factionalized parties like the Italian Christian Democrats and the Japanese Liberal Democrats: should these two parties be counted as parties, or are their factions the real parties? The second problem is that of close alliances between parties like the Australian Liberal and National parties, the German Christian Democrats, Union and Christian Social Union, and the Belgian Christian People's and Christian Social parties as well as the other Belgian linguistic parties that are similarly allied with their ideological partners across the linguistic divide: are these alliances or the alliance members the true parties?

The definitions one chooses are by no means inconsequential. For instance, in the Australian electoral system used from 1949 to 1983, the percentages of parliamentary and manufactured majorities would go up dramatically if the Liberal and National parties would be counted as one party. My criterion will be to follow the

parties' own definitions. This means that, in the above examples of factionalized parties, the parties as they define themselves rather than their factions will be considered the real parties. Similarly, parties that give themselves different names will be regarded as separate parties—including the Christian Democrats and the Christian Social Union in Germany which are more often counted as a single party.¹⁷ This is also the practice that Thomas T. Mackie and Richard Rose follow in their *International Almanac*.¹⁸ The few doubtful cases of alliances among small parties that remain, none of which are of great consequence, are explained in Appendix C.

INTERACTIONS BETWEEN DISPROPORTIONALITY AND THE PARTY SYSTEM

Disproportionality is a centrally important phenomenon in this study for two reasons. First, as I have emphasized before, while all electoral systems tend to be at least somewhat disproportional, they also tend to avoid extreme disproportionality. In other words, proportionality is one of the aims, albeit not necessarily the most important aim, of most electoral systems. The analysis of the degrees of disproportionality is important in order to determine to what extent this aim is realized. Moreover, it is important to determine how the different dimensions of electoral systems contribute to the proportionality or disproportionality of election outcomes. In this analysis, disproportionality is of intrinsic interest as the dependent variable—the focus of what we try to explain in terms of the electoral system dimensions as the independent or explanatory variables.

The other dependent variables on which this study focuses are the different aspects of party systems. In this analysis, disproportionality serves as the hypothesized link between the electoral system variables and the party system variables: the hypothesis is that it is the disproportionality of electoral systems that, by mechanical and psychological means, reduces the number of parties and increases the chances of having majority party victories. Table 3.4 shows that this hypothesis is borne out—with the exception of the link between disproportionality, as measured by the least-squares index, and the effective number of elective parties which

TABLE 3.4. Correlations between the least-squares index of disproportionality and four party system characteristics in 70 electoral systems and 57 PR Systems

Party system characteristics	Least-squares index
70 Electoral systems	57 PR systems
Effective number of elective parties	-0.11
Effective number of parliamentary parties	-0.45**
Frequency of parliamentary majorities	0.58**
Frequency of manufactured majorities	0.63**
	0.41**

Notes:

* Statistically significant at the 5 per cent level (one-tailed test).

** Statistically significant at the 1 per cent level (one-tailed test).

is weak, and statistically not significant—both for all seventy electoral systems and for the fifty-seven PR systems. (Excluding 1951–6 France from the set of seventy systems makes virtually no difference, and roughly similar patterns appear when the other three indices of disproportionality are used.)¹⁹

The other correlations are statistically significant, but they differ considerably in strength. The strongest correlations appear in the set of all seventy electoral systems—reflecting the wide differences between majoritarian and PR systems with regard to both disproportionality and party systems. But even the strongest relationship, between disproportionality and manufactured majorities, is not overwhelmingly strong: the coefficient of 0.63 means that the degree of disproportionality explains less than 39 per cent of the variance in manufactured majorities (in terms of the adjusted R^2). And it explains only about 19 per cent of the variance in the effective number of parliamentary parties. In the PR systems, it explains less than 16 per cent of the variance of any of the party system variables.

One explanation may be that the link between disproportionality and the party system is a two-way relationship. Disproportionality affects the degree of multipartism, but multipartism can in turn affect the degree of disproportionality. The reason for this is especially clear in plurality systems, where a substantial part of the

disproportionality of the election outcome is caused by small parties that fail to win representation or that are severely underrepresented. For instance, in US Congressional elections, in which for various reasons—including direct primary elections that weed out minor contenders and state laws that discriminate against third parties²⁰—virtually no small parties compete, the degree of disproportionality is considerably lower (5.41 per cent) than in British parliamentary elections in which a significant number of more substantial small parties tend to participate (10.55 per cent). Among PR systems, the most highly proportional ones may tempt politicians to form small parties and voters to vote for these parties—creating a large number of parties but also, if many of these parties fail to win seats, a relatively high degree of disproportionality.

This two-way relationship is especially difficult to sort out because disproportionality and multipartism affect each other in opposite directions: disproportionality *decreases* multipartism but, to at least some extent, multipartism *increases* disproportionality. Chapter 5 will show that the direct influence of one of the electoral system dimensions, the effective threshold, on multipartism is actually stronger than the effect of disproportionality.

The link between the party system as the independent variable and disproportionality as the dependent variable also has an important implication for two of the four additional dimensions of electoral systems—presidentialism and ballot structure—mentioned in Chapter 2. Both presidential government and categorical ballots are hypothesized to decrease multipartism. There is no plausible direct link between these two variables and disproportionality, but indirectly, via the party system, there could be a causal connection. Hence we can infer the further hypotheses that presidentialism and categorical ballots decrease disproportionality. These hypotheses will be tested in Chapter 6. First, however, the next two chapters will focus on the effects of the basic triad of electoral system dimensions: the effective threshold, the electoral formula, and assembly size.

electoral system that involve two dimensions, as well as small changes that have occurred within the same electoral system.

Changes in Election Rules between Systems in the Same Country

BEFORE turning to the more conventional cross-sectional analysis of the effects of electoral systems on disproportionality and party systems in the next chapter, I shall devote this brief chapter to a series of analyses by means of the comparative method. This method, which may also be called the method of controlled comparison, focuses on comparable cases: cases that differ with regard to the variables one wants to investigate, but similar with regard to all other important variables that may affect the dependent variables; these other important variables can then be treated as control variables. In Neil J. Smelser's words, comparable cases offer the following great advantage: 'The more similar two or more [cases] are with respect to crucial variables . . . the better able is the investigator to isolate and analyze the influence of other variables that might account for the differences he wishes to explain.'¹ It is usually not easy, however, to find appropriate comparable cases.

In this study, several of the cases under investigation—that is, the electoral systems—are perfect candidates for analysis as comparable cases: successive electoral systems in the same country. Many potentially important explanatory variables can be controlled in the sense that they can be assumed not to differ or to differ only marginally: the same country, the same political parties, the same voters, and so on. Moreover, if one or two of the electoral system dimensions has not changed, they are similarly controlled. This ideal situation is one in which, in the same country, two successive electoral systems differ with regard to only one dimension, because this allows us to gauge the influence of this one dimension with the knowledge that neither the other dimensions nor other background variables could have had a substantial effect on the outcome. It is on these ideal comparable cases that I shall focus in this chapter, but I shall also analyse within-country changes of

ONE-DIMENSIONAL CHANGES IN ELECTORAL FORMULA

Tables 4.1 to 4.3 present the effects of changes in one dimension of the electoral system—the electoral formula, the effective threshold, and the assembly size respectively—on disproportionality and the effective numbers of parties.² The evidence is derived from the electoral systems of twelve countries. The next section, where two-dimensional changes will be examined, will present evidence from seven additional countries. These nineteen countries are mainly PR countries. The reason is not only that there are more PR than non-PR countries in our universe in the first place, but also that PR countries have tended to change their electoral systems more frequently than the others. Of the five plurality countries, for instance, three (Canada, New Zealand, and the United States) did not change their electoral systems at all during the 1945–90 period; hence they are logically excluded from the analysis. And the other two (India and the United Kingdom) changed only once.

The party system characteristics reported in the tables are the effective numbers of elective and parliamentary parties; the frequencies of majority victories are not included because such majorities, whether manufactured or earned, were relatively rare in these PR systems.

A quick glance at the tables reveals that some PR countries are much more strongly represented among the comparable cases than others. An especially interesting example is provided by the last four German electoral systems which, juxtaposed in two different ways, yield four pairs of comparable cases (see Tables 4.1 and 4.3): two one-dimensional changes in electoral formula, from d'Hondt to LR-Hare, in the last two parliamentary election systems and in the two Euro-election systems, and two drastic reductions in assembly size, but no other changes, when the two parliamentary and the two Euro-election systems are compared. In three other countries (Denmark, Israel, and Norway), two successive changes provide two pairs of comparable cases in each country. The inclusion of the shift from the first (1949) to the second Israeli system (1951–69) requires a special explanation,

because technically two dimensions were changed: LR-Hare replaced d'Hondt and a 1 per cent national threshold was introduced. However, because this threshold is extremely low and because no party would have been barred from representation if the threshold had already been in place in 1949, I decided to ignore the threshold change in this case—in the interest of making maximum use of the available evidence.³

Let us take a closer look at the controlled changes in electoral formula in Table 4.1. Increases are indicated by plus and decreases by minus signs, and the increases and decreases that run counter to the hypothesized direction of the change are highlighted by being italicized. All of the changes entail shifts from or to the d'Hondt formula, and they all result in the increase or decrease in disproportionality (measured by the least-squares index) expected on the basis of the proportional or disproportional tendencies of the formulas. In absolute terms, the change from d'Hondt to one of the non-d'Hondt formulas results in a roughly 2 per cent change in disproportionality; the mean change is 2.05 per cent and the median 1.75 per cent. In relative terms, the change from d'Hondt increases or decreases disproportionality by roughly one-third to two-thirds.

The main hypothesis with regard to the effective numbers of parties is that they should be increased by a more proportional and reduced by a less proportional formula. As the italicized changes in Table 4.1 show, there are several disconfirming instances. The first change, that of the French electoral system change from the first post-war to the second post-war system (at the top of the table), is not really an invalidating case, however. As emphasized earlier, the 1951–6 system was the unusual mixed system with both majoritarian and PR elements and, as far as the PR side was concerned, with both d'Hondt and LR-Hare formulas. Because the majority rule could be applied, and actually was applied, in more districts and for the allocation of more seats than LR-Hare (see Table 2.8), I am treating the shift from d'Hondt to the mixed formula as a change in an inherently disproportional direction. In accordance with this assumption, the least-squares index of disproportionality increases substantially, but the effective numbers of both elective and parliamentary parties rise substantially, too. The reason, as also already indicated earlier, is that the French 1951–6 system was deliberately engineered to be disproportional

System	Electoral formula	Disproportionality (%)	Effective number of elective parties	Effective number of parliamentary parties	Notes:
FRA1	d'Hondt	3.65	4.59	4.23	
FRA2	Mixed	5.48	5.75	5.83	
GER3	d'Hondt	2.18	3.17	2.95	
GER5	LR-Hare	0.67	3.56	3.47	
GER4E	d'Hondt	4.24	3.18	2.76	
GER6E	LR-Hare	1.91	4.02	3.74	
ISR1	d'Hondt	2.47	5.39	4.73	
ISR2	LR-Hare	0.86	5.10	4.92	
ISR3	d'Hondt	2.61	4.36	3.82	
CHANGE		+1.75	-0.74	-1.10	
NOR1	d'Hondt	8.53	3.87	2.92	
NOR2	Modified Sainte-Lagu��	4.38	3.77	3.26	
CHANGE		-4.15	-0.10	+0.34	
SWE1	d'Hondt	3.51	3.43	3.06	
SWE2	Modified Sainte-Lagu��	2.36	3.30	3.11	
CHANGE		-1.15	-0.13	+0.05	

TABLE 4.1. Controlled changes in electoral formula, and changes in disproportionality and effective numbers of parties

in favour of the medium-sized parties and against the large ones—contrary to the normal pattern of increasing discrimination as party sizes decrease—and hence it should be expected to increase the number of parties. It is the kind of exception that the rule—or, more accurately, that reminds us forcefully of the normal hypothesis is.

Nevertheless, there are several other exceptions, and these are theoretically significant pattern. All three deviations occur in the changes in the effective number of *elective* parties; except the French system, three of the changes are in accordance with the hypothesis that increasing proportionality will increase the number of parties and vice versa, and three run counter to this hypothesis. The sizes of the unexpected changes in multipartism are relatively small, and they are all smaller than the sizes of the expected changes, but the conclusion can only be that the effect of the different PR formulas on elective multipartism is, at best, quite weak. On the other hand, the effective numbers of parties in parliament all change in the hypothesized direction.

Giovanni Sartori has made the useful distinction between ‘strong’ (plurality) and ‘feeble’ (PR) electoral systems as far as their effect on party systems are concerned. His ‘strong’ plurality systems are strong in their capacity to reduce the number of parties—this position that will be confirmed by the evidence to be presented in the next chapter. Within the family of PR systems, Sartori makes a further distinction between highly proportional, hence ‘strong’, ‘feeble’, systems and less proportional ‘strong-feeble’ systems. To the extent that all electoral systems, including PR systems, tend to decrease the effective number of parties in the process of converting the elective into parliamentary parties, there are no ‘strong’ and totally ‘feeble’—or what might also be called neutral—systems. Nevertheless, the evidence of Table 4.1 does support the position that d'Hondt is a ‘strong-feeble’ formula in its capacity to produce a lower degree of multipartism in parliament than other more proportional formulas. The second significant finding of the evidence of Table 4.1 is that this decrease in multipartism is only marginally due to Maurice Duverger's ‘psychological factors’, since elective multipartism is minimally affected by the changes in electoral formula.⁵ Hence the reduction that does take place almost entirely the effect of the mechanical factors of the electoral systems' translation of votes into seats.

Only two of the changes in Table 4.1 involved the generation of majority parties. In Norway, manufactured majorities occurred in both elections of the 1945–9 d'Hondt system but in only two of the nine elections under the 1953–85 system that used the modified Sainte-Lagu   formula—in accordance with our theoretical expectations. In Sweden, one majority was generated, an earned majority, but—contrary to expectations—in the modified Sainte-Lagu   rather than the d'Hondt system.

ONE-DIMENSIONAL CHANGES IN EFFECTIVE THRESHOLD AND ASSEMBLY SIZE

Table 4.2 shows the changes in effective threshold when the other electoral system dimensions—formula and assembly size—do not change. Unfortunately, there are only four changes of this kind, but the resulting changes in disproportionality and effective numbers of parties are all in the expected direction. In Denmark, the two changes in effective threshold were relatively small, and the corresponding changes in disproportionality were equally small. In Iceland, a bigger reduction in effective threshold resulted in an impressive drop in disproportionality, but an even larger reduction in Norway resulted in only a relatively small drop in disproportionality. The changes in multipartism, while all in the expected direction, do not correspond closely in size with the amounts of change in the effective thresholds.

A fifth instance of change could be added: the change from the first (1952–7) to the second (1962–84) Indian electoral system. India changed from an average magnitude of 1.21 seats to exactly one seat per district. In terms of the effective threshold of 35 per cent that I assigned to all majoritarian systems regardless of the type of majority or plurality formula and regardless of district magnitude, formally no change took place on this dimension—not on the other two dimensions. But for the present analysis, it would be correct to interpret a reduction in district magnitude (in a majoritarian system) as the equivalent of a reduction in effective threshold. On the basis of this interpretation, the changes in disproportionality and multipartism are all in the expected direction. Disproportionality, while high in both systems, decreased from

20.77 to 16.76 per cent; the effective number of elective parties increased, though only slightly, from 4.21 to 4.31; and the number of parliamentary parties rose more impressively from 1.79 to 2.27. There was no change in the generation of majority parties: both systems had a 100 per cent incidence of such majorities, all of them manufactured. The only other change that involved majority parties in this group of countries was the change from the 22 per cent incidence of manufactured majorities in the Norwegian 1953-85 system, already mentioned, to no majority party in the one election, in 1989, in the third Norwegian electoral system.

There is a more abundant supply of changes in assembly size, as Table 4.3 shows. And the supply of deviant findings increases even more. In all but one of the nine changes, the index of disproportionality still goes up or down as expected, but the effective numbers of parties change more often in the unexpected than in the expected direction. The first finding is not very surprising because it occurs in a change in the Australian alternative vote systems; majoritarian systems tend to yield not only more disproportional results than PR systems, but also results that fluctuate more in their degree of disproportionality from election to election. The pattern of changes in multipartism—basically showing no clear impact of assembly size—are extremely surprising, especially because the changes in the least-squares indices show that changes in assembly size do have the hypothesized effect on disproportionality.

Changes in parliamentary and manufactured majorities in the five countries where they occurred show a similar divided pattern. Smaller assembly size was associated with a higher incidence of majorities of both kinds in the first change in Australia and, although only marginally so, in Ireland, but it was associated with a lower incidence of such majorities in the other change in Australia and in Malta. In the United Kingdom, there were more manufactured majorities but fewer earned majorities in the parliamentary election system than in the Euro-election system.

The tentative conclusions that emerge from the total of twenty instances of one-dimensional electoral system change (excluding the change in the French system for the reasons discussed above, but including, for the sake of maximizing the number of cases, the change in the Indian system) are the following: first, changes to more proportional electoral system characteristics almost invariably

^a See description of electoral systems on pp. 13-14, 16.
Note:

Electoral system ^b	Effective threshold (%)	Disproportionality (%)	Effective number of elective parties	Effective number of parliamentary parties	Change
DEN1	1.6	1.81	4.08	3.96	-0.30
DEN2	2.6	2.01	3.84	3.66	+0.20
DEN3	2.0	1.74	3.84	3.66	-0.27
ICEL1	8.7	7.49	7.49	7.49	+1.26
ICEL2	5.8	2.86	3.66	3.44	-0.40
NOR2	8.9	4.38	4.38	3.77	+0.40
NOR3	4.0	3.65	4.84	4.23	-0.40
CHANGE	-2.9	-4.63	4.06	3.84	+0.40
CHANGE	-0.6	5.22	4.06	3.44	+0.40
CHANGE	-0.6	5.22	4.06	3.44	+0.40
CHANGE	-2.9	-4.63	4.06	3.84	+0.40
CHANGE	-4.9	-0.73	+1.07	+0.97	+0.40

TABLE 4.2. Controlled changes in effective threshold, and changes in disproportionality and effective numbers of parties

^a See description of electoral systems on pp. 13–14, 16.
^b The changes that run counter to the hypothesized influence of the assembly size are italicized.
^c In the Greek case, the change was not in the formal assembly size (which remained steady at 300 members) but in what may be called the effective assembly size, as explained in Ch. 2 and Table 2.7.

Notes:

GRE1 ^a	134	15.79	2.74	1.72	CHANGE	-555	+8.90	+0.29	-0.25
GRE2	185	10.99	3.21	2.22	CHANGE	+17	-0.06	-0.64	-0.65
IRE1	152	3.49	3.10	2.79	CHANGE	-137	+7.34	+1.35	+0.64
IRE2	15	10.83	3.10	2.79	CHANGE	-15	+7.34	4.45	3.43
IREL	40	3.79	2.97	2.79	CHANGE	-137	+7.34	4.45	3.43
MAL1	40	3.79	2.97	2.79	CHANGE	-137	+7.34	4.45	3.43
MAL2	57	3.73	2.33	2.14	CHANGE	+17	-0.06	-0.64	-0.65
UK1	633	10.55	2.65	2.10	CHANGE	78	19.45	2.94	1.85
UK2 ^b	78	10.55	2.65	2.10	CHANGE	633	10.55	2.65	2.10

Electoral system ^a	Assembly size	Disproportionality (%)	Effective number of parties	Parliamentary parties	Effective number of parties	Parliamentary parties	Effective number of parties	Parliamentary parties	Effective number of parties
AU1 ₁	74	9.61	2.74	2.40	CHANGE	+26	+1.69 ^b	+0.26	-0.18
AU1 ₂	122	8.55	2.76	2.53	CHANGE	148	10.24	3.02	2.35
AU1 ₂	122	8.55	2.76	2.53	CHANGE	402	3.80	5.71	4.65
GER1	402	3.80	5.71	3.17	CHANGE	487	3.67	4.21	3.63
GER2	487	3.67	4.21	3.18	CHANGE	497	0.67	3.56	3.47
GER3	497	2.18	3.17	2.95	CHANGE	-419	+2.06	+0.01	-0.19
GER4	78	4.24	3.18	2.76	CHANGE	-419	+2.06	+0.01	-0.19
GER5	78	1.91	3.18	2.76	CHANGE	-419	+1.24	+0.46	+0.27
GER6	78	1.91	4.02	3.74	CHANGE	-419	+1.24	+0.46	+0.27
GRE1 ^a	134	15.79	2.74	1.72	CHANGE	-137	+7.34	4.45	3.43
GRE2	185	10.99	3.21	2.22	CHANGE	-15	10.83	4.45	3.43
IRE1	152	3.49	3.10	2.79	CHANGE	-137	3.10	2.97	2.79
IRE2	15	10.83	3.10	2.79	CHANGE	-15	3.79	2.97	2.79
IREL	40	3.79	2.97	2.79	CHANGE	-137	+7.34	4.45	3.43
MAL1	40	3.79	2.97	2.79	CHANGE	-137	+7.34	4.45	3.43
MAL2	57	3.73	2.33	2.14	CHANGE	+17	-0.06	-0.64	-0.65
UK1	633	10.55	2.65	2.10	CHANGE	78	19.45	2.94	1.85
UK2 ^b	78	10.55	2.65	2.10	CHANGE	633	10.55	2.65	2.10

TABLE 4.3. Controlled changes in assembly size, and changes in disproportionality and effective numbers of parties

resulted in lower disproportionality as measured by the least squares index. Second, the effective number of parliamentary parties changed as hypothesized in three-fourths (15 out of 20) of the changes. Third, the effective number of elective parties changed as hypothesized in only about half (11 out of 20) of the record instances. Fourth, the effective threshold appears to have the greatest and the assembly size the least influence on the effective numbers of parties.

A MORE REFINED TEST

The above conclusions about the electoral system's influence on the number of parties are less than totally convincing for two reasons. In the first place, while it is easy to understand that electoral system differences within the PR family have much less impact than the differences between PR and plurality, it is difficult to understand and accept that the former appear not to have at least some, however weak, influence. Second, while it is easy to understand that the effective number of parliamentary parties is more responsive to electoral system changes than the effective number of elective parties, it is difficult to understand that it is not even more responsive; after all, even if, on the average, the latter is not affected at all by the electoral system changes, we would still expect the effective number of parliamentary parties to change by the sheer mechanical force of the electoral system changes.

A possible explanation of the first of these anomalies is that changes in the effective number of elective parties are based on psychological factors—expectations about the effects of electoral system changes—and that it may take more time for these expectations to change than for the electoral systems to change themselves. The politicians who have engineered the change in the electoral system presumably know and understand its likely impact right away, but the voters and some of the activists and financial supporters may need some actual experience with the new system in order to understand it. This explanation may be tested by comparing the effects of the old system not with those of the entire new system, but with the new system beginning with the second or the third election after the change.

The second possible explanation is of a methodological nature. I have used electoral systems within the same country as comparable cases, on the grounds that while these electoral systems were undergoing changes, the political parties and electorates could be assumed to remain basically unchanged. However, the period under observation is so long—close to half a century for most of the countries—that this assumption may well be questioned. Moreover, some of the electoral systems themselves extend over such long periods of time and so many elections that significant changes in parties and electorates may have occurred even within these systems. This explanation suggests an alternative method of measuring changes in the effective numbers of parties when the electoral system is changed: instead of comparing two entire systems—that is, all of the elections in the two systems—we should focus on elections that are as close together as possible in order to maximize comparability. Matthew S. Shugart has successfully used this kind of strategy in his study of electoral reform in some PR countries: he compares the results of the last two elections under the old rules with those of the first two elections under the reformed system.⁶ There is an obvious drawback to this strategy as well: using just one or two elections, instead of all of the elections available for an electoral system, deprives one of the advantage of the greater accuracy and reliability that repeated observations of the operation of the same system provide.

The above two considerations suggest the following alternative tests of the influence of changes in the electoral system on multi-partism: in order to give the explanation of lagged response a fair chance and in order to maximize comparability (and in spite of a reduction in the reliability of the evidence), compare the results of the last election of the old electoral system with the second and with the third election under the new system. When the change is a change from a parliamentary election system to a Euro-election system, the last election in the former is defined as the election just prior to the first Euro-election; in Ireland, for instance, this last parliamentary election took place in 1977, because it was the last election before the first Euro-election in 1979, and it is compared with the second and third Euro-elections in 1984 and 1989. Parenthetically, another small but not insignificant drawback of these alternative tests must be noted here: since not all of the electoral systems have second and third elections, focusing on

these elections reduces the instances of change available for analysis—from 20 to 15 and from 20 to 13 respectively.

The results of one of the alternative tests are presented in Table 4.4 in abbreviated form; in order to save space, the indices of disproportionality and the effective numbers of parties of the two comparable elections are omitted, and merely the increases and decreases are included in the table. The table gives the results for the changes to the second election in the new system rather than the third; the results of the two comparisons are quite similar, but the latter is based on fewer cases of change.

Table 4.4 shows again that actual changes in the disproportionality of elections, as measured by the least-squares index, follow changes in electoral system properties very closely. As far as the effects on the effective number of parties are concerned, the table solves one anomaly and confirms the other. The more refined test demonstrates clearly that the degree of multipartism in parliament does respond quite faithfully to changes in the proportional or disproportional tendencies of electoral systems: in the fifteen instances of change, there is only one exception to this proposition. On the other hand, the lack of responsiveness of the effective number of elective parties is confirmed: the ratio of positive (expected) to negative reactions is 6 to 9. When the three majoritarian systems are removed, the ratio for the PR systems becomes an even more damning 4 to 8.

The conclusion is now inescapable that differences in disproportionality in PR systems do not appreciably affect the effective number of elective parties. These differences are clearly not large enough to produce commensurate differences in the strategic calculations by élites and voters and hence insufficient psychological forces systematically to affect the party system. The systematic influence by the electoral system on the party system that does occur is the impact on the effective number of parliamentary parties, and it is due almost entirely to the mechanics of the translation of votes into seats.

We can seek further confirmation from the instances of change in electoral systems that entailed changes on two dimensions, as long

TABLE 4.4. One-dimensional changes in the electoral system and changes in dispropportionality and effective numbers of parties, from the last election in the old to the second election in the new electoral system.

Electoral system	Disproportionality (%)	Effective number of elective parties	Effective number of parliamentary parties	Change ^a
ISR1-2	-1.25	+0.92	+1.23	+1.40 ^b
ISR2-3	+1.94	+1.40 ^b	+0.81	-5.60
NOR1-2	-5.60	-0.28	+0.32	-1.08
SWE1-2	-1.08	-0.05	+0.12	-9.95
IND1-2	-9.95	-1.25	+1.25	+1.00
DEN1-2	-0.27	-0.01	+1.40	-4.75
ICEL-2	-0.27	+0.42	-0.08	-4.25
AU1L1-2	-0.27	-0.03	+0.13	+0.37
AU1L2-3	-0.25	-0.25	+0.18	+0.05
GER3-4E	+4.55	+0.23	+0.01	-0.01
GER1-2	-7.40	-0.05	+0.37	+0.37
IRI1-2E	+8.80	+0.97	-0.11	-0.11
MAL1-2	+4.55	+0.33	+0.01	+0.01
UK1-2E	+6.95	+0.09	-0.16	-0.16

Notes:

^a See description of electoral systems on pp. 13-14, 16.

^b The changes that run counter to the hypothesized influence of the electoral system dimensions are italicized.

as both changes were in the same direction of proportionality or disproportionality. There are eleven changes of this kind among our electoral systems. They all involve a change in the effective threshold combined with either a change in formula or a change in assembly size. Table 4.5 presents the increases and decreases in the least-squares indices of disproportionality and in the effective numbers of parties from the last election of the old system to the second election of the new system. As in the earlier tables in this chapter, the figures that run counter to the hypothesis are italicized.

The evidence should be stronger and clearer than in Table 4.4, because the changes are the results of two shifts in the same direction instead of just one shift of the electoral system. However, the impact on the effective number of parliamentary parties is now slightly weaker. On the other hand, the changes in the index of disproportionality are again almost entirely as hypothesized, and the changes in the effective number of elective parties are again about evenly divided—showing essentially no impact of the electoral system on elective multipartism.

WITHIN-SYSTEM CHANGES

I made a final attempt to use the comparative method by focusing on small changes that occurred entirely within a particular electoral system. These are changes that are not large enough to signify the start of a new system, that is, they are neither a clear change of electoral formula nor a change of 20 per cent or more in the effective threshold or the assembly size. Most of them were slight upward or downward adjustments of the effective threshold: modifications in the average district magnitude, as in Finland, Ireland, Malta, and Portugal, or in the legal threshold, as in Denmark and Italy. I examined seventeen changes of this kind, again attempting to achieve as much comparability as possible by comparing the last election before the change with the second election after. My rationale was that, however small, these changes might be discovered to affect disproportionality and multipartism to some degree, since the effective threshold had proved to be the strongest of the electoral system dimensions, and since these small changes

Changes in electoral system ^a	Disproportionality (%)	Effective number of elective parties	Effective number of parliamentary parties	Effective threshold	And assembly size	Effective threshold formula	Notes:
AUT1-2	-1.95	-0.03 ^b	+0.09	+1.16	-2.30	-0.85	JPN1-2
FRA2-3	+11.72	-1.16	-1.16	-2.08	-0.51	-0.20	ITTA1-2
ITA2-3	+11.72	-1.16	-1.16	-2.08	-1.07	+0.20	ITTA1-2
CR1-2	-0.45	-1.24	-1.24	+7.65	+0.14	-0.50	LUX1-2E
BEL1-2E	+3.70	+0.40	+0.40	-0.41	-0.41	-0.49	NET1-2
NET2-3E	+2.45	+0.09	+0.09	-0.53	-0.53	-0.13	NET2-3E
SWE2-3	-1.51	+0.33	+0.33	+0.48	+0.48	+0.48	SWE2-3

TABLE 4.5. Two-dimensional changes in the electoral system and changes in disproportionality from the last election in the new electoral system of parties, from the last election in the second system and changes in dispropotionality and effective numbers

- ^a See the description of electoral systems on pp. 13–14, 16.
- ^b The changes that run counter to the hypothesized influence of the electoral system dimensions are italicized.

occurred in optimally controlled circumstances within the same electoral system.

The results, however, turned out to be entirely negative. The changes in disproportionality and in the effective numbers of elective and parliamentary parties were all about evenly divided between changes that confirmed and that disconfirmed the basic hypothesis. The small shifts in effective threshold were evidently too small to have a measurable impact.

There is also a positive aspect to this finding, however. It shows that the electoral systems, even when they include a long series of elections, have a high degree of internal uniformity. This increases the confidence we can have in the electoral systems as our basic cases for analysis—and the proper cases to be examined by means of a cross-sectional research design in the next chapter.

AFTER the comparable-cases analyses of the previous chapter, this chapter turns to the systematic analysis of all cases, that is, all seventy electoral systems—with the exception of the highly unusual case of the mixed PR-majority system used in the 1951 and 1956 elections in France, which cannot be made to fit our general categories. Most of the time, the remaining sixty-nine cases will be the focus of attention, but I shall also single out the fifty-seven PR cases for special examination on many occasions.

I shall start with the bivariate relationships between the three electoral system dimensions on the one hand and disproportionality and party system characteristics on the other. My next topic will be the multivariate relationships among these variables, which I shall examine by means of both cross-tabulations and regression analysis. Finally, I shall test whether the empirical relationships discovered in this chapter hold up when a more conservative criterion—generally, a 50 per cent instead of a 20 per cent cut-off point—is used to distinguish between cases. This leads to several instances of consolidation of two or more cases in the same country into a single case—and the reduction from sixty-nine to fifty-two electoral systems (excluding 1951–6 France).

Bivariate and Multivariate Analyses

BIVARIATE PATTERNS

Table 5.1 presents the bivariate relationships between the electoral formula on the one hand and disproportionality and the four party system variables on the other. The formulas are broken down into five categories: (1) plurality, (2) other majoritarian formulas, (3) d'Hondt and LR-Imperiali, the least proportional of the PR formulas, (4) the more proportional LR-Droop, STV, and modified

Sainte-Laguë formulas, and (5) the most proportional LR-Hare formula. As explained in Chapter 2, the Japanese limited vote and single non-transferable (SNTV) systems are grouped in the middle PR category, and the Greek reinforced PR systems, after being reconfigured, belong to the d'Hondt formulas.

The percentage of disproportionality decreases as hypothesized from the plurality formula to LR-Hare. This decrease is both monotonic and dramatic: from almost 14 per cent to less than 2 per cent. The principal difference is between the majoritarian systems and the PR systems. The percentages in this column confirm the three general rules emphasized earlier. One, all electoral systems, including PR, are disproportional to some extent. Second, they are all also reasonably proportional, in the sense that even the highest disproportionality is not outrageously disproportional; the disproportionality of the plurality systems, for instance, is less than three times that of the d'Hondt PR system. But, third, there are obviously big and important differences among the various systems, and the systems of proportional representation are indeed much more proportional than the non-proportional systems.

An important caveat needs to be attached to the second of these rules. Electoral systems that provide incentives for strategic behaviour, especially plurality systems, significantly underestimate the degree of disproportionality: assuming that many voters cast their votes for larger parties because they do not want to waste their votes on small parties with poor chances of being elected, the parties' seat shares deviate much more from the pattern of the voters' true preferences than from the actual vote shares—and it is the latter on which the index of disproportionality is based.

An excellent indication of the strength of strategic behaviour can be found in the difference in effective numbers of elective parties between plurality and other majoritarian formulas.¹ The two formulas are alike in most respects—including the fact that they are normally applied in single-member districts—but differ in that strategic voting is, by and large, not necessary in the non-plurality systems. In France, voters can vote for their favourite small party in the first round without wasting their votes, because the second round, if no candidate wins in the first round, offers them another chance to vote for a candidate of one of the major parties.² In Australia, giving one's first preference to a candidate of a small party is not a wasted vote because, if the contest is not decided on

Note: The numbers of cases on which the average numbers and percentages are based are in parentheses.

Electoral formula	Disproportionality	Effective number of electives	Frequencies of parliamentary parties	Frequencies of majorities	Frequencies of manufactured majorities
Plurality (7)	13.56	3.09	2.04	0.93	0.71
Other majoritarian (5)	10.88	3.58	2.77	0.52	0.52
D'Hondt, etc. (32)	5.22	4.35	3.70	0.25	0.14
LR-Droop, etc. (13)	4.15	3.80	3.29	0.18	0.14
LR-Hare (12)	1.88	3.62	3.46	0.24	0.14
All (69)	5.69	3.94	3.34	0.30	0.21

TABLE 5.1. The effects of electoral formulas on disproportionality and party systems in 69 electoral systems

the basis of first preferences, second preferences will be counted and may help to elect one of the major candidates. The difference between the effective numbers of elective parties in plurality and other majoritarian systems—3.09 compared with 3.58 parties—must be attributed mainly to the strong presence versus the virtual absence of strategic voting. It is worth noting that the effective number of elective parties in the French and Australian systems is lower than in the PR systems, but not a great deal lower—and almost the same as that in the LR-Hare systems.

That disproportionality does not automatically lead to fewer elective parties is again demonstrated by the PR systems: the least proportional d'Hondt formula has the most parties, and the most proportional LR-Hare has the fewest parties. However, in line with the findings in the previous chapter, this order is partly reversed and the differences are narrower as far as the effective numbers of parliamentary parties are concerned. The less proportional formulas do cause a sharper reduction in the effective number of parties from elective to parliamentary parties. The greatest reduction, both in absolute and in relative terms, takes place in plurality systems.

In fact, by far the most striking difference in Table 5.1 is that between plurality and the other formulas: only plurality succeeds in creating a two-party system, by reducing the average effective number of about three elective parties to one with two parliamentary parties.³ The one qualification that needs to be emphasized here is that the Indian party system has usually been one of a dominant party and several smaller parties, which adds up to an effective number of roughly two parties, instead of a system with two more or less balanced parties. Both the two-party and the dominant-party patterns are associated with a very high incidence of parliamentary majorities: an average of more than 90 per cent, of which more than two-thirds are manufactured majorities. In the other majoritarian systems, all of the parliamentary majorities are manufactured, and they occur in only slightly more than half of the elections. Parliamentary and manufactured majorities are not uncommon in PR systems either but they occur at a much lower frequency. The three PR formulas do not differ greatly among themselves except that, under the most proportional LR-Hare system, manufactured majorities are extremely rare.

For the PR systems of election, Table 5.2 demonstrates that the

Effective threshold (%)	Disproportionality (%)	Effective number of elective parties	Frequency of parliamentary parties	Frequency of manufactured majorities	Majorities manufactured
35 (12)	12.44	3.30	2.34	0.76	0.63
12.9 to 18.8 (9)	7.24	3.28	2.71	0.61	0.38
8.0 to 11.7 (13)	5.74	3.99	3.31	0.25	0.18
4.0 to 5.9 (17)	3.68	4.56	3.99	0.05	0.04
0.1 to 3.3 (18)	2.29	4.07	3.74	0.11	0.03
All (69)	5.69	3.94	3.34	0.30	0.21

TABLE 5.2. The effects of effective thresholds on disproportionality and party systems in 69 electoral systems

Note: The numbers of cases on which the average numbers and percentages are based are in parentheses.

differences in effective thresholds are considerably more consequential than the differences in formula. The effective threshold is a continuous variable, but naturally occurring discontinuities make it easy to divide the values into five categories. The largest break occurs between the 35 per cent arbitrarily assigned to all majoritarian systems and the highest threshold—18.8 per cent under reinforced PR in Greece—in any PR system. But the effective thresholds of PR systems also clearly cluster in four groups, as shown in the first column of the table.

Because plurality and majority formulas have the highest effective thresholds, the top row of the table merely repeats the information that was already contained in the two top rows of Table 5.1. Table 5.2 is therefore mainly important for what it tells us about PR systems. Disproportionality decreases, as hypothesized, as the effective threshold decreases—both monotonically and with sizable differences between each of the four categories. The effective numbers of parties increase as the threshold decreases, but what looks like a clear pattern is upset by the PR systems with the lowest thresholds. However, the occurrence of parliamentary and manufactured majorities is highly sensitive to the threshold level. Among the least proportional systems—those with the highest thresholds—the average percentage of parliamentary majorities, 61 per cent, is even higher than that for the non-plurality majoritarian systems. In the next category with threshold levels between 8.0 and 11.7 per cent, such majorities are rarer but still occur in one-fourth of the elections. At lower threshold levels, both parliamentary and manufactured majorities become quite rare.

Table 5.3 shows the effects of the third electoral system dimension: assembly size. This is also a continuous variable, and I again converted it into discrete categories by taking advantage of naturally occurring discontinuities, as shown in the first column. The table is limited to the fifty-seven PR systems. The reason is that, as shown in Chapter 2, assembly size and formula are correlated: plurality and majority systems are used most often for the election of the largest assemblies. As a result, the bivariate relationship between assembly size and disproportionality for all sixty-nine electoral systems appears to be curvilinear: as assembly size increases, disproportionality decreases from 5.96 to 4.62 per cent, but then goes up to 4.92 and, for the largest assemblies, to 7.03 per

Note: The numbers of cases on which the average numbers and percentages are based are in parentheses.

Assembly size	Disproportionality (%)	Effective number of effective parties	Frequency of parliaments	Frequency of majorities	Manufactured majorities
6 to 81 (20)	4.86	3.96	3.42	0.21	0.08
100 to 200 (19)	4.12	4.10	3.65	0.28	0.19
211 to 350 (7)	4.00	3.66	3.19	0.28	0.19
402 to 626 (11)	3.63	4.50	3.87	0.15	0.11
All (57)	4.27	4.07	3.55	0.20	0.12

TABLE 5.3. The effects of assembly size on disproportionality and party systems in 57 PR systems

cent. There is no plausible theoretical reason for this, and the most likely explanation is that it is merely an artefact of the relationship between assembly size and plurality-majority systems. In order to control for this disturbing influence, therefore, only the PR systems are included in the table.

As hypothesized, the percentage of disproportionality now decreases monotonically as assembly size increases. The biggest difference is between the smallest assemblies, with up to 81 members, and the next category of assemblies with 100 to 200 members. This makes good theoretical sense, because, while the technical possibility of achieving perfect or near-perfect proportionality keeps improving as assembly size goes up, only the smallest assembly sizes entail serious restrictions on proportionality. In line with this finding, we would expect lower effective numbers of parties and higher frequencies of parliamentary and manufactured majorities in these small assemblies. Table 5.3 shows that this is not the case; in fact, the values for the smallest assemblies are very close to the average values for all assemblies. For the larger assemblies, there is no discernible pattern either. Of the three sets of bivariate relationships, those of the effects of assembly size are plainly the weakest.

The multivariate relationships are shown in a series of five tables (Tables 5.4 to 5.8). In order to have sufficient cases in each category, the two classes of PR systems with the highest thresholds were merged and, similarly, the two most proportional PR formula groups were consolidated. The juxtaposition of three types of formula and four categories of effective thresholds yields 12 cells, but 5 of these are logically empty. The first table, which presents the multivariate results for disproportionality, makes a further dichotomous contrast according to assembly size, using the difference between the smallest assemblies (with up to 81 members) and the larger ones (with 100 or more members) that we just discovered to be the most important dividing line.

Table 5.4 is the kind of table that is a researcher's pure delight because of the beautifully regular pattern it displays. Part A shows a completely perfect relationship between formula and threshold

TABLE 5.4. Average percentages of disproportionality, classified by electoral formula, effective threshold, and assembly size, in 69 electoral systems

Assembly size	Effective threshold (%)	Plurality and other majoritarian formulas	D'Hondt and LR-Imperiali PR	Other
A. All 69 systems	35	12.44 (12)	—	—
	8.0–18.8	—	8.07 (11)	4.64 (11)
	4.0–5.9	—	4.21 (13)	1.98 (4)
B. 22 systems with small assemblies	0.1–3.3	—	2.96 (8)	1.76 (10)
	35	14.53 (2)	—	—
	8.0–18.8	—	10.32 (2)	5.26 (5)
C. 47 systems with large assemblies	4.0–5.9	—	4.95 (7)	1.91 (1)
	0.1–3.3	—	4.80 (2)	1.38 (3)
	35	12.03 (10)	—	—
	8.0–18.8	—	7.57 (9)	4.12 (6)
	4.0–5.9	—	3.33 (6)	2.00 (3)
	0.1–3.3	—	2.34 (6)	1.92 (7)

Note: The numbers of cases on which the average percentages are based are in parentheses.

on the one hand and disproportionality on the other: the indices of disproportionality gradually decrease from the top left-hand cell to the bottom right-hand cell. The plurality and majority systems have the highest disproportionality. After that, the indices of disproportionality of the d'Hondt and LR-Imperiali systems are higher than those of the other PR systems in each of the threshold categories; and within the two PR formula categories, the indices decrease as the effective threshold decreases. When assembly size is controlled, by separating the small from the large assemblies in parts B and C of the table, the same perfect pattern is repeated twice.

TABLE 5.5. Average effective numbers of elective parties, classified by electoral formula and effective threshold, in 69 electoral systems

Effective threshold (%)	Plurality and other majoritarian formulas	D'Hondt and LR-Imperiali	Other PR
35	3.30 (12)	—	—
8.0–18.8	—	3.83 (11)	3.57 (11)
4.0–5.9	—	4.73 (13)	4.00 (4)
0.1–3.3	—	4.46 (8)	3.76 (10)

Note: The numbers of cases on which the average effective numbers of parties are based are in parentheses.

By comparing the corresponding cells in parts B and C, we can also gauge the effect of assembly size when formula and threshold are controlled. Disproportionality is generally lower in the larger assemblies, but here two slight imperfections appear: in the two lowest threshold groups of the other PR systems. The difference in disproportionality in the 4.0 to 5.9 per cent threshold category is very small, and should probably not be taken too seriously because of the few cases in these cells, but the entries in the two bottom right-hand cells clearly deviate from the expected pattern. A plausible explanation is at hand, however: it makes sense that in this most proportional category, with an overall disproportionality well below 2 per cent, small assembly size does not contribute any further to lower disproportionality.

The classification by assembly size is not repeated in Tables 5.5 to 5.8 because the effect of assembly size now largely disappears. There are still slightly more differences in the expected direction than in the contrary direction, but the pattern is too erratic to warrant the conclusion that even a slight influence of assembly size remains. Table 5.5 does not show a very clear pattern for the influence of electoral formula and effective threshold on the number of elective parties either. There are more parties in the PR systems than in the plurality and majority systems, but among the six PR categories the differences are more often than not against expectations: there are more instead of fewer parties in d'Hondt and LR-Imperiali than in the other PR systems, and the systems with the lowest thresholds have fewer instead of more parties than

TABLE 5.6. Average effective numbers of parliamentary parties, classified by electoral formula and effective threshold, in 69 electoral systems

Effective threshold (%)	Plurality and other majoritarian formulas		D'Hondt and LR-Imperiali		Other PR
	Effective threshold (%)	Plurality and other majoritarian formulas	D'Hondt and LR-Imperiali	Other PR	
35	—	—	2.34 (12)	—	—
8.0–18.8	—	8.0–18.8	—	3.09 (11)	3.04 (11)
4.0–5.9	—	4.0–5.9	—	4.08 (13)	3.71 (4)
0.1–3.3	—	0.1–3.3	—	3.91 (8)	3.61 (10)

Note: The numbers of cases on which the average effective numbers of parties are based are in parentheses.

those with medium thresholds. This finding confirms the lack of influence of different PR systems on the effective number of elective parties that already emerged from the comparative analysis in the previous chapter.

However, the previous chapter did show a substantial influence of different forms of PR on the effective number of parliamentary parties. At least at first sight, Table 5.6 does not appear to confirm this finding. In fact, all of the differences in this table are exactly in the same direction as those in the previous table—but they are all much smaller. The one clear pattern that Table 5.6 does show is the major difference between PR systems with thresholds of 8.0 per cent and higher and those with thresholds of 5.9 per cent and lower. Within the latter category, the differences are very small. Thresholds therefore clearly matter in the sense that thresholds of 8.0 per cent and higher substantially reduce the effective numbers of parliamentary parties: these numbers are roughly half-way between those of the plurality-majority and the other PR systems. But there is no gainsaying of the contradiction between the evidence of Table 5.6 and the comparative evidence in the previous chapter with regard to PR formulas. Since the positive finding in the previous chapter was based on the more tightly controlled comparable-cases analysis, it can obviously not be abandoned, but it is weakened at least slightly.

The pattern of a major division between systems with thresholds above 8.0 per cent compared with lower-threshold systems found in Table 5.6 also shows up very clearly in Tables 5.7 and 5.8. Both

TABLE 5.7. Average frequencies of parliamentary majorities, classified by electoral formula and effective threshold, in 69 electoral systems

Effective threshold (%)	Plurality and other majoritarian formulas	D'Hondt and LR-Imperiali PR	Other PR
35	0.76 (12)	—	—
8.0-18.8	—	0.40 (11)	0.40 (11)
4.0-5.9	—	0.06 (13)	0.00 (4)
0.1-3.3	—	0.06 (8)	0.15 (10)

Note: The numbers of cases on which the frequencies are based are in parentheses.

TABLE 5.8. Average frequencies of manufactured majorities, classified by electoral formula and effective threshold, in 69 electoral systems

Effective threshold (%)	Plurality and other majoritarian formulas	D'Hondt and LR-Imperiali	Other PR
35	0.63 (12)	—	—
8.0-18.8	—	0.31 (11)	0.22 (11)
4.0-5.9	—	0.05 (13)	0.00 (4)
0.1-3.3	—	0.06 (8)	0.00 (10)

Note: The numbers of cases on which the frequencies are based are in parentheses.

parliamentary majorities and manufactured majorities occur with considerably greater frequency at the higher threshold levels. As in Table 5.6, these figures are roughly in the middle between the frequencies of plurality-majority and other PR systems. What Tables 5.7 and 5.8 partly obscure, but what was already shown in the earlier Table 5.2, is that the majority-generating capacity is especially strong among the PR systems with the highest thresholds of 12.9 per cent and above. This small group contains some of the more unusual PR systems: Irish and Maltese STV, Japanese SNTV (literally a semi-PR rather than a PR system), and Greek reinforced PR. A slightly greater tendency of d'Hondt and LR-Imperiali systems compared with other PR systems to yield manufactured majorities also appears in Table 5.8, but there is no

clear pattern differentiating the two PR formula groups as far as the generation of parliamentary majorities is concerned.

REGRESSION ANALYSES

Most of our variables are cardinal in nature and hence capable of being subjected to regression analysis. And the one variable that is discrete—the electoral formula—can be dichotomized and thus also included in this kind of analysis. Tables 5.9 and 5.10 show the regression analyses for all sixty-nine electoral systems (again with the exception of 1951-6 France); in Table 5.10, a PR dummy variable is used—essentially dichotomizing the electoral formulas into plurality and majority versus PR systems. Table 5.11 shows the regression analyses for the fifty-seven PR systems only; here a d'Hondt and LR-Imperiali dummy represents the dichotomy between these least proportional PR formulas and all other PR formulas.

The tables show the regression of each of the dependent variables on the three independent variables (the three electoral system dimensions). For each regression, the tables present the estimated (unstandardized) regression coefficients, the standardized regression coefficients (betas), and the t-values for each independent variable, as well as the intercept, the square of the correlation coefficient (R^2), and the adjusted R^2 . The betas can be interpreted as rough indicators of the strength of each independent variable in explaining the dependent variables. Because of the relatively large number of cases and the small number of independent variables, the adjusted R^2 is generally only slightly lower than the unadjusted R^2 , but my measure of the proportion of variance explained will be the former, more conservative R^2 . The tables also indicate whether or not the regression coefficients are statistically significant at the 5 per cent or 1 per cent level.

Because the majoritarian-PR contrast and the effective threshold are so highly correlated, they cannot be entered into the same regression equation. Therefore, as Tables 5.9 and 5.10 show, they were entered into separate regression equations together with assembly size. Uniformly, the results—both the percentage of variance explained and the betas—are stronger when the effective

Notes:						
Independent variables	Disproportionality	Effective number of effective parties	Frequency of parliamentary parties	Frequency of majorities	Frequency of manufactured majorities	Adjusted R ²
PR dummy	-8.61**	0.81*	1.24**	-0.57**	-0.50**	0.47
Assembly size	(7.96)	(2.13)	(3.92)	(5.20)	(5.30)	(1.78)
(log)	-1.60*	0.11	0.11	-0.03	0.02	-0.16
R ²	-0.72	0.26	0.45	-0.55	-0.57	0.49
Intercept	16.26	3.04	2.07	0.84	0.59	0.19
		(0.34)	(0.43)	(0.36)	(0.21)	0.06
						0.30
						0.33
						0.31

Notes:						
Independent variables	Disproportionality	Effective number of effective parties	Frequency of parliamentary parties	Frequency of majorities	Frequency of manufactured majorities	Adjusted R ²
PR dummy	-8.61**	0.81*	1.24**	-0.57**	-0.50**	0.47
Assembly size	(7.96)	(2.13)	(3.92)	(5.20)	(5.30)	(1.78)
(log)	-1.60*	0.11	0.11	-0.03	0.02	-0.16
R ²	-0.72	0.26	0.45	-0.55	-0.57	0.49
Intercept	16.26	3.04	2.07	0.84	0.59	0.19
		(0.34)	(0.43)	(0.36)	(0.21)	0.06
						0.30
						0.33
						0.31

TABLE 5.9. Regression analyses of the influence of the effective threshold and assembly size on disproportionality and party system variables in 69 electoral systems

** Statistically significant at the 1 per cent level (one-tailed test).
* Statistically significant at the 5 per cent level (one-tailed test).

a The estimated regression coefficients are listed first, followed by the standardized coefficients; absolute t-values are in parentheses.

Notes:						
Independent variables	Disproportionality	Effective number of effective parties	Frequency of parliamentary parties	Frequency of majorities	Frequency of manufactured majorities	Adjusted R ²
Effective threshold	0.32**	-0.03**	-0.05**	0.02**	0.02**	0.63
Assembly size	-1.52*	0.12	0.12	-0.03	0.02	(2.04)
(log)	-0.15	0.05	0.05	-0.04	0.03	-0.05
R ²	0.64	0.11	0.30	0.43	0.43	0.47
Intercept	5.31	4.07	3.66	0.12	-0.05	-0.05
		(0.39)	(0.50)	(0.42)	(0.29)	(0.24)
						0.41
						0.43
						0.41

TABLE 5.10. Regression analyses of the effect of the electoral formula and assembly size on disproportionality and party system variables in 69 electoral systems

** Statistically significant at the 1 per cent level (one-tailed test).
* Statistically significant at the 5 per cent level (one-tailed test).

a The estimated regression coefficients are listed first, followed by the standardized coefficients; absolute t-values are in parentheses.

threshold rather than the PR dummy is used as one of the independent variables. The reason, of course, is that the effective threshold is capable of capturing the less proportional and more majority-generating tendencies of the high-threshold PR systems, whereas the PR dummy assumes no differences within the broad group of PR systems. Because of the differences within the majoritarian group between plurality and non-plurality systems (see Table 5.1), I also tried using a plurality dummy (contrasting plurality on the one hand with the other majoritarian systems plus the PR systems on the other), but this always yielded weaker results than those produced by the PR dummy.

It comes as no great surprise after all the evidence that has already been presented, that disproportionality is the variable that is best explained by the electoral system dimensions. The proportion of variance explained by the effective threshold and assembly size is almost two-thirds (63 per cent). The effective threshold by itself—that is, in a bivariate regression equation—already explains 61 per cent of the variance. Assembly size adds a bit more than one percentage point, but this contribution is still statistically significant at the 5 per cent level. The unequal impact is also reflected by the widely different betas. When we look at the unstandardized regression coefficients, each percentage increase in the effective threshold produces almost a third (0.32) of a percentage increase in disproportionality, and each unit increase in the logged assembly size (which means a tenfold jump in assembly size from, say, 10 to 100 or from 50 to 500) yields a decrease of about a percentage point and a half (1.52 per cent) in disproportionality.

Since I introduced three alternative measures of disproportionality in Chapter 3 (the Rae, Loosemore-Hanby, and largest-deviation indices), it is worth enquiring at this point whether the impressive total percentage of variance explained can be raised further when these are used instead of the least-squares index. The answer is yes for the Rae index for which the variance explained is 74 per cent—probably due to this measure's tendency to overstate the proportionality of PR systems (see Chapter 3)—but no for the Loosemore-Hanby and largest-deviation indices for which the variance explained is 52 and 57 per cent respectively. Using the Taagepera-Shugart threshold instead of my preferred effective threshold lowers the variance explained only slightly: from 63 to 61 per cent.

The variance explained of the other variables is considerably lower—especially low for the effective number of elective parties (again, not much of a surprise), but a respectable 28 to 42 per cent for the other three. It should be noted that assembly size is no longer a significant explanatory variable, and that the total amount of explained variance is explained almost entirely by a single variable: the effective threshold. Each percentage increase in the effective threshold reduces the effective number of elective parties by 0.06, and it increases the frequency of parliamentary and manufactured majorities by about 4 and 2 per cent respectively. All of the coefficients of the regressions of the dependent variables on the effective threshold as well as on the PR dummy are statistically significant, usually at the 1 per cent level; in fact, as the high t-values show, most of the coefficients that are significant at the 1 per cent level are also significant at the 0.1 per cent level.

In the regression analyses of the fifty-seven PR systems, all three independent variables could be entered simultaneously (see Table 5.1), but the results are similar in many respects to those of the regression analyses of all sixty-nine systems. Disproportionality is again the variable of which the largest amount of variance can be explained, and the proportion explained is again almost two-thirds (63 per cent). The effective threshold is also again the strongest force, but, as the betas indicate, the electoral formula (the d'Hondt and LR-Imperiali dummy) and assembly size also make important contributions; all of the regression coefficients are statistically significant at the 1 per cent level. In a stepwise regression, the effective threshold by itself explains almost 45 per cent of the variance in disproportionality; the electoral formula raises this percentage by 12 points to 57 per cent; and assembly size adds the final 6 per cent. The unstandardized regression coefficients show that each percentage increase in effective threshold increases disproportionality by 0.42 per cent, that moving from one of the more to one of the less proportional PR formulas raises the index of disproportionality by 2.19 per cent, and that each unit increase in logged assembly size decreases disproportionality by 1.68 per cent.

The Rae index of disproportionality again gives a somewhat better result (71 per cent of variance explained), and the Loosemore-Hanby and largest-deviation measures again perform not as well as the least-squares index (55 and 58 per cent respectively).

However, the Taagepera-Shugart threshold now yields a slightly stronger result than my effective threshold: in conjunction with the electoral formula and assembly size, it explains almost 65 percent of the variance in disproportionality.

The amounts of variance in the other dependent variables that the electoral system dimensions manage to explain is again much lower than the explained variance in disproportionality—and also lower than the corresponding percentages of variance explained in the regression analyses of all sixty-nine systems. The electoral formula dummy appears to be a significant variable (with a beta of 0.26 and a t-value of 2.06) in the explanation of the effective number of elective parties—but note that its sign is wrong: the use of d'Hondt or LR-Imperiali is associated with a larger instead of a smaller number of parties, contrary to the hypothesized effect of these relatively disproportional PR formulas. In the regressions of the other party system variables, the electoral formula is not statistically significant either and adds only slightly to the total variance explained; assembly size makes no contribution at all. The general pattern is that the effective threshold is the most important, and almost the only important, explanatory variable. In several respects, it emerges as a stronger factor among the fifty-seven PR systems than among all sixty-nine electoral systems: each percentage increase produces a greater increase in disproportionality and about twice as much of an increase in the effective numbers of parties and in the frequency of parliamentary majorities.

The strength of the effective threshold as an explanatory variable is also highlighted when we compare Tables 5.9 to 5.11 with Table 3.4 in Chapter 3. This table shows strong correlations between disproportionality and the party system characteristics with the exception of the effective number of elective parties. A reasonable expectation would have been that disproportionality, as the putative causal link between the electoral system and the party system, would be a stronger explanatory variable than any of the electoral system dimensions by themselves or even stronger than all of the electoral system dimensions combined. This is not the case, however: for all four of the party system variables and for both the set of sixty-nine electoral systems and the set of fifty-seven PR systems, just one of the electoral system dimensions, the effective threshold, explains a substantially larger proportion of the variance than disproportionality.

Independent variables							System variables in 57 PR systems								
	Disproportionality	Effective number of elective	Effective number of	Frequencies of	Frequencies of	Majorities	Majorities	Parliamentary	Parliamentary	Majorities	Majorities	Party	Party	Party	Party
Effective	0.42**	-0.06*	-0.09**	-0.04**	0.04**	0.02**									
threshold ^a	0.66	-0.27	-0.42	0.54	0.48										
d'Hondt and LR-Imperiali	2.19**	(8.13)	(2.09)	(3.39)	(4.70)	(4.06)									
dummy	0.36	0.26	0.15	-0.05	0.05										
Assembly size	-1.68**	(4.35)	(2.06)	(1.23)	(0.68)	(0.86)									
(log _e)	-0.25	-0.07	-0.04	0.02	0.02										
Intercept	3.86	4.29	3.88	-0.04	-0.21										
R ²	0.65	0.14	0.20	0.30	0.25										
Adjusted R ²	0.63	0.09	0.15	0.26	0.21										

^a The estimated regression coefficients are listed first, followed by the standardized coefficients; absolute t-values are in parentheses.

Note(s):

* Statistically significant at the 5 per cent level (one-tailed test).

** Statistically significant at the 1 per cent level (one-tailed test).

TABLE 5.11. Regression analyses of the effect of three electoral system dimensions on disproportionality and party

A REPPLICATION OF THE REGRESSION ANALYSES WITH
CONSOLIDATED CASES

As promised in Chapter 1, I also replicated the regression analyses on a smaller number of more leniently defined electoral systems.⁴ Having more than one electoral system in the same country offers a special advantage because it means that the comparable cases method can be applied. However, using them as cases in cross-sectional research is at least somewhat problematic because the cases in this type of analysis should ideally be completely independent of each other and, in practice, should be as independent as possible. In order to comply with this requirement, I redefined the electoral systems in such a way as to have fewer systems in the same country: a total of fifty-three cases in the twenty-seven countries—only about two electoral systems per country.

Instead of my earlier 20 per cent criterion, I used the criterion that at least 50 per cent change in the effective threshold or in the assembly size was necessary for a set of elections to be defined as a new electoral system. With regard to the electoral formula, I did not count changes within the family of majoritarian systems or within each of the three major groups of PR systems as changes that triggered the definition of a new electoral system; for instance, the switch from the reinforced to the normal LR-Imperial in Italy in the 1950s was considered to be a within-system instead of a between-system change. In addition, it seemed reasonable to be even more lenient in the following three cases: (1) the adoption of the very low threshold of 1 per cent in Israel after the 1949 election; (2) the increase in the low effective threshold of 1.6 to a still rather low 2.6 per cent in Denmark in 1953; and (3) the increase in assembly size from 74 to 121 in the late 1940s in Australia.

I also dropped the criterion that electoral systems had to consist of successive elections. This meant that the Israeli elections held in 1949 and from 1973 on, held under similar election rules (ignoring the lack of a legal threshold in 1949), could be regarded as elections belonging to the same electoral system. Similarly, the 1945–6 and 1986 elections in France, forty years apart but conducted with strikingly similar election rules, could be treated as a single electoral system. One consequence of all these consolidations was to increase

TABLE 5.12. Regression analyses of the influence of the effective threshold and assembly size on disproportionality and party system variables in 52 electoral systems (consolidated cases)

	Independent	Disproportionality	Effective number of electives	Frequency of parties	Frequency of parliamentary parties	Frequency of parties	Majorities	Majorities	Majorities	Majorities	Majorities
Effective	0.32**	-0.03*	-0.05*	0.02**	0.02**	0.02**	0.69	0.67	0.67	0.67	0.67
threshold ^a	0.83	-0.31	-0.51	0.67	0.67	0.67	0.98	0.98	0.98	0.98	0.98
Assembly size	-2.36**	(9.88)	(2.22)	(4.02)	(6.18)	(6.57)	-0.04	-0.04	-0.04	-0.04	-0.04
(log)	-0.26	-0.04	-0.02	0.01	0.01	0.01	(3.12)	(3.12)	(3.12)	(3.12)	(3.12)
Intercept	7.00	4.56	3.82	0.02	0.02	0.02	(0.30)	(0.16)	(0.14)	(0.40)	(0.40)
R ²	0.67	0.10	0.25	0.45	0.45	0.45	0.10	0.25	0.25	0.49	0.49
Adjusted R ²	0.66	0.07	0.22	0.43	0.43	0.43	0.07	0.22	0.22	0.47	0.47

^a The estimated regression coefficients are listed first, followed by the standardized coefficients; absolute t-values are in parentheses.

Notes:

* Statistically significant at the 5 per cent level (one-tailed test).
** Statistically significant at the 1 per cent level (one-tailed test).

the relative weight of the Euro-elections, which could never be merged with the parliamentary elections.⁵

The results of the replication of the regression analyses in the smaller sets of fifty-two electoral systems and forty-four PR systems (the 1951–6 French system was again excluded) are shown in Tables 5.12 and 5.13. Slight changes in the results of the analysis were to be expected, and they did, in fact, occur. In general, the relationships in the set of all electoral systems turned out somewhat stronger, and considerably stronger as far as the influence of assembly size on disproportionality is concerned: one unit increase in the logged assembly size now decreases disproportionality by as much as 2.36 per cent instead of 1.52 per cent—an ‘improvement’ of close to a full percentage point. On the other hand, the relationships in the consolidated set of PR cases were somewhat weaker; for instance, the coefficient of the regression of the effective number of elective parties on the effective threshold is no longer statistically significant. But it is worth noting that here, too, the influence of assembly size on disproportionality has become more sizable.

The overall pattern did not change. Of the five dependent variables, disproportionality remained the one best explained by the electoral system dimensions. The assembly size and, among the PR systems, the electoral formula did not significantly affect the party system variables. And, above all, the effective threshold remained the strongest explanatory variable.

Independent Variables	Disproportionality	Effective number of elective parties	Frequency of parliamentary majorities	Frequency of majorities	Notes:
Effective threshold ^a	0.38**	-0.07*	0.03**	0.03**	
d'Hondt and LR-Imperiali	1.90**	(1.96)	(3.09)	(4.46)	
dummy	0.34	0.63	0.33	-0.06	0.05
Assembly size (log)	-2.02**	(1.70)	(1.70)	(0.77)	(0.85)
Intercept	4.96	(0.10)	(0.10)	(0.23)	(0.90)
R ²	0.64	0.28	3.76	0.00	-0.19
Adjusted R ²	0.61	0.03	0.05	0.15	0.29

TABLE 5.13. Regression analyses of the effect of three electoral system dimensions on disproportionality and party system variables in 44 PR systems (consolidated cases)

* Statistically significant at the 5 per cent level (one-tailed test).
** Statistically significant at the 1 per cent level (one-tailed test).

^a The estimated regression coefficients are listed first, followed by the standardized coefficients; absolute t-values are in parentheses.

Note: