CHAPTER 13

Multiparty systems

> There is a radical distinction between controlling the business of government and actually doing it.
>
> John Stuart Mill

13.1 Two views of representation

> Views are divided on the role and function of elections in the democratic process and, therefore, on one of the basic constitutive elements of democratic theory. In one view, elections serve primarily to choose a government – a cabinet, administration, or executive – and only secondarily, if at all, to reflect the preferences or opinions of citizens. In that view, a cabinet governs as long as it retains the confidence (reflects the preferences or opinions) of the elected parliament.... There is a tendency for those who opt for that view – which we should note provides the foundation for the theory of *responsible* government – to focus on questions and issues that pertain to cabinets more than on those related to parliament and to citizens.
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> According to a second view, elections are primarily instruments in the hands of the public to signal particular preferences or opinions to competing representatives and only secondarily to fulfill the function of choosing a government. The basis of that view, which provides the foundation for the theory of *representative* government, is the assumption that governments seek to meet the preferences of citizens for public policies which would otherwise be unavailable or available in suboptimal quantities.
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> (Breton and Galeotti, 1985, pp. 1–2)

The two-party or two-candidate competition model of Chapters 11 and 12 provides a theoretical foundation for the first view of government. As long as the two parties or candidates must from time to time compete for the votes of the citizens, they will remain responsive to citizens' preferences. Each citizen's preference receives a positive weight in the competing candidates' objective functions. But with a large electorate, that weight will be small, and the equilibrium at which the candidates arrive may be a great distance from the citizen's most preferred platform. Moreover, since the government governs for several years, the "issues" over which the candidates compete are not specific proposals for expenditures and programs, but more general ideological and policy positions. Thus, in voting for a particular candidate the citizen does not vote for someone who will closely and directly represent the citizen's preferences. The citizen votes for the candidate or party to

whom he wishes to entrust the power to govern for the upcoming electoral period. This view of the process of government resembles somewhat Hobbes's selection of a sovereign, with the amendment that the sovereign must periodically stand for reelection.

The "ideal type" for the second view of government is Athenian democracy. Government outcomes should reflect the preferences of the people as in a direct democracy. One needs representative democracy only if the polity is too large for all citizens to assemble and decide issues directly. In choosing representatives, one seeks to select those whose voting duplicates that which would occur were all of the citizens to assemble and vote directly on the issues.

Ideal models of the first view of democracy were presented in Chapters 11 and 12. We sketch an ideal representation of the second model of democracy in the next section, and then go on to discuss proportional representation systems as they appear in the real world.

13.2 Selecting a representative body of legislators

We seek an assembly in which each citizen is represented by someone whose preferences are identical to those of the citizen.[1] Such a representative assembly cannot be formed, however, unless some citizens have preferences identical to others. Otherwise the only truly representative assembly would have to include all of the citizens. Assume, therefore, that the citizenry can be divided into s groups with all members of each group having perfectly homogeneous preferences on public issues. Let the number of citizens with preference of the ith type be n_i. Then a fully representative body can be formed by selecting s individuals, one from each group, giving each representative votes in the assembly proportional to the number of individuals represented, for example, the representative of the ith group has n_i votes. Such an assembly would have each citizen represented by someone whose preferences were identical to those of the citizen, and all citizens' preferences represented in proportion to their frequency in the polity.

The simplest way to form such an assembly would be to make the rewards for serving sufficiently attractive so that members of each group would be induced to run for office. Assuming citizens vote for representatives with preferences identical to their own, a fully representative assembly would be formed.

If s were so large as to make the assembly itself unwieldy, then its size could be limited by (1) fixing the number of seats at some figure m and allowing only the m candidates with the highest vote totals to take seats, or (2) setting a minimum on the number or percentage of votes a candidate must receive to be allowed to take a seat in the assembly. The first proposal guarantees that at most m seats are filled in the assembly. The second allows a variable number of seats to be filled, but a number less than s can be guaranteed by setting the number of votes required to be elected high enough.

[1] The model in this section resembles that discussed by Tullock (1967a, ch. 10); Mueller, Tollison, and Willett (1972, 1975); and Mueller (1996a, ch. 8).

The second two proposals would both result in some citizens having voted for candidates who did not win seats in the assembly. This feature could be avoided by having a second, runoff election among the winners on the first round to determine the number of votes each could cast in the assembly. Each citizen could then vote for the representative elected in the first round whose preferences came closest to those of the citizen. Although representation would then not be perfect, it would come much closer to the ideal than the outcome from a two-candidate winner-take-all contest.

Finally, if the feasible size of an assembly m were large relative to s, one could simply choose m citizens at random from the population and rely on the law of large numbers to ensure that the assembly formed consists of members whose preferences are in the same proportions as those of the polity at large (Mueller, Tollison, and Willett, 1972).

13.3 Proportional representation in practice

A large discrepancy exists between the ideal proportional representation (PR) system just described and its real-world counterparts. In only two countries, Israel and the Netherlands, do voters in all parts of the country face the same list of parties and candidates. In all other countries, the nation is divided into districts with each district electing several representatives. Thus, the mode of representation is typically a compromise between the extreme form of geographic representation in the first-past-the-post systems, and a fully at-large PR system.

In the typical PR system, the legislative and executive branches are combined. Following an election a head of government and her cabinet is either chosen directly by the legislature, or appointed by the head of state (the president, the queen) following the advice of the legislature. Thus, when a set of parties succeeds in putting together a majority coalition, it can effectively choose the chief executive and her fellow cabinet members – it can form "the government."[2]

In the remainder of this chapter, we discuss the properties of electoral politics in PR systems, and their consequences. We begin a review of the some of electoral rules that are found in PR systems.

13.4 Electoral rules

Our ideal PR system had but one district and as many persons elected from that district as there were seats in the legislature. Real-world PR systems differ in both the number of districts into which the nation is divided and the number of persons that can be elected from each district. The fewer the districts into which the polity is divided and the more persons elected per district, the more a geographically

[2] In the United States it is common to refer to "the government" when talking about the legislature, the executive branch and its accompanying bureaucracies, and even the judiciary. My use of the word "government" in this book generally follows this American convention. In parliamentary democracies, "the government" typically refers to the cabinet, that is, the executive authority concentrated in the parliament. In parliamentary democracies, the wider panoply of public sector activities are lumped under the heading of "the state."

based system resembles our ideal PR system. In any system in which more than one person is elected from a district, a formula must be chosen to translate votes in the district into seats in the parliament. These formulas can result in differences between the percentage of the national vote a party gets and its percentage of seats in the parliament. We shall first illustrate what is involved with five of the most often used formulas.

13.4.1 *The Hare, Droop, Imperiali, d'Hondt, and Sainte-Lagué formulas*

Consider Table 13.1.[3] A nation of 10,300,000 voters is divided into 10 districts. Seats in the parliament are apportioned to each district in proportion to population, for example, district 1 has twice the population of district 2 and therefore can fill twice as many seats. The population in each district is such as to make the allocation of seats exact. Every 100,000 voters elect one representative. (Usually, of course, even the fairest apportionment of seats results in some differences in voters per seat across districts.) Eight parties seek seats in the parliament, but all eight do not run candidates in each district. When a party fails to enter a list of candidates in a district, an NL (no list) is entered. A voter in any district votes for a single party. The seats assigned to that district are allocated in proportion to the votes cast in that district. We have assumed that the allocation rule is the largest remainder rule. Under this formula, one first calculates the Hare quotient

$$q = \frac{v}{s}, \tag{13.1}$$

where v is the total number of votes cast in a district, and s the number of seats it can fill. The number of seats won by each party is determined by dividing the number of votes won by the party, v_p, by q. This division gives a nonnegative integer I plus some fraction f, $0 \leq f < 1$; that is,

$$\frac{v_p}{q} = I + f. \tag{13.2}$$

The allocation of seats to parties proceeds by first giving each party a number of seats equal to its I. The remaining seats are assigned according to which parties have the largest remainders, f. For example, on the basis of the Is for each party, the allocation of seats in district 1 gave three seats to A, one to D, and two to G. The remaining two seats were given to A and H, since they had the highest remainders.

The second-to-last column of Table 13.1 gives the total votes won by each party (V) across the nation and the number of seats each would obtain if the formula in (13.2) were applied to the national totals rather than district by district. The last column cumulates the seats won across the ten districts. The correspondence between the seats won in the ten districts and what would have been won if the entire nation were a district is close, but not perfect. The largest remainder formula when

[3] This table and much of the discussion in this section are taken from Mueller (1996a, ch. 10).

Table 13.1. *Distribution of seats in a multirep-multidistrict system*

District	1		2		3		4		5		6		7		8		9		10		Totals		
Party	v	s	v	s	v	s	v	s	v	s	v	s	v	s	v	s	v	s	v	s	v	s	Actual seats
A	349,851	4	489,441	5	141,222	1	73,444	1	NL		111,422	1	141,383	1	268,317	3	NL		4,525		1,579,605	16	16
B	NL		69,617	1	92,856	1	101,867	1	17,642		71,683	1	155,363	2	182,741	2	81,646	1	115,922	1	889,337	9	10
C	41,442		NL		52,956	1	NL		66,817	1	NL		646,522	7	433,829	4	124,317	1	611,323	6	1,977,206	20	20
D	107,814	1	31,145		NL		32,496		75,323	1	NL		NL		110,009	1	111,666	1	224,103	2	692,556	7	6
E	NL		180,017	2	66,100	1	115,466	1	NL		88,238	1	333,661	3	101,842	1	NL		89,306	1	974,630	10	10
F	23,500		16,333		41,323		304,275	3	80,969	1	NL		141,682	1	NL		NL		79,221	1	687,303	7	6
G	227,275	2	490,376	5	480,727	5	170,631	2	59,249		192,349	2	NL		162,300	2	190,841	2	NL		1,973,748	19	20
H	50,118	1	323,071	3	224,816	2	101,821	1	NL		236,308	2	81,389	1	140,962	1	91,530	1	275,600	3	1,525,615	15	15
Totals	800,000	8	1,600,000	16	1,100,000	11	900,000	9	300,000	3	700,000	7	1,500,000	15	1,400,000	14	600,000	6	1,400,000	14	10,300,000	103	103

Notes: v, Popular vote for each party; *s*, number of seats in parliament assigned by largest remainders formula; NL = no list.

applied to the total votes cast in the nation would assign an extra seat to parties D and F, and one less seat to B and G.

Although the Hare quotient coupled with a largest-remainders rule for allocating leftover seats in a district is the most straightforward and easiest to apply, it is not the only one in use. Two variants on the Hare quotient are the Droop quota, d,

$$d = \frac{v}{s+1} \quad \text{or} \quad d = \frac{v}{s+1} + 1, \tag{13.3}$$

and the Imperiali

$$i = \frac{v}{s+2}, \tag{13.4}$$

with d as defined on the left side of (13.3) and i rounded up to the next integer. The d'Hondt method computes no quotient, but rather simply allocates the seats in a district by repeated application of the largest-remainders principle. The modified Sainte-Lagué formula uses 1.4, 3, 5, 7,... as divisors instead of 1, 2, 3, 4,... as under the d'Hondt. Still other variants on these are or have been used.[4] As we shall see, these differ in how well they match party seats to party votes, but all tend to achieve a reasonable correspondence between the two.

13.4.2 *The single-transferable vote (STV)*

In STV systems the citizen votes for a particular candidate, or more accurately candidates, rather than for a party per se. Namely, each voter ranks the candidates running in her district. Winners are determined using the second Droop quota defined above; that is,

$$d = \frac{v}{s+1} + 1, \tag{13.5}$$

where v and s are the total votes and seats in a district as before. One first determines the number of candidates with first-place votes in excess of d. These candidates are all elected. Any first-place votes for a given candidate above those required for him to reach d are then assigned to the voters' second choices. If with these transferred votes any candidate has more than d, the extra votes are assigned to the voters' third choices, and so on until the s seats are filled. STV is currently employed in the Republic of Ireland, Malta, Northern Ireland (to elect representatives to the European Parliament), Australia (to elect representatives to the Senate), and in some American cities.

When voters confine their ranking of candidates to those from a single party, STV results in the same party representation as under the largest-remainders formula (Lijphart, 1986, p. 175). The main difference between STV and a party list system

[4] The various formulas are illustrated and compared by Carstairs (1980, chs. 2 and 3), Balinsky and Young (1982), Lijphart (1986), and Amy (1993, pp. 225–38).

is that under the list system the party leadership gets to determine which persons fill the seats won by the party; under STV the voters make this determination. Under STV the voters may depose a party leader, for example, by giving her very low ranks, while under a list system she would be elected so long as her rank among the party leadership was higher than the number of seats her party won.

STV would seem to have all of the merits of a party list system – the voters can after all rank the candidates in the same order as that advocated by the party – plus the obvious advantage of allowing the voters to provide the additional input into the election process of their views on the relative merits of the party members. A particular advantage claimed for STV is that it allows ethnic, religious, and gender groups to single out party members from their group for election.[5]

13.4.3 *Limited voting*

Under limited vote systems each voter can cast c votes, $c \leq s$, where s is the number of seats to be filled in the district. The s candidates receiving the most votes in a district assume its seats in the parliament. The votes are cast for persons rather than parties, and so limited voting resembles STV in a way since the voter can indicate which members of a party he wishes to see in the parliament. But the voter can also cast his votes for persons in different parties. The only country in which limited voting with $c > 1$ is used today is Spain to elect the upper house.[6]

Limited voting is a compromise between pure PR systems in which the parties or persons receive votes in the parliament in direct proportion to the votes cast for them, and plurality systems in which representatives are elected with greatly different numbers of votes. This latter characteristic creates strategic problems for both the voters and the parties' running candidates. Suppose, for example, four seats can be filled from a district and each voter can cast three votes, the typical case in Spain. A voter might like to see all four seats filled by representatives from his most preferred party, but can cast but three votes. If the party runs four candidates, the voter must choose one candidate of the four not to vote for. If all voters who support this party choose not to vote for the same person, only three members of the party will be elected. If the number of voters supporting this party is large, however, all four seats might have been filled by representatives of this party under an alternative pattern of voting. This may lead some voters to vote for their fourth choice from the party, say, and not for their first choice, under the expectation that their first choice will receive considerably more than the number of votes required to get elected. But if large numbers of voters act the same way, their first choice might fail to get elected, while their fourth choice is elected.

A symmetric problem faces the parties in choosing the number of candidates to run. A party that runs four candidates for four seats might spread its votes

[5] For further discussion of the merits and demerits of STV, see Hallett (1984), Katz (1984), Amy (1993, pp. 183–91, 193–7), and Bowler and Grofman (2000b).

[6] For a discussion of limited voting in general, and the Spanish experience in particular, see Lijphart, Lopez, and Sone (1986) and Cox (1997, pp. 115–17).

so thinly that it elects only two; when by running three it could have elected all three. If it runs only three, however, it passes up the chance of electing four. These strategic considerations suggest that limited voting systems are a less attractive means for eliciting information on voter preferences than PR party list or STV systems.

13.4.4 *Single-nontransferable-vote systems (SNTV)*

A special case of limited voting has $s > 1$ and $c = 1$. When both s and c equal 1, we have the plurality system, so that SNTV is clearly closer to a plurality system than limited voting systems with $c > 1$. Indeed, when $c = s > 1$, limited voting resembles STV, so that limited voting approximates PR or plurality systems as s and c are large or small. Japan, Korea, and Taiwan have used SNTV, but recent constitutional changes in Japan have replaced this system with a mixture of single-member districts that use the plurality rule and a PR system for the remaining seats.[7]

13.5 Electoral rules and the number of parties

What difference do the electoral rules make? Under the plurality rule, minority parties whose support is evenly distributed across the country do not win seats. Over time, the continual lack of success of these parties can be expected to dry up their financial support and discourage both their members and leaders. Thus, under the plurality rule one expects minority parties to disappear, unless their supporters are concentrated in particular geographic areas. One expects the plurality rule to produce two-party systems.

In 1954 Maurice Duverger claimed that this tendency under the plurality rule in fact "approaches most nearly perhaps to a true sociological law."[8] Duverger's law rests on the presumption that citizens vote strategically.

To see why consider the decision calculus of a voter under the plurality rule, when there are candidates from three parties competing for her vote. Based on preelection polls and the past performance of the three parties in her district, she judges the probabilities of the three candidates' victories to be $\pi_A > \pi_B > \pi_C$. For her vote to make a difference, the two candidates receiving the most votes must *tie* save for her vote, and she must cast the decisive vote for one of them. Unless π_B and π_C are very close, the probability of a tie between the candidates from parties A and C must be much smaller than the probability of a tie between A and B. If the voter wants to have a real chance of affecting the outcome of the election, she does not "waste" her vote on the candidate from party C, but rather

[7] For further discussion of SNTV systems, see Lijphart, Lopez, and Sone (1986); and Grofman, Lee, Winckler, and Woodall (1999).

[8] As quoted by William Riker (1982a, p. 754). Riker reviews both the intellectual history of the "law" and the evidence gathered on its behalf.

gives it to the candidate from either A or B whose victory she prefers. Under the plurality rule rational voters desert the minority parties in favor of the two leading parties.[9]

The logic of the voter's calculus that underpins Duverger's law can be generalized to electoral systems, which allow two or more representatives to be chosen from a district, and leads to the general prediction that there will be more than two parties competing for votes when more than one representative is elected from each district. This prediction is often referred to as *Duverger's hypothesis*.

Assume now that two representatives can be elected in a district and there are candidates from four parties competing for the two seats. The voter judges the probabilities of each party's winning a seat to be $\pi_A > \pi_B > \pi_C > \pi_D$. If the differences between each pair of probabilities are substantial, the voter will waste her vote by voting for *either* party A *or* for party D. The front running candidate is almost certain to win one of the two seats, and so the meaningful competition is for the second seat. The probability of a tie for second between the candidates of the parties expected to come in second and third is much greater than the probability of a tie for second between the fourth-ranked party and any of the other three. If the voter wants to have a chance of affecting the election's outcome, she chooses between the two candidates vying for the *marginal* seat in the district. If M representatives are chosen from the district, then the competition for the marginal seat is between the candidates ranked Mth and $M + 1$th in the preelection polls, and the rational voter concentrates on these two candidates.[10]

This line of reasoning leads to some fairly precise predictions. Not only should we expect to find only two major parties, where one representative is elected from each district (single-member districts), the number of major parties should increase with the average size of an electoral district. The logic linking district size and number of parties only applies at the district level, however. In a single-member district, one's vote is likely to be wasted if one votes for the fourth strongest party in the district, even if it is on average the strongest party across the country. Thus, both Duverger's law and hypothesis must be qualified in countries where party strengths differ greatly across regions.[11]

Before one can test whether there is a relationship between the number of representatives elected per district and the number of parties, one needs to consider what is meant by the "number of parties." In a country with five parties, each obtaining 20 percent of the popular vote, it seems reasonable to speak of there being five major parties. If the five parties received 60, 30, 7, 2, and 1 percent of the vote, respectively, however, it would seem more difficult to call this "a five-party system," as one would expect it to perform much more like a one-party or two-party system. To allow for differences in the relative sizes of parties, most scholars measure the

[9] If the number of voters in her district is large, the rational voter may realize that the probability of a tie for first between any two of the candidates is infinitesimal, and *not vote at all*. Thus, the hypothesis that rational voters vote strategically includes an assumption that they vote *as if* their votes had a meaningful chance of affecting the outcome. We take up the question of why rational individuals vote at all in the next chapter.

[10] See McKelvey and Ordeshook (1972), and Cox (1997, chs. 2, 4, and 5).

[11] Humes (1990) demonstrates that more than two parties may survive when $M = 1$, if the decisions of parties to exit are made simultaneously.

Table 13.2a. *Median numbers of representatives per district (M), effective numbers of parties (ENV, ENS), deviations from proportionality (Dev), and relative reduction in the number of parties (RRP)*

Districts	Year	*M* (effective)	ENV	ENS	*Dev* (%)	RRP (%)
Australia	1984	1.0	2.79	2.38	11.5	18.7
Bahamas	1987	1.0	2.11	1.96	19.2	7.7
Barbados	1986	1.0	1.93	1.25	–	54.4
Belize	1984	1.0	2.06	1.60	22.0	28.8
Botswana	1984	1.0	1.96	1.35	17.2	45.2
Canada	1984	1.0	2.75	1.69	24.9	62.7
Dominica	1985	1.0	2.10	1.76	34.8	19.3
France	1981	1.0	4.13	2.68	20.6[a]	54.1
Grenada	1990	1.0	3.84	3.08	–	24.7
India	1984	1.0	3.98	1.69	31.8	135.5
Jamaica	1989	1.0	1.97	1.60	–	23.1
Korea (South)	1988	1.0	4.22	3.56	–	18.5
New Zealand	1984	1.0	2.99	1.98	19.0	51.0
St. Kitts and Nevis	1984	1.0	2.45	2.46	–	−0.4
St. Lucia	1987	1.0	2.32	1.99	26.0	16.6
St. Vincent and Grenadines	1984	1.0	2.28	1.74	17.8	31.0
Trinidad and Tobago	1986	1.0	1.84	1.18	–	55.9
United Kingdom	1983	1.0	3.12	2.09	23.4	49.3
United States	1984	1.0	2.03	1.95	6.7	4.1
Means		1.0	2.68	2.00	21.1	30.5

Sources: See Table 13.2b.

effective number of parties for a country. This statistic can be calculated based on the number of votes each party received across the country in the election (ENV), or based on its number of seats in the legislature (ENS). If v_p is the number of votes party p received in the election, and v is the total number of votes cast, then ENV is defined as follows

$$\text{ENV} = \frac{1}{\sum_{p=1}^{n} \left(\frac{v_p}{v}\right)^2} \tag{13.6}$$

with the analogous formula holding for party seats (s_p) in a legislature with s seats

$$\text{ENS} = \frac{1}{\sum_{p=1}^{n} \left(\frac{s_p}{s}\right)^2}. \tag{13.7}$$

In the preceeding two five-party examples, the ENV when each party gets 20 percent of the votes is 5, and in the second case it is 2.2.[12]

Table 13.2 presents ENV and ENS figures for 19 single-member-district (SMD) and 34 multimember-district democratic (MMD) countries. It is readily apparent that SMD systems produce lower numbers equivalents, regardless of whether these

[12] An analogous statistic – the "numbers equivalent" – is used in the industrial organization literature to measure the effective number of firms in an industry. It is simply one over the Herfindahl index of concentration. In political science it is often also called the Laakso-Taagepera index (Laakso and Taagepera, 1979).

Table 13.2b. *Median numbers of representatives per district (M), effective numbers of parties (ENV, ENS), deviations from proportionality (Dev), and relative reduction in the number of parties (RRP)*

Multimember districts	Year	R/D (effective)	NEV	NES	*Dev* (%)	RRP (%)
Argentina	1985	9.0	3.37	2.37		42.2
Austria	1986	30.0 (20)	2.72	2.63	4.3	3.4
Belgium	1985	8.0 (12)	8.13	7.01	7.7	16.0
Bolivia	1985	17.5	4.58	4.32		5.6
Brazil	1990	30.0	9.68	8.69	5.9	11.4
Columbia	1986	8.0	2.68	2.45	3.4	9.4
Costa Rica	1986	10.0 (8)	2.49	2.21	1.2	12.7
Cyprus	1985	12.0	3.62	3.57		1.4
Denmark	1984	11.0 (25)	5.25	5.04	2.9	4.2
Dominican Republic	1986	5.0	3.19	2.53		26.1
Ecuador	1984	3.0	10.32	5.78	16.0	78.5
El Salvador	1985	4.0 (4)	2.68	2.10		27.6
Finland	1983	17.0 (13)	5.45	5.14	3.9	6.0
Germany	1983	1.0 (10)	3.21	3.16	0.8	1.6
Greece	1985	6.0 (3)	2.59	2.14	9.0	21.0
Honduras	1985	9.0	3.49	2.80	2.2	24.6
Iceland	1983	7.0 (60)	4.26	4.07	4.3	4.7
Ireland	1987	5.0 (4)	3.46	2.89	3.2	19.7
Israel	1984	120.0 (50)	4.28	3.86	5.8	10.9
Italy	1983	24.0 (20)	4.51	4.11	4.5	9.7
Japan	1986	4.0 (4)	3.35	2.57	6.9	30.4
Liechtenstein	1986	15.0	2.28	1.99		14.6
Luxembourg	1984	21.0 (16)	3.56	3.22	7.5	10.6
Malta	1987	5.0 (5)	2.01	2.00	2.6	0.5
Mauritius	1983	3.0	1.96	2.16		−9.3
Netherlands	1986	150.0 (75)	3.77	3.49		8.0
Norway	1985	10.0 (90)	3.63	3.09	8.7	17.5
Peru	1985	9.0	3.00	2.32		29.3
Portugal	1983	16.0 (12)	3.73	3.41	5.7	9.4
Spain	1986	7.0 (7)	3.59	2.81	17.5	27.8
Sweden	1985	12.0 (12)	3.52	3.39	2.0	3.8
Switzerland	1983	12.0 (8)	5.99	5.26	4.3	13.9
Uruguay	1989	11.0	3.38	3.35		0.9
Venezuela	1983	11.0 (27)	2.97	2.42	7.9	22.7
Means		19.2 (19.2)	4.10	3.48	5.8	14.9

[a] Based on first-round votes.

Sources: Dev figures are for 1985 and are from Taagepera and Shugart (1989, Table 10.1).

RRP (%) = (ENV/ENS-1)100. Effective *M* are for the early 1980s and are from Taagepera and Shugart (1989, Table 12.1).

All other figures are from Cox (1997, Appendix C).

statistics are based on seats won in the assembly or votes cast in the elections. It is also obvious that the formulas used to translate votes into seats tend to concentrate power on the larger parties in both types of systems, with the greater concentration taking place within the SMD countries.

The mean number of parties based on seats in the legislature of SMD countries turns out to be precisely 2.00, and thus offers rather dramatic support for Duverger's law. An examination of the figures for the individual countries, however, reveals several significant deviations from two-party systems with Barbados, Trinidad, and Tobago coming close to being single-party states, and France, Grenada, and South Korea all having ENSs above 3. Nevertheless, 13 ENSs for the 19 SMD countries lie between 1.5 and 2.5.

The larger-than-predicted number of parties for France has often been attributed to its use of a two-stage electoral rule. To be elected in the first round, a candidate must receive a majority of the votes cast. If no candidate obtains an absolute majority in the first round, candidates receiving less than 12.5 percent of the votes are eliminated from the ballot and a second round of voting takes place at which only a plurality is required to win. The logic underlying Duverger's law should hold at the second stage, however, and thus I find it difficult to see why one should not expect two dominant parties to emerge over time in France.[13]

The numbers in parentheses in the M column are Taagepera and Shugart's (1989) adjustments to the numbers of representatives per district specified in the electoral law. Their adjustments take into account whether there are second-tier adjustments in the number of seats each party gets based on its share of the vote at a higher level of aggregation as in Austria and Germany, the effects of threshold percentages of the national vote, and so on. Sometimes the effects of these adjustments are quite large as, for example, in effectively reducing the number of representatives elected per district in the Netherlands from 150 to 75, while *raising* the number for Norway from 10 to 90.[14]

The logic underlying the $(M + 1)/M$ hypothesis leads to the prediction not only that there are two parties when $M = 1.0$ and more than two parties when $M \geq 2$. It predicts that the number of parties should rise with M. The data in Table 13.2b are also consistent with this prediction. Table 13.3 presents the mean ENSs for different ranges of M. As more representatives are elected from each district in a country, the effective number of parties in the legislature increases.

Cox (1997, ch. 11) has undertaken a systematic analysis of the relationship between the size of electoral districts and the number of parties represented in the national assembly. Using data for the countries in Table 13.2, he estimated the

[13] Such a tendency is further strengthened by the propensity for coalition partners to withdraw in the runoff elections. See Tsebelis (1990).

[14] The Netherlands uses a party-list system at the national level, so the Dutch vote for parties, not persons. There are 150 seats in the Dutch Parliament, but the threshold for taking seats eliminates the possibility of their being 150 parties in the Parliament.

Cox lists Germany as an SMD country. Only half of the 496 seats are filled this way, however. The other half are filled based on the shares of votes each party receives in the (now) 16 Länder. I have categorized Germany with the MMD countries, therefore, based on the effective size of its electoral districts.

Table 13.3. *Effective numbers of parties in legislature, number of representatives elected per district, and deviations from proportionality*

M	Mean ENS	Mean *Dev* (Taagepera and Shugart, 1989)	Mean *Dev* (Lijphart, 1990)
1.0	2.00 (19)	21.1 (13)	12.9 (6)
2.0 ≤ 5.0	2.12 (8)	7.5 (5)	7.5 (4)
6.0 ≤ 10.0	3.34 (7)	4.9 (6)	5.6 (9)
11.0 ≤ 15.0	3.98 (7)	4.8 (4)	
> 15.0	4.09 (11)	5.8 (9)	3.5 (12)[a]

[a] Weighted average of figures for *M*s of 1–25, and > 25.

Notes: Number of countries upon which calculations made are in parentheses.
Mean ENS and *Dev* for Taagepera and Shugart are taken from Table 13.2.

following equation:

$$\text{ENS} = 0.58 + 0.51\text{ENV} + 0.08\text{ENV} \times \ln(M) + 0.37\text{ENV} \times \text{UP}, \qquad R^2 = 0.921$$

where $\ln(M)$ is the natural log of the median number of representatives elected per district, and UP is an adjustment for the existence of upper tier allocation formulas as exist in Germany.[15] Countries in which the distribution of voter preferences is such as to give larger numbers of parties' votes tend to have larger numbers of parties represented in the legislature. The effect of having large numbers of parties win votes is enhanced by electoral rules that allow large numbers of representatives to be elected from each district.[16]

As noted above, when party strengths differ significantly across a country, Duverger's law and hypothesis are likely to break down. Significant geographic differences in party strengths are likely to be associated with ethnic and religious heterogeneity. Cox thus tries to explain the numbers equivalents based on votes across countries using an index of ethnic diversity and $\ln(M)$. He obtains the best fit when these two variables are interacted. Countries that elect large numbers of representatives from each electoral district *and* have large numbers of different ethnic groups tend to have larger numbers of parties winning votes.[17]

13.6 Electoral rules and the degree of proportionality

We saw in Table 13.1 that the seats allocated to each party in a PR representation system may not be strictly proportional to the votes each party gets across the country, when the country is divided into electoral districts for selecting representatives. The differences between votes won and seats allocated in the legislature can become quite dramatic, however, in electoral systems in which one representative is elected from each district.

[15] Thus, Cox records Germany's *M* as 1.0, and accounts for the fact that the *effective M* in Germany is much higher with the dummy UP. All coefficients are highly significant.

[16] See also Taagepera and Shugart (1989, ch. 13).

[17] Cox (1997, pp. 214–18); see also Ordeshook and Shvetsova (1994).

Table 13.4. *Distribution of votes across 10 electoral districts (numbers of votes in millions)*

	District									
Party	1	2	3	4	5	6	7	8	9	10
A	3	3	3	3	3	3	3	3	3	3
B	3	3	2	2	3	0	3	3	3	3
C	0	0	0	0	0	4	4	4	4	4
D	0	0	4	4	4	3	0	0	0	0
E	4	4	1	1	0	0	0	0	0	0
Total	10	10	10	10	10	10	10	10	10	10

To see this, consider Table 13.4. The distribution of voters by party in each of 10 districts is depicted for a polity of 100 million. Each district has 10 million voters. Under the plurality rule, the two largest parties nationally, A and B, would win no seats, although they account for 30 and 25 percent of the votes in the country. Party C would win half of the seats, 2.5 times its share of the national vote, and parties D and E would each win a fraction of seats that doubles their shares of the national vote. Although this example is contrived and is obviously extreme, when voters from each party are randomly distributed across electoral districts, even small percentage advantages in popular support for a given party can translate into large percentage advantages in seats held under the plurality rule (Segal and Spivak, 1986).

This example raises the question of just how closely different electoral rules match seats in the legislature to votes across the nation. The column labeled *Dev* in Table 13.2 provides an answer to this question. *Dev* is the deviation from strict proportionality between the vote shares for each party, v_p, and its share of the seats in the legislature, s_p, as calculated by Taagepera and Shugart (1989) using the following formula:

$$Dev = \frac{1}{2}\sum_{p=1}^{n} \|s_p - v_p\|. \tag{13.8}$$

The mean deviation from proportionality for the SMD countries is 21.1 percent, as compared to a mean *Dev* for the MMD countries of 5.8 percent.

The last column in Table 13.2 presents the percentage reduction in the effective number of parties that takes place under each system, when going from measuring number of parties in vote shares versus shares of seats in the legislature. Despite the 78.5 percent decline in number of parties recorded in Ecuador – which only elects three representatives per district on average – the relative reduction in parties in the MMD countries is only half of that in the SMD countries.

In Table 13.3, the middle column of numbers gives the mean deviation from proportionality for different ranges of M. There is a big drop in going from one representative per district to a range from 2 to 5, and another small drop in going

from 2–5 to 6–10. The sample sizes are small, however, and the mean *Dev* actually rises a bit for the sample of countries with Ms > 15.

The third column in Table 13.3 gives comparable figures for deviations from proportionality as calculated by Lijphart (1990) for the period 1945 through 1985. Lijphart's observations are mean values of *Dev* for each country over the 40-year period. Lijphart uses a much smaller sample of SMR countries than do Taagepera and Shugart, and gets a much lower *Dev* than we obtain from the Taagepera and Shugart numbers. Nevertheless, the same general pattern can be observed with a big drop in the mean deviation from proportionality in going from SMR to MMR with two to five representatives per district, and still further small declines as district size expands.

Lijphart also compared the different methods for converting votes into seats. He found some differences here, also, but the differences were smaller than those related to the number of representatives per district. The smallest deviations from proportionality were observed in the five countries that use the largest-remainder (LR)-Hare and Sainte-Lagué methods (mean *Dev* = 2.6 percent). The LR-Droop, LR-Imperiali, modified Sainte-Lagué, and STV systems came in second (six countries with a mean *Dev* = 4.5 percent). The d'Hondt method was the least proportional of the PR formulas tried, with a mean *Dev* of 5.9 percent in the 14 countries where it is used.[18]

13.7 The goals of parties

One of the most frequently cited sentences of Downs is his assertion that: "Parties formulate policies in order to win elections rather than win elections in order to formulate policies" (1957, p. 28). Party policies play a purely instrumental role in politics, and parties are willing to shift policies any distance to win elections. This assumption of ideological flexibility underlies the Downsian assumption that parties maximize expected votes and the prediction that they converge on the ideal point of the median voter in a two-party system with a single-dimensional issues space. Indeed, it leads to the prediction that the party of the Left would readily leapfrog over the party of the Right should the party of the Right mistakenly take up a position to the left of the median voter's ideal point.

To apply Downs's assumption about party motivation to PR systems, one needs to think of it at two levels: the choice of a position along the ideological spectrum before an election, and the choice of whether or not to join a coalition to form a cabinet after the election. The first thing to note when trying to apply the assumption at the level of elections in a multiparty system is that "winning" has a different meaning than in a two-party system. Ignoring the possibility of a tie, with two parties, one must win a majority of the vote and can form the government. With more than two parties, no party may win an absolute majority, and thus one can often say that "*no* party has won the election." One can also say with equal accuracy that *every* party wins in a multiparty election, in that every party (generally) wins some seats,

[18] For further evidence on the consequences of electoral laws, see Rae (1971), Rose (1984), Grofman and Lijphart (1986), Taagepera and Shugart (1989), Lijphart (1994), and Powell (2000).

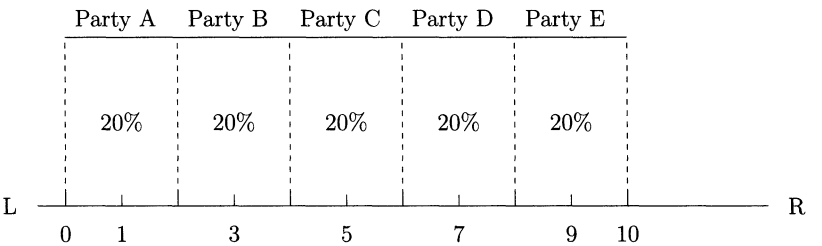

Figure 13.1. Party positions with a uniform distribution of voter ideal points.

and thus lives on to fight another election *and, most importantly*, to bargain for a position in the cabinet that forms after the election.

Theorems establishing an equilibrium set of policy positions with multiparty/multicandidate systems are very difficult to prove, and often imply rather complicated or implausible equilibrium conditions.[19] On the other hand, casual observation of European PR systems suggests that parties do settle into certain positions in ideological space and tend to stay there. Each European country has its socialist/red party, its Christian democratic/black party, its green party, and so on, and virtually every observer will place the Christian democrats to the right of the socialists and the greens to their left. Shifts in positions occur, but parties do not appear to leapfrog about the issue space in search of votes (Budge, Robertson, and Hearl, 1987); nor do they all converge on the same set of policies.

One way to account for these phenomena is to weaken or abandon Downs's vote-maximization assumption, and replace it with one that gives weight to a party's ideology.[20] Let us assume, therefore, that the sole goal of a party's leadership is to represent the ideological position of its supporters, and that it does so by adopting the median position *of its supporters*. If we assume as in the Downsian model a single-dimensional issue space with citizens voting for the party whose position is closest to their ideal point, then an equilibrium results with parties spread across the ideological spectrum.[21]

Figure 13.1 depicts the equilibrium with five parties and a uniform distribution of voter ideal points. Each party gets 20 percent of the votes, and the position occupied by the median party, party C, coincides with the ideal point of the median voter.

Figure 13.2 depicts a distribution of voter ideal points that is nonuniform. Although the median voter still supports party C, its position (5) no longer coincides with the median voter's ideal point (M = 5.67). Moreover, party D actually wins a greater share of the vote by occupying the space that contains the greatest density

[19] See, for example, Hinich and Ordeshook (1970, pp. 785–8); Lindeen (1970); Selten (1971); Wittman (1984); Greenberg and Weber (1985); Breyer (1987); de Palma, Hong, and Thisse (1990); Hermsen and Verbeek (1992); Lin, Enelow, and Dorussen (1999); and Hamlin and Hjortlund (2000).

[20] Downs's assumption that politicians single-mindedly maximize votes at the expense of ideological consistency was criticized early on in the context of the two-party model by Wittman (1973). In a detailed analysis of elections in the Netherlands and Germany, Schofield, Martin, Quinn, and Whitford (1998) show that parties may pass up the opportunity to increase their votes in an election, and thus their weight in the next parliament, because it would force them to bargain from an ideological position that lies farther from their ideal point in the negotiations to form a cabinet. See also Adams (1999, 2000).

[21] This is proved by McGann (2002) with the additional assumptions that the number of parties is fixed, and they are ordered left to right.

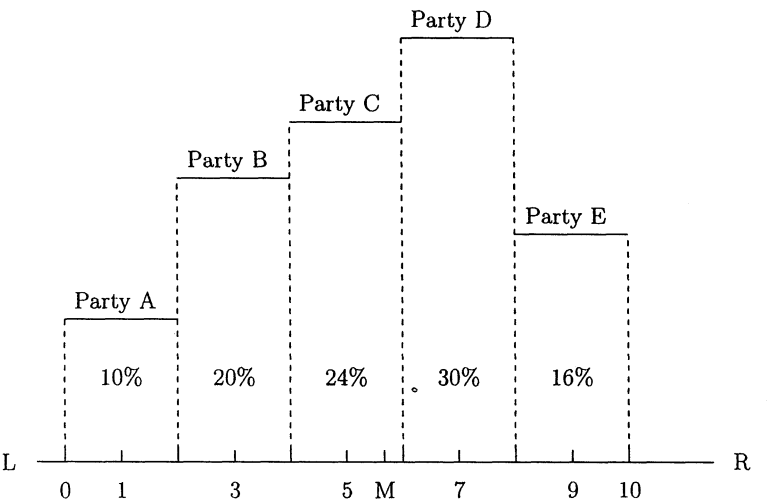

Figure 13.2. Party positions with a nonuniform distribution of voter ideal points.

of voters. Party A, on the other hand, is disfavored by the relatively small fraction of the electorate located in its ideological space.

McGann (2002) also examines the implications of assuming that party positions are chosen with one eye on the preferences of the party's supporters and the other on the potential gain in votes from shifting positions. As one might expect, such a change of goals tends to shift party positions toward the median of the distribution of voter ideal points, and reduces the shares of votes won by the centralist parties.

Party leaders must also consider whether they should compromise their party's ideological position at the second stage of the electoral process, when a cabinet is formed. If two or more parties form a cabinet, at least one of them must acquiesce to the implementation of a set of policies that does not correspond fully to its most preferred set. Compromise with a party's policy preferences is often the price of getting to influence what the actually implemented policies are. Thus, one might restate the first part of Downs's assumption for multiparty systems to read "parties change policies to join cabinets."

In the next subsection we examine several hypotheses that make different predictions regarding the formation of cabinets. Some assume that a party is willing to "move any distance" to join a cabinet; others assume that policy inertia persists at the cabinet formation stage, and use this assumption to predict which parties are likely to form cabinets.

13.7.1 *Coalition theories with a one-dimensional issue space*

Demokrastan has seven political parties holding seats. These parties compete for votes along a single-dimensional issue space. Each party has positioned itself along this left–right line as follows:

A	B	C	D	E	F	G
15	28	5	4	33	9	6

An election is held, and each citizen votes for the party that comes closest to her ideal point. The election results in a distribution of the 100 seats in the parliament according to the numbers under each party's letter. As often happens in multiparty systems, no single party holds a majority of the seats.

If Demokrastan's parliament, like most others, uses the simple majority rule, it is reasonable to assume that the goal of any parties that seek to form a coalition is to build one that controls at least 51 seats, so that it can decide all bills that come up during the parliamentary session. There are 61 possible coalitions that control at least 51 seats, the grand coalition of all seven parties; any six of the seven parties (six possibilities); *B* plus any four parties, *E* plus any four parties, and *B* and *E* plus any three parties (18 possibilities); 24 possible four-party coalitions; 10 possible three-party coalitions; and 1 possible two-party coalition between *B* and *E*. Which, if any, of these 61 coalitions will come together to select a cabinet?

Von Neumann and Morgenstern (1953) were arguably the first to have provided a hypothesis about which coalition might form. They proposed that a *minimal winning coalition* would form.

Definition: *A coalition is a minimal winning coalition if the removal of any one member results in its shifting from a majority to a minority coalition.*

The intuition behind von Neumann and Morgenstern's proposal is obvious. Any additions to a minimal winning coalition are going to take up cabinet positions that would otherwise go to the original members, and are likely to shift the outcomes from the coalition away from those favored by the original members. There are 11 possible minimal winning coalitions in Demokrastan's parliament (*BE*, *ABF*, *ACE*, *ADE*, *AEF*, *AEG*, *ABCD*, *ABCG*, *ABDG*, *CDEF*, and *DEFG*).

Riker (1962) extended the intuition underlying the minimal winning coalition as a solution concept one step further, and argued that it would be the *smallest* minimal winning coalition that would form. This hypothesis rests on modeling politics as a zero-sum game. The plausibility of this assumption is best appreciated by thinking of all political issues as involving zero-sum redistributions of wealth. In such a game, the optimal strategy is to allow the opposing coalition to be as large as possible, while remaining a losing–paying coalition. With respect to the formation of cabinets, the prize to be divided is the fixed number of positions in the cabinet. Each party wants to have as many cabinet posts as it can. The larger its relative size is in the coalition, the greater is its claim on cabinet positions. This argues for making the size of the minimal winning coalition, in terms of number of seats in the parliament, as small as possible. Riker thus proposed the *minimum* winning coalition as a solution concept.

Definition: *A minimum winning coalition contains the smallest number of seats of all minimal winning coalitions.*

There is one minimum winning coalition among the 11 minimal winning coalitions. *CDEF* controls 51 seats and is the smallest possible majority coalition.

Forming a coalition entails bargaining among the potential coalition members, and bargaining takes time. It is reasonable to assume, therefore, that it is easier for three parties to form a coalition, than for four, and easier still for two parties to form a coalition. Thus, one might expect that the coalition containing the smallest number of parties is the most likely to form (Lieserson, 1966). This hypothesis also leads to a unique prediction in our example – a coalition between parties *B* and *E*.

The four hypotheses considered so far base their predictions solely on the *sizes* of the potential members of a winning coalition or their number. Their *positions* along the left/right issue dimension are ignored. These hypotheses thus incorporate Downs's assumption that policies have no intrinsic value to a party's leadership. Its only goal is to be part of the winning coalition. Party *B* is just as willing to join a coalition with *E* as with *C* or *A*.

If winning is not everything, however, party *B* should prefer a coalition with *C* to one with *E*, ceteris paribus, because the policy outcomes from such a coalition are likely to lie much closer to *B*'s position along the left/right issue space. The next two hypotheses about the composition of a winning coalition assume that the positions of potential coalition members also affect their chances of joining the winning coalition.[22]

Axelrod (1970) proposed that the parties forming a winning coalition must be adjacent to one another along the single policy dimension. This *minimal-connected-winning* (MCW) hypothesis reduces the number of potential winning coalitions in our example to four – *ABCD*, *BCDE*, *CDEF*, and *DEFG*. Note that the requirement that the parties sit adjacent to one another along the ideological-issue dimension means that a coalition may be MCW without being minimal winning. *CDEF* is such a coalition. Party *D*'s seats are not needed to form a winning coalition, but to drop it would break the connection across the four parties. If *C*, *E*, and *F* form a minimal-winning coalition, it costs them nothing in terms of divergence from their policy positions to include *D* in the coalition.

It seems plausible that it is easier for two parties to agree on a common set of policies when they are situated close to one another along the policy line than when they are far away. Party *F* can reach an agreement with *E* more readily than with *G*. Extending this line of reasoning leads one to predict that the winning coalition will be the MCW coalition with the smallest range (de Swaan, 1973). Invoking this closed-minimal-range hypothesis leads to the unique prediction that coalition *CDEF* forms.

Although these six hypotheses do not include all of those that have been proposed, they include the most widely cited and those that have garnered the most empirical support. To test the last two, we need to locate each party in a country along a left/right issue dimension. To do so scholars of European politics have relied on judgments by panels of experts, mass survey data, and content analysis

[22] For further discussion of the differences between theories that treat parties as purely office seekers or as office and policy oriented, see Laver and Schofield (1990, chs. 3–5) and Müller and Strøm (1999, pp. 5–9). Müller and Strøm (1999) contains case studies illustrating how party leaders act when the goals of pursuing votes, office and party, are in conflict. Our discussion in this section relies heavily on Laver and Schofield.

Table 13.5. *Frequency of coalition types, by country, 1945–1987*

Country	Majority situations	Minority situations: Surplus not MCW	MCW not MW	MCW and MW	MW not MCW	Minority	Total
Austria	6	–	–	5	1	1	13
Belgium	1	4	–	7	8	2	22
Denmark	–	–	–	2	–	18	20
Finland	–	17	–	4	1	10	32
Germany	2	–	–	9	1	–	12
Iceland	–	2	–	6	4	2	14
Ireland	4	–	–	–	3	5	12
Italy	4	8	6	–	3	14	35
Luxembourg	–	1	–	8	1	–	10
Netherlands	–	5	3	4	2	3	17
Norway	4	–	–	3	–	8	15
Sweden	1	–	–	5	–	10	16
Total	22	37	9	53	24	73	218

Source: Laver and Schofield (1990, p. 100).

of party manifestos.[23] Since scholars disagree to some extent on the positions of the various parties, and even sometimes on which parties are de facto members of the coalition that forms the government, it is not surprising to find some disagreement over how well the different theories predict the coalitions observed. Taylor and Laver (1973), de Swaan (1975), and de Swaan and Mokken (1980) all claim that the MCW hypothesis provides the best explanation for the observed data. But Warwick (1979, 1994) finds that the MCW hypothesis adds no explanatory power to the predictions given by the minimal-winning-coalition hypothesis (MW). Laver and Schofield's (1990) more recent comparison lends support to Warwick's position.

The first thing to note in Table 13.5 is that a third of the governments in Europe between 1945 and 1987 were minority governments. Since all of the theories are predicated on the assumption that parties wish to be part of a majority coalition, this substantial fraction of minority governments must be viewed as a contradiction to all of them.

The second striking fact to note is how rare it is in PR systems that one party wins a majority of the seats. This occurs barely 10 percent of the time.

Turning now to the success rates of the MCW and MW in predicting which coalitions form, we see that there were 123 instances when no single party received a majority of the seats in the parliament. Of these 62, just over 50 percent, were MCW coalitions, and 77 were MW (62.6 percent). Only 9 of the MCW governments were not also MW. Thus, the classifications of Laver and Schofield reconfirm the judgment of earlier observers that the MCW hypothesis adds little predictive power over the MW.

[23] For a discussion and comparison of these techniques, see Laver and Schofield (1990, pp. 245–65).

In our seven-party example, there were 61 possible coalitions, which could form and would control a majority of the seats in the parliament. Of these only 11 were MW. If our null hypothesis were that each of the 61 possible majority coalitions were equally likely, then we would expect to observe a MW about one sixth of the time. The numbers in our example should come fairly close to those for the average European parliament, and thus we should expect to see a MW about one-sixth of the time, *when a majority coalition succeeds in forming*. The prediction that the coalition that forms a government will be MW does far better than just assigning each possible majority coalition an equal probability of forming. The success rate for the MW goes up still further if we add in all of the governments that were formed by a single party with a majority of the seats, since these, too, are MW.

The four other single-dimensional coalition theories discussed earlier all select subsets of either the MCW or the MW sets of coalitions. They thus have even lower success rates at predicting which coalition forms than do the MW and MCW. All six theories predict that some majority coalition forms, and thus the large fraction of minority governments contradicts all six theories. One explanation for the existence of so many minority governments is that policy does matter a lot to parties, and affects their willingness to form coalitions.[24]

In our seven-country example, if no government forms and the parties merely vote on legislation, the one-dimensional nature of the issue space leads us to predict the victory of proposals at the median position. *All* of the proposals made by party *D* should win. Given its central position, *D* might thus try and form a government by itself. Although it is unlikely that a party with only 4 percent of the seats in parliament would try to form a minority government, if *D* had, say, 40 percent of the seats it might very well try.

Van Roozendaal (1990, 1992, 1993) defines a *central party* in exactly the same way as we defined a median position in Chapter 5. Including the votes of the central party, there are 50 percent or more of the votes in the parliament to both the right and the left of the central party's position. Extending the logic of the median voter theorem to cabinet formation, van Roozendaal predicts that central parties will be members of every government – majority or minority – that forms.

Of the 196 European governments examined by Laver and Schofield (1990, p. 113) 165 contained or were supported by a central party. Thus, van Roozendaal's theory of cabinet formation obtains considerable empirical support. Nearly 20 percent of the governments formed *did not* contain a central party, however; and so we still need some auxiliary assumptions or a more general theory. One possibility is that the issue space is not one dimensional as assumed by van Roozendaal and several of the other theories considered so far. If the issue space has a second dimension, then *D*, with only 4 percent of the seats in the parliament, might well find itself left out of the government. Although it is in a pivotal position in a single-dimensional issue space, it may not be so in a multidimensional space. We turn now to two theories of coalition formation that allow for more than one dimension in the issue space.

[24] For an analysis of why minority governments form so often, see Strøm (1984, 1996).

13.7.2 *Coalition theories with two- or more-dimensional issue spaces*

13.7.2.1 *The political heart.* Once the issue space has two or more dimensions, the possibility of cycles arises. Cycling in cabinet formation takes the form of unstable coalitions. A coalition among parties A, B, and E is preferred to one among A, B, and C, but the ABE coalition loses to BEF, and so on.

In Chapter 11 we argued that voting in a multidimensional issue space may not lead to cycles that span the entire space because some points dominate others. Winning proposals can reasonably be assumed to be confined to some central area of the issue space like the uncovered set or the yolk. Constructs like the uncovered set and the yolk cannot be easily generalized to predict winning grand coalitions, however, because the outcome is a joining of parties with different ideal points. The question to be answered is not which unique point in the issue space will be chosen, but rather which unique coalition of parties will form. Nevertheless, we might also expect that the parties in the winning coalition will be located in some central region of the issue space, and some concept analogous to the uncovered set will define this region. Schofield (1993a,b, 1996a) has proposed such a region, which he calls the *heart* of the polity.

To locate the heart we must first locate all median lines in a two-dimensional issue space, or median planes in a multidimensional space. All points along or to one side of a median line (plane) add up to a majority of votes in the legislature. In Figure 13.3 the parties in Israel's parliament, the Knesset, are placed in a two-dimensional issue space formed by party positions on national security issues and their secular/religious ideological position. The median lines are based on the number of seats (given beneath party) that each party won in the 1988 election. There are three such lines and they form a triangle. This triangle constitutes the political heart in this seating of the Knesset. The Pareto set is the area bounded by the ideal points of all parties, so we see that the heart lies within the Pareto set. (The heart always lies within or at worst coincides with the Pareto set.)

If we now consider a party like the Degel Hatora, labeled *DH* in the figure, we can see that it was at a disadvantage in trying to get its most favored position chosen, because a majority of the votes in the Knesset are held by parties on or to the left of the median line through *SHAS* and *LIK*, and thus all of these parties strictly prefer some points closer to this median line than *DH*'s ideal point. In contrast points within the heart can only lose to other points within the heart. Cycling is thus expected to be confined to within the heart, and one expects the coalition that eventually forms to contain one or more members of the heart. Two governments held office during the four years up to the next election: first a coalition led by Likud and including Labor (*LAB*), followed by a coalition that included Likud and *SHAS*.

Figure 13.4 illustrates the situation after the 1992 election in Israel. The three median lines now intersect at the Labor Party's ideal point, which constitutes the *core*. No point can command a majority over Labor's ideal point. The clear prediction is that Labor will be part of the winning coalition that forms the government – as it was.

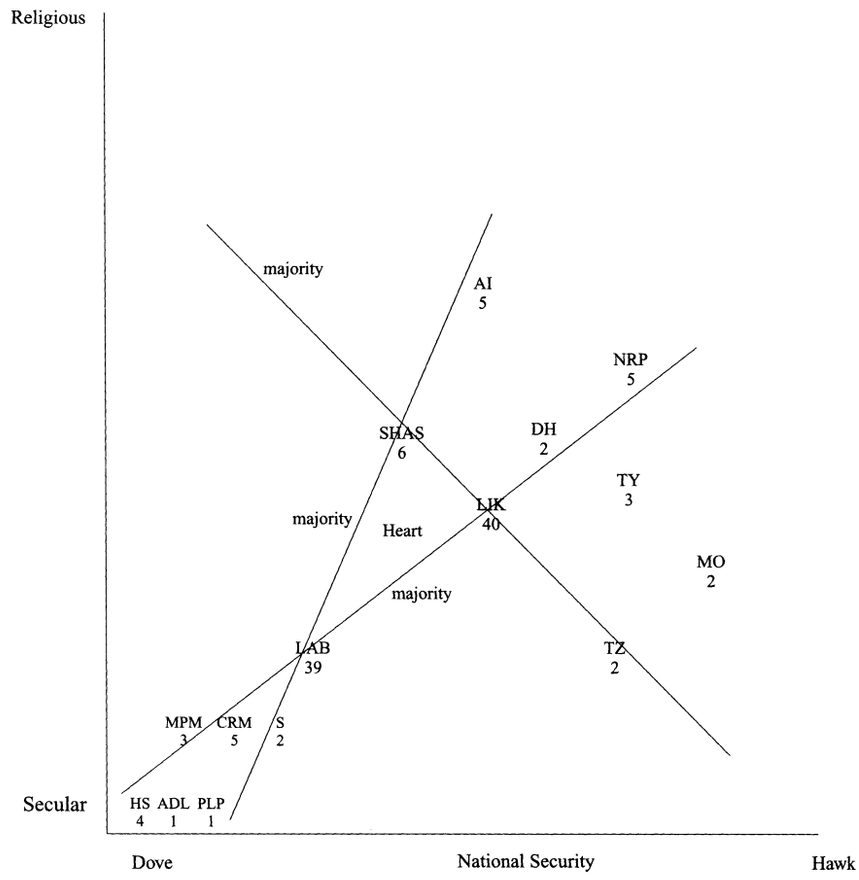

Figure 13.3. The Knesset in 1988. *Source:* Schofield (1997, p. 289)

When all median lines intersect at a single point, it constitutes the core. When they do not intersect at a single point, the area that they enclose is called the *cycle set*. The heart is the union of the cycle set and the core. Schofield's theory predicts that any coalition that forms a government contains at least one of the parties in the heart. The theory seems to have considerable predictive power (Schofield, 1993b).

13.7.2.2 *The dimension-by-dimension median.* We saw in Chapter 5 that an equilibrium could sometimes be "manufactured" in a multidimensional issue space by voting one dimension at a time.[25] Laver and Shepsle (1996) have extended this idea from voting on issues to the formation of cabinets. They note that cabinet formation is not simply about which parties form the government, but about which parties get which cabinet ministries. They assume that if party *A* gets the finance industry, it does not merely implement an economic policy *near* its ideal point along the economic policy dimension; it implements the policy, which *exactly corresponds* to its ideal point in this dimension. This assumption greatly reduces the number of

[25] See also Kadane (1972) and Slutsky (1977b).

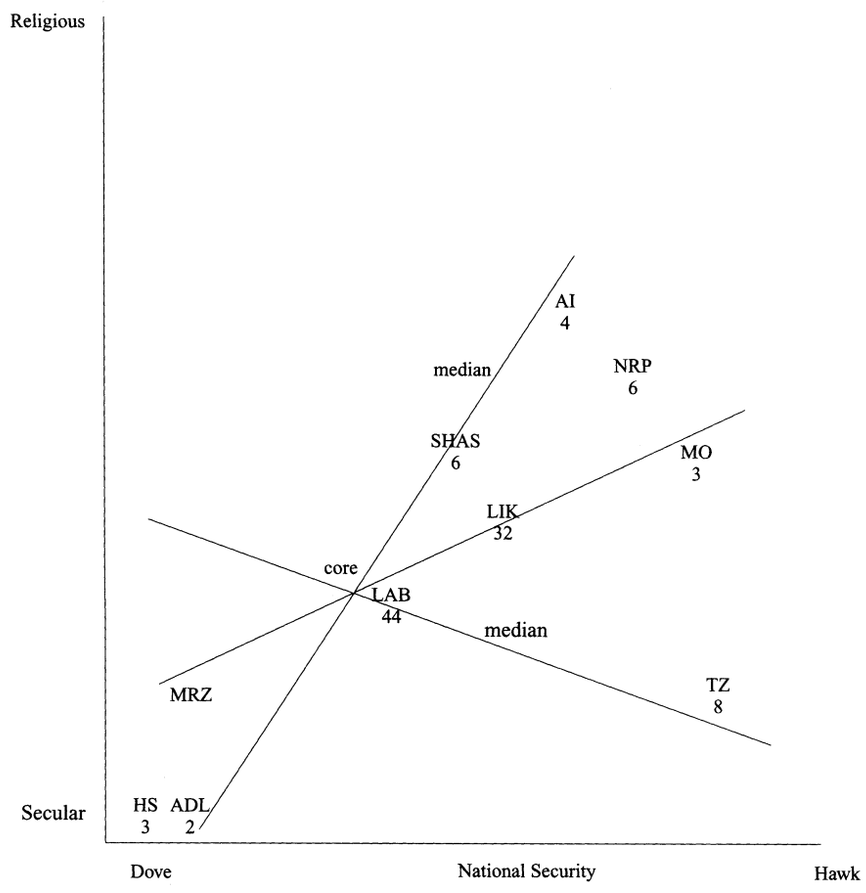

Figure 13.4. The Knesset in 1992. *Source*: Schofield (1997, p. 290)

possible outcomes from the coalition process, and thus increases the chances of an equilibrium outcome.

To see what is involved, consider Figure 13.5, which depicts the positions of the four major German parties in 1987. The two most important policy dimensions in Germany have been identified as economic and foreign policy. The ideal points of the four parties have been identified with dots. The two lines through the dot labeled *GG* represent the Green Party's position on economic and foreign policy. Each intersection of two lines represents a possible cabinet allocation of the ministries of finance and foreign policy. For example, the intersection labeled *GC* is an allocation of the finance ministry to the Green Party and the foreign affairs ministry to the Christian Democrats, whose ideal point is labeled *CC*. If the Christian Democrats were to form a government by themselves, they would fill both ministries and the cabinet outcome would be at *CC*. To avoid clutter, all possible cabinets have not been labeled. The points *FF* and *SS* represent the ideal points of the other two parties, the Free Democrats and the Socialists.

No party had a majority of the seats in the Bundestag. The Christian Democrats had enough seats to be able to form a majority coalition with any one of the other

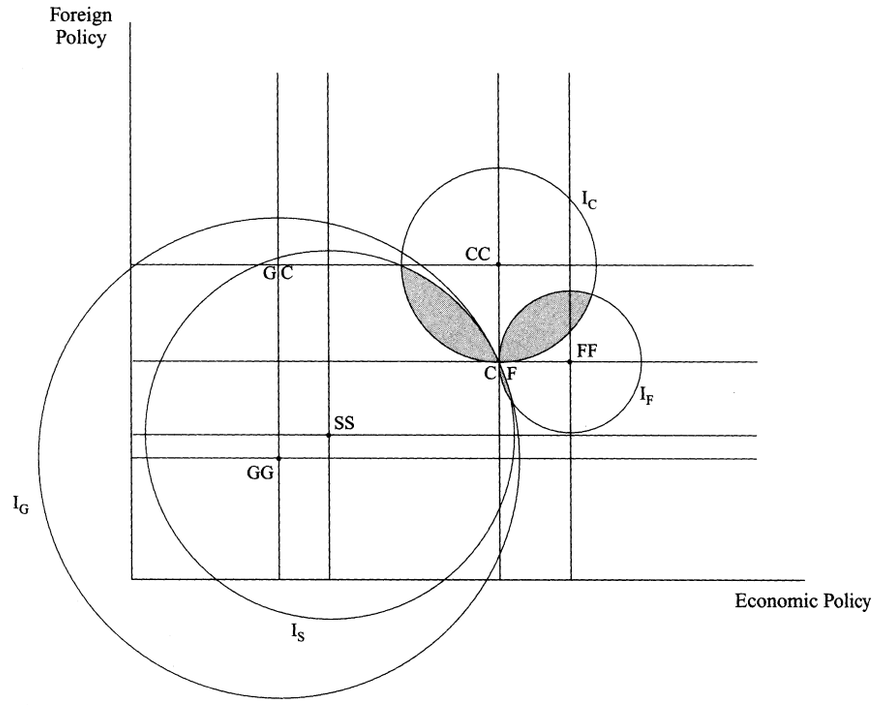

Figure 13.5. Cabinet formation in the German Bundestag in 1987.

parties. The Socialist Party was the second largest party in the Bundestag, but it could only form a government in coalition by joining with either the Christian Democrats or with the other two parties. The median position in the economic policy dimension was thus occupied by the Christian Democrats, while the median in the foreign policy dimension was occupied by the Free Democrats. The dimension-by-dimension median was at *CF*, therefore.

The Christian Democrats and the Free Democrats had formed the previous government, and had split these two key ministries with the Christian Democrats occupying the Finance Ministry and the Free Democrats having the Foreign Affairs ministry. The cabinet assignment *CF* was, therefore, the status quo. The question confronting the parties following the 1987 election was whether a new assignment of ministries and perhaps a new coalition of parties could defeat this status quo.

The circles labeled I_G, I_S, I_C, and I_F represent indifference curves for the four parties, which pass through the status quo point. Any point inside one of these circles is favored over the status quo cabinet by the party whose indifference curve is represented. The shaded, lens-shaped regions represent the *winsets* against the status quo, all of the points favored by a majority coalition over the status quo. The winsets are not empty, and thus the policies represented by the status quo allocation of ministries would lose to many other policy combinations in the legislature, *if the legislature were to vote on these policy combinations*. A central assumption of the Laver and Shepsle model is, however, that the legislature is not allowed to vote on combinations in these winsets, but is merely offered the policy favored by the party

occupying the appropriate ministry. What is relevant, therefore, is not whether the winset is nonempty, but whether it contains any points where the lattice lines drawn in the figure intersect. If the winset does contain such a lattice point, there exists a cabinet allocation that can defeat the status quo, and the theory predicts that this new cabinet forms. No lattice points are contained in the winsets for point *CF*, and so the Laver-Shepsle theory predicts that the status quo is sustained. The theory makes the precise prediction that the Christian Democrats and Free Democrats will form the government, *and* that the finance ministry will go to the Christian Democrats and Foreign Policy to the Free Democrats, which is exactly what happened.

In this particular example, the dimension-by-dimension median involves a coalition of two parties. It could of course happen that a single party occupies this position. If one did and its winsets did not contain any lattice points, then there would be no allocation of cabinet posts that could defeat its filling both posts. Laver and Shepsle (1996, pp. 69–78) define such a party as being *very strong* and predict that it is in any equilibrium cabinet that can form.

They also define *merely strong* parties. A merely strong party's ideal point has a nonempty winset, but all lattice points in this winset imply cabinet allocations of which it is a part. Imagine, for example, that the Green Party's position on economic issues was shifted far enough to the right in Figure 13.5 so that its lattice line and the horizontal line through *CC* intersected in the (newly drawn) winset to *CF*. The Christian Democrats could then move closer to their ideal point by dropping the Free Democrats as coalition partners and joining with the Greens, and presumably would do so, if this new coalition would not lose to another, which left the Christian Democrats worse off. Thus, a merely strong party is strong because it can veto shifts away from its ideal point, and thereby tends to control "the making and breaking of governments." Both types of strong parties tend to be relatively large and centrally positioned in the issue space (Laver and Shepsle, 1996, pp. 184–5).

One of the important advantages of the Laver-Shepsle theory is that it can account for and indeed predicts minority governments, as, for example, when a party with less than a majority of the seats in the parliament is very strong. The theory can also account for surplus majority coalitions, when the issue space contains three or more dimensions (Laver and Shepsle, 1996, pp. 266–9). Thus, just as the existence of governments that exclude a median party in a one-dimensional issue space implies that the issue space may have more than one dimension, the existence of governments with surplus majorities implies that the issue space may have more than two dimensions, if one accepts the rest of the premises of the Laver and Shepsle theory.

Laver and Shepsle (1996, chs. 6–9) subject their theory to several empirical tests including thousands of simulations of coalition formation. In general, the theory obtains impressive support in both the simulations and when confronted with data on actual cabinet formations. It seems somewhat better at explaining the coalitions that form in countries like Sweden, which contain one large, centrally located party than in countries like Belgium and Denmark, which have numerous small- and medium-sized parties. But all in all the theory holds up quite well, particularly when one takes into account how specific its predictions are.

13.8 Cabinet stability

13.8.1 *The duration of governments*

In a parliamentary system, the government survives only as long as it can preserve its support from a majority of the members of the parliament. When there are but two parties this task is relatively easy, as the majority party's leadership must only maintain the support of the members of its own party. But when a coalition of parties forms the government, the task becomes more difficult. The different parties have different views as to what the government's program should be, and perhaps different views as to the costs, or benefits, from having a government fall and either a new coalition of parties take over or a new election called. Thus, one expects the life of a government to be shorter in multiparty systems.

The criticism that PR leads to unstable government is the most venerable, most frequent, and most forcefully leveled criticism against it (e.g., Hermens [1933, 1941, 1951], Schumpeter [1950, pp. 272–3], Black [1958, pp. 81–2]). Taylor

Table 13.6a. *Average duration of European governments by type: 1945–1987 (months)*

	AUS	GER	BEL	ICE	LUX	NOR	IRE	SWE	DEN	NET	FIN	ITA	Total
Single-party majority	46		46			48	49	24					45
Surplus coalition with majority party	24	49										16	26
Unconnected non-MW coalition			10	40						47	15	11	17
Connected (but non-MW) coalition			18	40	5					38	16	22	23
MCW but not MW coalition										25		20	22
Surplus coalition	24	49	12	40	5					34	15	17	21
MW and MCW coaliton	40	33	27	36	45	31		24	43	35	15		35
MW but not MCW coalition	39	33	24	44	61		42			23	33	17	31
Minimal coalition	40	33	25	39	47	37	42	24	43	31	19	17	33
Minority coalition with support	67		5	10		24	36	44	30		24	12	26
Minority coalition without support			2	5		25	27	21	16	4	7	6	15
Minority coalition	67		7	8		24	30	30	22	4	10	9	19
Total	41	37	22	34	45	32	39	28	26	27	15	13	26

Source: Schofield (1993b).

Table 13.6b. *Number and average duration of European governments by type: 1948–1998 (months)*

	AUS	GER	BEL	ICE	LUX	NOR	IRE	SWE	DEN	NET	FIN	ITA	Total
Number of cabinets	21	25	32		15	25	21	25	30	22	36	47	25.5[a]
Average duration[b]	28	23	17		39	25	30	26	21	27	16	12	23.4[a]

[a] Average includes France and Portugal. France has 22 cabinets with a mean duration of 21 months; Portugal 10 with a mean duration of 20 months.

[b] Müller and Strøm's figures are in days. I have converted to months by dividing by 30.

Source: Müller and Strøm (2000b, p. 585).

and Herman (1971) were among the first of many studies to test whether this criticism was well-founded. Using data for 196 governments from the post–World War II period, they found that government stability, measured as the duration of the government in days, was negatively correlated with both the number of parties in the parliament ($r = -0.39$) and the number in the coalition forming a government ($r = -0.307$). A Herfindahl-type index of party fractionalization ($F = 1 - \sum p_i^2 = 1 - \text{ENS}$, p_i = proportion of the seats held by the ith party) was negatively correlated with government stability both when measured for the full parliament ($r = -0.448$) and for the government ($r = -0.302$). One-party governments lasted on average 1107.9 days, almost twice as long as coalition governments (624.5 days).

Warwick (1979, 1994) focused upon the durability of *coalition* governments, and found that majority coalitions lasted longer than minority coalitions, and that MW coalitions lasted much longer than other types. Government durability was inversely related to the number of parties in the government. Several other studies have reconfirmed these findings in different ways.[26]

Table 13.6 presents a summary of the data on European government durations over the 1945–87 period as assembled by Schofield (1993b), and over 1948–98 by Müller and Strøm (2000b). First note that there is a great deal of variation in the lengths of governments' lives both across countries and across types of coalition structures. The average Italian government lasted barely 1 year, while governments in Luxembourg have lasted as long as 5 years with a mean of 45 months in Schofield's data and 39 months in that of Müller and Strøm.

Among the coalition types, single-party-majority governments have lasted the longest (mean of 45 months); minority governments have had the shortest lives (mean of 19 months). Minimal-winning coalitions last on average half again as long as surplus coalitions (33 versus 21 months). The dominance of single-party-majority governments over all other forms in terms of stability would be reinforced if data on the duration of governments in plurality-rule systems were included in the table.[27]

[26] See Powell (1981, 2000), Midlarsky (1984), Schofield (1987), and Taagepera and Shugart (1989, pp. 99–102); for additional discussion and references, Warwick (1979, 1994) and Laver and Schofield (1990).

[27] See also Lijphart (1984, 1999).

13.8.2 *The death of governments*

Where the early research measured government stability as the *length of a government's life*, the most recent work has focused on predicting the *probability of its death*.

In its simplest form this approach views government deaths as purely a function of random events.[28] The *Achille Lauro* sinks at sea, and the Italian government falls soon thereafter. Although the probability of a ship under the Italian flag sinking at sea is probably greater than for that of a ship under Luxembourg's flag, one expects that the dramatic differences in the lengths of government lives apparent in Table 13.6 are not all due to chance. Some underlying institutional differences exist that turn random events into government deaths in Italy more frequently than in Luxembourg.

In a seminal contribution, King, Alt, Burns, and Laver (1990) tried to determine what these underlying differences were. They modeled the *hazard rate* – the conditional probability that a government dies at time t – as an exponential function of a set of institutional and political variables drawn from the literature on government stability. Defining H as this hazard rate, we have

$$H = \exp(-\beta' x), \tag{13.9}$$

where x is a vector of the variables thought to affect cabinet deaths, and β' is a vector of the coefficients to be estimated.[29] Consistent with the previous literature, King et al. found that majority governments had lower hazard rates and cabinets with high degrees of fractionalization had higher rates.

Warwick (1994) has extended and retested the model of King et al. Table 13.7 presents the estimates for two of his equations. The six variables included in Equation 1 were the only ones that proved to be significant from a much larger set with which Warwick experimented. The different variables try to capture various aspects of the complexity of the bargaining situation and the costs to the parties should the government fall. For example, the larger the fraction of the members of one government who reappear in the next one (returnability), the smaller the expected cost to any one party from the government falling, and the more likely the government is to fall. The positive coefficient on polarization might be explained as follows: the more polarized a parliament is (that is, the stronger the parties on the far left and right are), the greater the likely loss in votes in the next election for any party that compromises on its policy position by moving toward the center. Since coalition formation and maintenance *depend* on compromise, coalition governments in polarized systems are more likely to die.

Of particular interest are the coefficients on majority status and the effective number of parties in the government. A government formed by a majority coalition has a significantly lower probability of collapsing than a minority government. The effective number of parties in the government is simply the ENS for the parties making up the cabinet. Consistent with the literature on government duration and

[28] The pioneering contribution here was Browne, Frendreis, and Gleiber (1986).

[29] For the derivation of this equation see King et al. (1990) and Warwick (1994, pp. 17–21).

Table 13.7. *Determinants of the hazard rate for government deaths*

	Equations	
Covariates	1	2
Majority status	−1.11 (0.16)	−1.37 (0.23)
Postelection status	−0.61 (0.15)	−0.51 (0.17)
Investiture	0.44 (0.15)	0.50 (0.19)
Effective number of parties in the government	0.20 (0.06)	0.11 (0.07)
Returnability	1.60 (0.47)	1.34 (0.51)
Polarization	3.54 (0.62)	2.62 (0.83)
Ideological diversity		0.34 (0.14)
Log-likelihood ratio	−1,120	−842
Number of cases	360	284

Standard errors in parentheses.
Variable definitions: See Warwick (1994, pp. 39–40, 53–62).
Majority status. Is the government a majority coalition?
Postelection status. Is the government the first after an election?
Investiture. Is a formal vote of investiture required?
Effective number of parties in the government. The ENS for the parties that make up the government.
Returnability. Proportion of government parties represented in the next government following a collapse or early termination, calculated by system.
Polarization. Proportion of seats held by extremist parties.
Ideological diversity. An index of the ideological diversity of the parties in the government based on the parties' positions along a left–right ideological scale, a clerical–secular scale, and a regime-support–antipathy scale.
Source: Warwick (1994, Tables 3.3, 4.4).

King et al., Warwick finds that the probability of a government falling increases with the number of parties in the coalition that forms it.[30]

Equation 2 in Table 13.7 includes an index of the ideological diversity of the coalition of parties forming the government. This index is constructed from three other indexes – a normal left–right scaling, a clerical–secular scaling, and a scaling related to regime support. It has a positive and significant effect on the hazard rate. The greater the ideological diversity across the parties forming the government, the higher the probability that their coalition falls apart. Once ideological diversity is included in the model, the number of parties in the government loses its statistical significance. Warwick (pp. 64–7) interprets this result as implying that the effective number of parties proxies for ideological diversity, when the latter is omitted, and that it is really this ideological diversity that increases the likelihood that a multiparty government falls, not the number of parties in it per se.

This inference seems too strong. Although there may in fact be considerable ideological diversity within a single party, when an ideological index is created,

[30] For discussion of the other variables in Equation 1 see Warwick (1994, ch. 3).

Strøm (1985) also found that majority status significantly lengthened the life of a cabinet. He also found that parties in minority governments tended to do better in elections than those in majority governments, and concluded from this that being in a minority government may be more advantageous for party leaders. Taagepera and Shugart (1989, pp. 99–102) found that ENS for the entire parliament is inversely linked to government duration.

each party is treated as an individual actor and given a single value along an ideological scale. Thus, a government formed by a single party with the majority of seats in the parliament has zero ideological diversity as measured by either the range or the variance of such an index. When two parties form a coalition, the index of their ideological diversity must be positive, unless they occupy exactly the same position in ideological space, and it is likely that a coalition of three parties will have a greater range or variance in its ideological indexes than a coalition of two. Thus, there is an inherent positive and possibly strong correlation between an index of the ideological diversity of a coalition and the number of parties that compose it. Since both of these variables are proxies for concepts that are difficult to measure precisely, one has to expect that different proxies might produce a different ordering of the statistical significance of the two variables.

We saw earlier that the degree of ethnic and social heterogeneity in a country was positively related to the effective number of parties in the country. The more parties there are in the parliament, the smaller the share of seats of any one party, and the more parties that are needed to form a majority coalition. If the ideological diversity in a country is reflected in the parties in its parliament, then again we can expect greater degrees of ideological diversity across the parties forming a government to be positively associated with their number. Thus, I am inclined to interpret Warwick's results for Equation 2 of Table 13.7 as implying that both the number of parties that make up a government and their ideological diversity are likely to be positively related to the probability of its demise.

Once ideological diversity is present in the model, Warwick finds that minimal-winning coalitions are no more likely to survive than other forms (pp. 67–72). The only characteristic of a coalition that proves to be significant and highly so in explaining the hazard rate is its majority status.

A large literature has now rather firmly established that good economic conditions increase the likelihood that a president or a government is reelected, and that presidents and parties take this into account when setting their economic policies (see Chapter 19). This literature has largely ignored the question of whether economic conditions also affect the life expectancy of a government. It seems quite plausible that they would. Bad economic times might lead parties to bolt a coalition for fear of being held responsible for the state of the economy at the next election; good economic times might keep coalitions in tact as all members want to take credit at the next election for the state of the economy. Warwick's data are consistent with these conjectures (ch. 5). The difficult economic environment of the 1980s and 1990s seems to have both increased hazard rates over all of Western Europe, and made them more sensitive to changes in unemployment and inflation, with inflation being given increasing weight by voters over time.[31]

[31] The poor state of the German economy in the early 1980s made it unlikely that the coalition between the Socialist party and the Free Democrats would return to power after the next election. This fact seems to have contributed to the Free Democrats' decision to form a new coalition with the Christian Democrats (Poguntke, 1999). The Austrian Socialist party's decision in 1966 not to renew the grand coalition with the People's party also was influenced by the deteriorating state of the economy at that time (Müller, 1999).

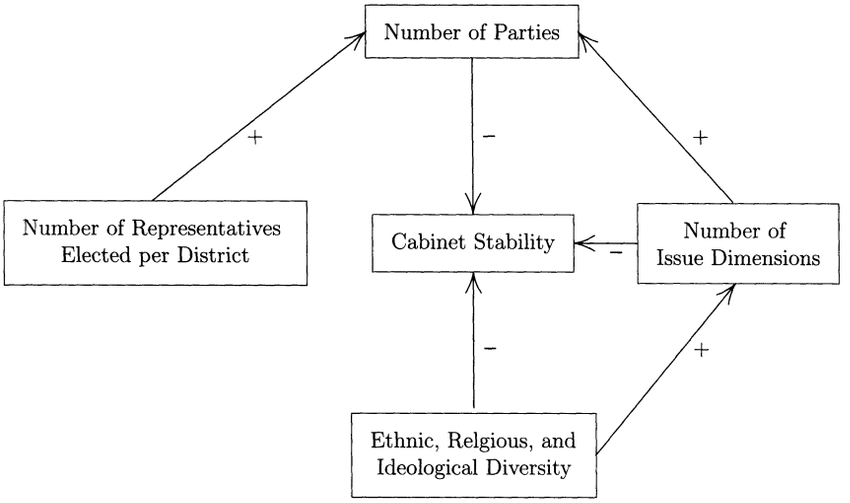

Figure 13.6. The determinants of cabinet stability.

13.8.3 *Summary*

The literature reviewed in this section with respect to cabinet stability, plus some of the findings from earlier sections can be summarized with the help of a diagram (Figure 13.6). The politics of a country with a single religious denomination is not likely to split along religious lines. Linguistic differences will not be a salient policy dimension in a country where everyone speaks the same language. The ethnic, religious, and ideological heterogeneity of a country determines the dimensionality of its issue space. The number of salient political issue dimensions in a country in turn affects the number of political parties it has. The number of political parties is also affected, however, by the electoral rules of the country. In particular the number of political parties will be positively related to the number of representatives that can be elected from each electoral district. Both the number of political parties and the degree of ideological heterogeneity are inversely related to cabinet stability.

One could add many more boxes to Figure 13.6, and perhaps additional arrows. At the constitutional level, for example, social diversity may explain the choice of electoral rules. Switzerland and Belgium both abandoned SMD representation toward the end of the nineteenth century as a response to violent protests by citizens who objected to being represented by someone from a different linguistic or religious group (Lakeman, 1974, pp. 192–99; Carstairs, 1980, chs. 6 and 13). Which brings us to the question of the relationship between electoral rules and social stability.

13.9 Social stability

Under the plurality rule nearly half of the citizens may be represented by someone they did not vote for; with three or more parties, quite often more than half are "represented" in this way (Buchanan and Tullock, 1962, p. 242). In the election that

returned Tony Blair's Labour Party to office with a "landside" 60 percent of the seats in the Parliament, the Labour Party won only slightly above 44 percent of the popular vote – about what the *losing* presidential candidate receives in a "landslide" election in the United States. This characteristic of the plurality rule can lead to alienation and may explain the significantly lower voter turnouts in plurality rule, two-party democracies than in PR systems.[32] Powell (1982) has also found significantly higher frequencies of violent political protest in two-party democracies.

Thus, the advantage of greater stability that is often claimed for two-party political systems would appear to need qualification. The stability *within* the political process that is brought about by denying diverse minorities proportionate representation in the legislatures to some extent is offset by the decisions of alienated minorities to opt out of the normal political process.

13.10 Strategic voting

Strategic voting can occur for two reasons: (1) the voter does not want to vote for a candidate or party with a very small chance of winning a seat in his district; or (2) the voter does not want to vote for a party with a very small chance of joining the coalition that forms the government. In this section we discuss the evidence for both types of strategic voting, beginning with the plurality-rule countries.

13.10.1 *Strategic voting under the plurality rule*

As we have seen, Duverger's law rests on the premise that the first type of strategic voting takes place in single-member districts, which use the plurality rule. For strategic voting to lead to two dominant parties, however, voters must judge the chances of the third party's candidate winning a seat to be significantly lower than for the second-place candidate. If the parties expected to come in second or third are expected to obtain similar fractions of the vote, there is no reason to desert the third candidate for the second. Thus no strategic voting is expected when the second and third parties' candidates have similar probabilities of winning. If we then calculate the ratio of the third party's candidate's votes to the second party's candidate's votes, $3P/2P$, we should expect this ratio to exhibit a bimodal distribution across districts. Where the probabilities of the second and third candidates' winning differ greatly, $3P/2P$ should be close to zero; where these probabilities are close, they should be close to 1.0. The in-between ratios should fall out.

A significant difference between the second party's expected share of the vote and that of the third is a necessary but not a sufficient condition for strategic voting. If the leading party in a district is thought to be an almost certain winner, then there is no reason to desert the third party for the second, since both have too small of a chance of winning. One might as well cast one's vote for the party one most prefers,

[32] See Powell (1981), Jackman (1987), Blais and Carty (1990), Amy (1993, ch. 7), and Mueller and Stratmann (2002). Mudambi, Navarra, and Nicosia (1996) find evidence of more information gathering by Sicilian voters under PR electoral rules.

as the outcome of the election is a foregone conclusion. Thus, one does not predict a bimodal distribution of $3P/2P$ ratios in districts where the probabilities of the leading party's victory are high.

The Liberal Democrats'[33] emergence as a major third party in Great Britain in recent years makes it a good country to test these predictions. Cox (1997, pp. 85–9) has done so. In districts that were not closely contested, he found a unimodal distribution of $3P/2P$ ratios with a mode between 0.3 and 0.4. In very closely contested districts, on the other hand, a bimodal distribution of these ratios was observed as the strategic voting hypothesis predicts, with one mode between 0.1 and 0.2 and a second between 0.9 and 1.0.

Although Cox's results strongly suggest that strategic voting has occurred in Great Britain, they do not imply that large fractions of Britons vote strategically. The hypothesis predicts no strategic voting in districts where the leading party has a high probability of winning, nor where the differences in probabilities of victory between the second and third parties are small. Even where neither of these two conditions is met, all voters are not voting strategically. Survey studies that ask voters about their intentions seem to suggest that from 5 to 15 percent of the British vote strategically.[34] This evidence of strategic voting combined with that discussed above regarding the relationship between votes and seats implies that the Liberal Democrats in Great Britain have been doubly disadvantaged by the use of the plurality rule. Some voters desert it for the two major parties so as not to waste their votes with the result being that the actual number of votes that the Liberal Democrats receives is less than the fraction of voters who rank this party first, and the electoral system transforms the Liberal Democrats' share of votes cast into a significantly smaller share of the seats in the Parliament.

Cox (1997, pp. 81–3) also tested for the presence of strategic voting in Germany, and found evidence that it has also taken place. Survey results again confirm the statistical evidence that strategic voting has taken place.

13.10.2 *Strategic voting in multiparty systems*

The generalization of tests involving the distributions of the ratio $3P/2P$ to multi-member district systems requires that one looks at the ratio $(M+1)/M$, where M is the number of representatives selected from a district. A brief glance at Table 13.2 suggests that the logic of this test will break down as M grows large. A simple-minded interpretation of the theory would imply 76 parties competing for votes in the Netherlands, but clearly the effective numbers for parties in this country are much lower. Cox (1997, ch. 5) found that the predictions regarding the ratios $(M+1)/M$ do hold up, so long as M remains below five. Thus, strategic voting would appear not to affect the outcomes in PR systems, where district size is moderately high.[35]

[33] Formerly the Alliance.

[34] Cox (1997, pp. 85–9) cites and discusses several studies.

[35] Ordeshook and Zeng (1994) discuss the incentives to vote strategically under STV.

Voters typically have priors on not only the expected share of the vote each party will win in an election, but also which parties are likely to form coalitions. These priors can also induce strategic voting.

Consider again the example of Demokrastan, where the parties are positioned along a single-dimensional, left–right issue space. The numbers below the line now represent the *expected* number of seats for each party following the election.

A	B	C	D	E	F	G
15	28	5	4	33	9	6

The constitution of Demokrastan obligates the president to invite the party receiving the most votes in an election to form a government. If the election goes as expected, *E* will be invited to form a government, and either a *CDEF* or a *DEFG* coalition is anticipated. Supporters of party *A* now have a strong incentive to vote for *B* to lift its seat total above *E*'s, since *B* should favor an *ABCD* coalition. Anticipating this, supporters of *F* and *G* might then switch their votes to *E*. Even such a simple convention of asking the largest party to form a government can lead to strategic voting and a flow of votes to the largest parties.

Strategic voting can also work to the advantage of smaller parties, however. Consider the following example adapted from Cox (1997, pp. 197–8). The positions of the German Social Democratic Party (*S*), Free Democrats (*F*), and Christian Democrats (*C*) are as follows:

S	F	C
49	4	47

The numbers below the line are again the expected share of the national vote for each party just prior to the election. The German Constitution imposes a threshold of 5 percent of the national vote for a party to obtain any seats in the Bundestag. If the preelection polls are correct, the Free Democrats will not make the threshold and the other two parties divide the seats proportionally. The Social Democratic Party can form the government alone. The ideology of the Free Democrats lies closer to that of the Christian Democrats than to the Socialists, and if they would manage to get over the threshold, they would form a majority coalition with the Christian Democrats. Knowing this Christian Democrats have an incentive to vote for the Free Democrats to ensure that they get at least 5 percent of the vote. Situations like this have been common in Germany since 1961, and the Free Democrats have attempted to take advantage of their position near the center of the ideological spectrum by openly encouraging German citizens to vote strategically.[36]

13.11 Commentary

We began this chapter with a quotation from Albert Breton and Gianluigi Galeotti (1985) regarding two views of representation. It should be clear from this chapter and the two preceding ones that both two-party, winner-take-all systems and PR

[36] For further discussion and citations, see Cox (1997, pp. 194–8) and Poguntke (1999, p. 232).

systems are representative in the sense that each citizen's preferences receive weight in the final outcomes of the political process. In two-party systems, the individual citizen's preferences influence the platforms upon which the candidates run and the outcomes to the extent that the necessity to stand for reelection forces the winners to implement the platforms upon which they run. In the PR systems, each citizen is represented by a party for which he has voted, or the party of the person for whom he has voted. The choice of parties is wider, and the citizen can vote for a party that represents his preferences more closely than in the two-party systems.

The two views on representation lead logically to alternative electoral rules for choosing representatives. Duverger's law predicts that the plurality rule will produce two dominant parties, and on average it does. But in many of the so-called two-party countries, like Canada and Great Britain, strong third and even fourth parties often exist. As a consequence, voters can have incentives to vote strategically, so that the votes cast for each party do not necessarily reflect the first-choice preferences of the citizens, and the party that wins a majority of the seats in the legislature often has done so without winning a majority of the popular vote. Indeed, it can happen that a majority of the voters would prefer another party to the one that "wins" an election.[37]

To produce more than two parties in the legislature, one needs to elect more than one party or person from each electoral district. The number of parties in the legislature tends to increase with the number of representatives elected per district (M), and when M exceeds five strategic voting seems to disappear. With M moderately large, PR systems also exhibit modest deviations from an allocation of seats in the parliament that is strictly proportional to the votes received. Thus, most real-world PR systems might be considered to be reasonable approximations to the "ideal system" described at the beginning of this chapter as far as their representation of different sets of voter preferences is concerned.

The logic underlying the ideal PR system is to represent the preferences of all citizens in the national assembly in proportion to their numbers in the population at large, and then to aggregate these preferences in an optimal way. For the reasons discussed in Chapters 4, 5, and 6, the simple majority rule is unlikely to achieve this optimal aggregation. In addition to a high qualified majority rule, some version of point voting or voting by veto might be used, so that *all* citizens' preferences have a chance to influence the outcome. Under an ideal PR system, the legislative and executive branches would be separated, and the executive branch's task would be to execute "the will of the people," as expressed through the votes taken in the fully representative legislature.[38]

[37] Both of these disadvantages of two-party systems that use the plurality rule to manufacture a parliamentary majority could be eliminated by adopting a two-round electoral rule to award parties seats, similar to the rule used to elect the president of France. All citizens across the country would face the same list of parties in each round, and votes would be tallied on a national basis. If no party received a majority of the votes cast in the first round, a second round of voting restricted to the two parties receiving the most votes in the first round would be held. The $(M + 1)/M$ logic should apply to this rule, and one expects a two-party system to evolve over time. For further discussion, see Mueller (1996a, chs. 9 and 10).

[38] For further discussion of the differences between the two types of systems and ways to create their ideal prototypes, see Mueller (1996a, chs. 8–10).

Real-world PR systems differ from this ideal in that they inevitably employ the simple majority rule for parliamentary decisions, and they merge the executive and legislative functions of government by requiring that the parliament chooses, or at least acquiesces to the choice of, the chief executive and her cabinet. This requirement under the cabinet form of PR changes the strategic options for the voter. If the legislature employed a voting rule that allowed the party for which she voted to influence the outcome, the citizen would have a strong incentive to vote for the party with the closest position on the issues to her own. However, if only *some* parties will join the cabinet, and the cabinet will decide all government policies, the rational citizen should consider the probability that each party will enter the cabinet, as well as its position on the issues, when deciding which party to vote for. Thus, under the cabinet form of PR, the distribution of votes across parties may also inaccurately reflect the distribution of citizens' preferences for the policy positions of each party.

Despite these important differences between real-world electoral systems and their theoretical counterparts, one might expect that the two come close enough to one another that we can use the results from the public choice literature to compare real-world electoral systems. In a pure two-party system, one party *always* wins a majority of the votes and seats in the parliament, and thus majority governments with their inherent stability can be expected. In real-world two-party systems, majority governments do not always form, but they form far more often than in PR systems, as one expects.[39]

With two parties and a single-dimensional issue space, both compete for the vote of the median voter and the winning platform coincides with her ideal point. The probabilistic voting model introduced in Chapter 12 leads us to expect equilibrium outcomes in two-party systems, even when there is more than one dimension to the issue space, with the winning party located at the mean of the distribution of voters' ideal points. Even when equilibria may not exist, theoretical constructs like the uncovered set and the yolk lead us to expect outcomes in two-party systems that lie near the center of the distribution of voters' ideal points (see Chapter 11).

The literature on multiparty systems leads – perhaps somewhat surprisingly – to very similar conclusions. When a single-dimensional issue space exists, the party occupying the ideal point of the median voter can be expected to join any coalition that forms, or to form the government by itself, even perhaps when it does not occupy a majority of the seats in the parliament. When the issue space has more than one dimension, the winning coalition that forms the government is likely to contain the party located at the dimension-by-dimension median, if such a party exists, or at least at the median of one of the dimensions of the issue space. Concepts like the uncovered set and the yolk are replaced by the heart to predict which parties join coalition governments, but again the implication is that they will be somewhere near the center of the distribution of voters' ideal points. In multiparty systems the median voter is replaced as the key actor by the "central" or "core" or "strong" party.

[39] Blais and Carty (1988) find that a single party wins an absolute majority of the seats in the parliament 72 percent of the time in two-party systems versus only 10 percent of the time under PR.

Powell (2000) has recently undertaken an extensive comparison between two-party and multiparty systems.

Strong parties are large and centrally located, while core parties are positioned at the intersection of median lines. The almost exclusive use of the simple majority rule in all two-party and multiparty systems instills a powerful centripetal tendency into them regardless of the particular electoral rule used to fill the seats in their legislatures.

The use of the Downsian spatial voting model by students of both two-party and multiparty systems results not surprisingly in a great concern over the *positions* of the candidates and parties in the two systems. The often implicit assumption in the literature is that the policies implied by the positions occupied in the issue space get adopted. The concern of observers like Breton and Galeotti about *responsible* government is often not over the nature of the policies promised, but over whether the promises are kept and the policies actually are enacted. When the government reneges on its promises in a two-party system, the voters have a clear strategy for punishing it by voting for the opposition party. In PR systems, the voter's best strategy is less clear, since "responsibility" for past policies is shared by all members of the coalition, and the voter does not obviously advance her own interests by weakening the party that most closely represents them. Not surprisingly, one finds that *changes* in government following an election are more likely to be observed in two-party than in multiparty systems.[40]

The vast literature on cycling leads one to expect cabinet instability to take the form of constantly changing policies. The most significant cost of cabinet instability may be the complete paralysis of the government. Schofield (1995) has shown, for example, that the Christian Democrats occupied a near-core position in the Italian issue space throughout the post–World War II period, and thus were members of every one of the 50 or so governments that formed up until the mid-1990s. At that time Italians voted *all* of the major parties in Italy out of office, and the Christian Democrats vanished as a party. One presumes that this occurred not because Italian voters were unhappy with the major parties' policy positions, but with their implementation of these policies. Thus, the most significant differences among electoral systems may not come in how well voters' preferences are represented in the legislature, or in how the legislature decides what ought to be done, but in whether the legislature decides anything at all, and in the implementation of its decisions. We return to these issues in Chapter 17.

Bibliographical notes

The standard format for articles on PR or multiparty systems is to begin with one or more lengthy quotations from classic works. I know of no other area in public choice in which the average age of a source quoted is so great. Whether this tendency reflects the brilliance of the first writers on the topic or the paucity of talent devoted to the topic since, I am not sure. Perhaps it merely reflects the lack of interest in the topic by Anglo-Saxon scholars. I defer in part to this tradition

[40] Blais (1991, p. 242) compares PR and two-party systems according to several additional performance criteria, as do Grofman and Reynolds (2001), and Powell (2000).

with my opening quotation from a relatively recent article by Breton and Galeotti (1985).

Among the classics, John Stuart Mill's *Considerations on Representative Government*, first published in 1861, is worth reading for its discussion of both PR and political theory more generally.

More recent discussions of the normative properties of PR include Pitkin (1967), Riker (1982a), Chamberlin and Courant (1983), Johnston (1984), Rose (1984), Sugden (1984), Blais (1991), Powell (2000), and Grofman and Reynolds (2001).

For a formal analysis of various rules for allocating seats in the legislature based on electoral votes, see Balinsky and Young (1978, 1982). Myerson and Weber (1993), Myerson (1999), and Persson and Tabellini (2000a, ch. 8) examine issues of stability and performance in different electoral systems.

Schofield (1997) surveys the spatial literature on multiparty systems and provides a simple introduction to the concept of the heart. Austen-Smith (1996) suggests some modifications of the heart to eliminate the possibility that it selects an outcome not in the uncovered set.

Grofman and van Roozendaal (1997) provide an excellent survey of the literature on cabinet stability. Müller and Strøm (2000a) contains 15 essays on coalition governments in Europe. Grofman, Lee, Winckler, and Woodall (1999) contains 18 essays on the single nontransferable vote as used in Japan, Korea, and Taiwan. Twelve essays on the single-transferable-vote procedure are included in Bowler and Grofman (2000a).