

## ***Election Laws, Disproportionality and Median Correspondence: Implications for Two Visions of Democracy***

G. BINGHAM POWELL JR AND GEORG S. VANBERG\*

Comparative studies of election rules and legislative representation have focused intensively on vote–seat disproportionality as an indication of poor representation. Beginning with citizens' preferences, rather than votes, has important advantages and is especially more appropriate for a majoritarian vision of democracy. We analyse the effect of election rules on both vote–seat correspondence and median left–right correspondence in seventy elections in seventeen countries. We show theoretically the stringent conditions necessary to reduce vote–seat disproportionality in high threshold systems and empirically their high variance (and higher levels) of distortion. Although good median correspondence could be created, in theory, under a wide range of electoral systems, our empirical results suggest that proportional representation (PR) systems tend to outperform single-member district (SMD) systems by this criterion also.

The impact of election law on the (dis)proportionality of representation of voters in legislatures has been intensively studied. Empirically, it is quite clear and widely accepted that election laws greatly influence the manner in which citizens' votes at the polls are converted into seats in the legislature.<sup>1</sup> More specifically, electoral systems with some form of proportional representation rules, large districts and low legal thresholds convert votes into seats quite accurately. Electoral systems with higher thresholds, smaller districts and, especially, plurality rules often create substantial distortion in the proportionality of vote–seat representation. Scholars concerned about representation in democracies have used vote–seat disproportionality as one measure of the quality of representation, concluding that low threshold proportional representation (PR) election laws generally provide better representation.<sup>2</sup> Presumably, disproportionality is a relevant measure in this context because vote–seat

\* Department of Political Science, University of Rochester; and Department of Political Science, Florida State University, respectively. We are grateful to John Carey, Arend Lijphart, Gail McElroy, Rein Taagepera, Albert Weale and the anonymous reviewers for the *Journal* for their extremely helpful comments and suggestions.

<sup>1</sup> Michael Gallagher, 'Proportionality, Disproportionality, and Electoral Systems', *Electoral Studies*, 10 (1991), 33–51; Arend Lijphart, *Electoral Systems and Party Systems: A Study of Twenty-Seven Democracies, 1945–1990* (New York: Oxford University Press, 1994); Douglas Rae, *The Political Consequences of Electoral Laws* (New Haven, Conn.: Yale University Press, 1967); Rein Taagepera and Matthew S. Shugart, *Seats and Votes: The Effects and Determinants of Electoral Systems* (New Haven, Conn.: Yale University Press, 1989).

<sup>2</sup> Consider Arend Lijphart's judgement: 'This is an important practical conclusion because there is well-nigh universal agreement that electoral proportionality is a major goal of electoral systems and a major criterion by which they should be judged. For many PR supporters, proportionality is

distributions represent the most tangible and easily quantifiable evidence available about the preferences of the electorate and their reflection in the legislature. Votes are the closest approximation to 'revealed preferences' for the public as a whole.

While we respect both the meaningfulness of the vote and the progress that has been made in studying the effect of election laws on the vote–seat relationship, we think that important parts of the problem of electoral law and representation have been neglected. First, despite great progress, aspects of the causal connection between electoral systems and vote–seat disproportionality remain obscure. In particular, the problem that votes are translated into seats at the district level, while disproportionality is conceived of as a national-level phenomenon, has not received sufficient attention. Secondly, focusing on the relationship between seats and votes assumes (at least implicitly) that all we can know, or need to know, about citizens' preferences in a discussion of representation is captured by the distribution of citizens' votes. But the vote distribution itself is strongly affected by the alternatives that are offered to citizens (i.e., by the party system) and by citizens' perceptions of those alternatives. The policy positions of the parties in turn depend at least in part on the incentives that electoral laws generate for voters and politicians. If we think the point of elections is to convert citizens' preferences into representation through the medium of votes and the rules for aggregating those votes, then ideally we should begin with preferences, not votes, in our analysis.

This last point can be of particular importance because the majoritarian vision of democracy that underlies much justification of plurality, single-member district rules (which are often characterized by high vote–seat distortion) explicitly denies the normative importance of vote–seat disproportionality as such. In this vision, the purpose of legislative elections is not to represent the range of citizen preferences or to convert votes into seats accurately. Rather, it is to reduce the diversity of citizen preferences in such a way as to create a legislative majority for a party that represents the policy preferences of a citizen majority.<sup>3</sup> The point of elections in this vision is to allow voters to choose decisively the government itself, leading presumably to responsiveness and accountability.<sup>4</sup> As we shall illustrate it is quite possible, even plausible, to find close correspondence of citizen and legislative majorities in conjunction with great vote–seat distortion. Even if we accepted the authenticity of the vote distribution as an indication of citizen preferences, vote–seat disproportionality

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a goal in and of itself – virtually synonymous with electoral justice – but is also regarded as an important means for minority representation' (Lijphart, *Electoral Systems and Party Systems*, p.140).

<sup>3</sup> John D. Huber and G. Bingham Powell Jr, 'Congruence between Citizens and Policymakers in Two Visions of Liberal Democracy', *World Politics*, 46 (1994), 291–326; Arend Lijphart, *Democracies: Patterns of Majoritarian and Consensus Government* (New Haven, Conn.: Yale University Press, 1984).

<sup>4</sup> Dennis Mueller, 'Choosing a Constitution in East Europe: Lessons from Public Choice', *Journal of Comparative Economics*, 15 (1991), 325–48; G. Bingham Powell Jr, 'Constitutional Design and Citizen Electoral Control', *Journal of Theoretical Politics*, 1 (1989), 107–30.

as such would therefore be inappropriate for normative evaluations of electoral systems from a majoritarian point of view.

We address these concerns in two stages. First, we investigate the causal connection between electoral law and disproportionality, taking particular account of the national–district aggregation problem. Then, we move analysis of the performance of election laws in creating desirable representation of citizen preferences in the primary law-authorizing body – the national legislature – beyond the vote–seat measures of disproportionality. Our tool for doing so is the left–right scale, which makes it possible to compare the policy-positions of citizens with the policy-positions of the parties that represent them in a kind of ‘super’ issue dimension.

The latter analysis requires us to accept the meaningfulness of the left–right scale as a measure of preference. We recognize that this assumption is not always justified, and particularly that the reduction of multiple dimensions into this single one is more problematic in some situations than others. But substantial work on public opinion suggests that the left–right scale position is a reasonable summary of citizens’ views in the context of national political debate in most of these countries.<sup>5</sup> Our analysis requires only that the distances between left–right positions be comparable across times and countries, not that the substantive positions be similar (see also the more detailed discussion in the penultimate section below).

Despite the inevitable concerns about the left–right metric, it has two critical advantages. First, this approach allows us begin analysis with a direct measure of citizen preferences rather than with votes. Secondly, unlike measures of disproportionality, which are shaped by the exclusion of parties at any policy position, such analysis can focus directly on the normative concern of the majoritarian vision that citizens and their representatives share the same preference majorities. In this article, we shall analyse the correspondence of legislative and citizen medians on the left–right scale, which captures this majoritarian concern. In a single-issue dimension, the position of the median is privileged because it is the only policy position that cannot be defeated by another position in a head-on vote. The further from the citizen median the legislative median is located, the larger the citizen majority that would prefer an alternative. While this is the critical property for majoritarians, it is obviously relevant for proponents of other visions of representation as well. Although non-majoritarians, who desire to see the full range of citizen preferences in the

<sup>5</sup> Matthew J. Gabel and John D. Huber, ‘Putting Parties in Their Place: Inferring Party Left–Right Ideological Positions from Manifestos’ Data’ (Ann Arbor: unpublished paper, 1998); John D. Huber, ‘Values and Partisanship in Left–Right Orientations: Measuring Ideology’, *European Journal of Political Research*, 17 (1989), 599–621; Ronald Inglehart, ‘The Changing Structure of Political Cleavages in Western Society’, in Russell Dalton, Scott C. Flanagan and Paul Allen Beck, eds, *Electoral Change in Advanced Industrial Societies: Realignment or Dealignment* (Princeton, NJ: Princeton University Press, 1984), pp. 25–69; Ronald Inglehart and Hans-Dieter Klingemann, ‘Party Identification, Ideological Preference, and the Left–Right Dimension among Western Mass Publics,’ in Ian Budge *et al.*, eds, *Party Identification and Beyond* (London: John Wiley, 1976), pp. 243–73.

legislature, may feel that the correspondence of the medians is not sufficient for good representation, they should still wish the legislative body to be centred on the citizen distribution, which requires good correspondence of the medians.

#### ELECTORAL LAW AND DISPROPORTIONALITY

##### *Electoral Systems: The Effective Threshold*

Before moving into the heart of our argument, it will be necessary to take a short detour into the problems of measuring electoral laws and disproportionality. The reason for this is fairly straightforward. Electoral laws vary on numerous dimensions; many of these dimensions have an impact on how difficult it will be for a party to gain seats in the assembly. For example, the German electoral system features a 5 per cent minimum threshold for representation, which tends to increase disproportionality as small parties are left out of the legislature. Other electoral systems, for example Norway before 1989, do not employ legal thresholds, but have relatively small district magnitudes or other features that can also make entry more difficult for small parties. We expect theoretically that where entry is more difficult, there is greater likelihood of disproportionality in representation. To study systematically the relationship between electoral law and disproportionality, it would be desirable to find a measure that combines these various aspects of electoral systems in such a way as to make meaningful comparison across systems possible. Fortunately, we can take advantage of a concept that has been widely employed in the literature on electoral systems for this purpose: Arend Lijphart's notion of an 'effective threshold'.<sup>6</sup> The purpose of this measure is to take the various aspects of an electoral system, and to convert them into an equivalent (fictitious) legal threshold that would have approximately the same effect on difficulty of entry to the legislature as the electoral law under consideration.

In particular, the effective threshold aims to capture two properties of an electoral system. The first is its 'upper threshold,' i.e. an approximation of the maximum vote share a party or candidate could receive under the most adverse circumstances without winning a seat. The second is the 'lower threshold', i.e. an approximation of the minimum vote share that could win a party a seat under the most favourable circumstances. If there is no stipulated national minimum, Lijphart calculates the average of the 'upper' and 'lower' threshold numbers to be the effective threshold of an electoral system. The exact formula is given by:<sup>7</sup>

$$T_{eff} = \frac{50\%}{M + 1} + \frac{50\%}{2M},$$

where  $M$  denotes the average district magnitude.

<sup>6</sup> Lijphart, *Electoral Systems*, p. 26

<sup>7</sup> The crucial ingredients in calculating the upper and lower thresholds are the average district magnitude, any existing legal thresholds, and certain assumptions about the number of competing parties. For a precise statement of the derivation of the effective threshold, see Lijphart, *Electoral Systems*, pp. 26f.

If a national minimum threshold exists and if it exceeds this average, Lijphart uses it as the effective threshold. One difficulty with this measure is that for single-member, plurality-rule (SMD) systems, it yields an effective threshold of 50 per cent, which is equivalent to the upper threshold. Therefore we follow the convention of assigning a value of 35 per cent to these systems.<sup>8</sup> The highest threshold for any non-single member district system in our sample is only about 13 per cent (France in 1986).<sup>9</sup> Intuitively, the effective threshold thus provides us with a rough estimate of the difficulty of gaining seats in a given electoral system. The higher the effective threshold, the more support a party must secure, on average, in order to gain seats. As is intuitive, and as the formula makes clear, the effective threshold falls with increases in district magnitude.

### *Effective Threshold and Disproportionality*

That disproportionality rises with increases in the effective threshold has been well documented. In our sample, consisting of seventy elections in seventeen countries between 1977 and 1993, we find similar results. The particular disproportionality measure we use in our analysis is Michael Gallagher's least squares index.<sup>10</sup> The data are presented graphically in Figure 1, a scatter plot of disproportionality by Lijphart's effective threshold measure. The SMD systems (due to their assigned effective threshold of 35) are grouped together at the right side of the graph, while the PR systems are positioned on the left side. Even to the unaided eye, the result is unambiguous: empirically, at least, higher thresholds do seem to entail higher disproportionality scores.<sup>11</sup> The more difficult an electoral system makes it for parties to gain representation in the legislature, the greater the divergence, on average, between vote and seat shares that parties obtain.<sup>12</sup>

<sup>8</sup> Lijphart, *Electoral Systems*, p. 27

<sup>9</sup> The Appendix Table A1, available on the internet version of this article, shows the effective thresholds for each election in our sample.

<sup>10</sup> Gallagher, 'Proportionality, Disproportionality, and Electoral Systems'. The least squares index is calculated as the square root of

$$\frac{1}{2} \sum_{i=1}^n (v_i - s_i)^2,$$

where  $v_i$  and  $s_i$  denote the vote/seat shares of the  $n$  competing parties.

<sup>11</sup> Using the continuous measure of effective threshold to predict disproportionality scores for the seventy elections (in seventeen countries) in a simple bivariate regression model yields the following results (standard errors in parentheses; adjusted  $R^2 = 0.70$ ): least squares index = 1.6 (0.5) + 0.32 (0.025)\*  $T_{eff}$ . The empirical robustness of this relationship is suggested by the fact that Lijphart with a somewhat different set of countries, elections and equation specification, reports a very similar coefficient of 0.32 for the influence of effective threshold on disproportionality (Lijphart, *Electoral Systems*, p. 108.)

<sup>12</sup> Several comments on the graph are in order. First, the exact slope of the regression line naturally depends on the (somewhat arbitrary) choice of an effective threshold value for the SMD systems. Secondly, there are several noticeable outliers in the medium range of effective threshold. These cases are the pre-1989 Norwegian elections, as well as the five Spanish cases. Both of these systems feature

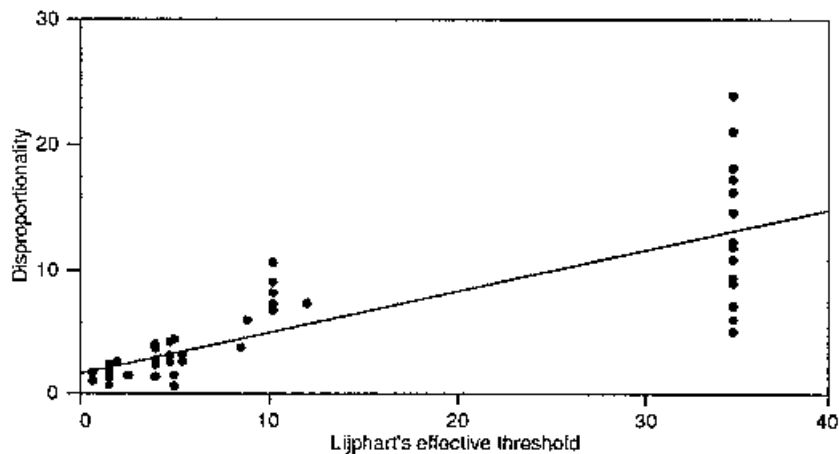


Fig. 1. Disproportionality by effective threshold

Note: SMD systems are assigned an effective threshold of 35 per cent.

#### A BASELINE MODEL OF NAÏVE VOTERS AND PARTIES

In order to set up the remainder of our argument, in which we move beyond disproportionality as a measure of the quality of representation, let us begin with a very intuitive, if constrained, approach to understanding how election rules can shape the translation of the distribution of citizen preferences into the distribution of legislative party positions. First, let us assume that the distribution of citizen preferences is reasonably approximated by a normal, bell-shaped curve. In fact, for the countries that we shall be examining this is empirically a well-founded assumption in the 1980s and 1990s. Table 1 shows the distribution of citizen self-placement on the left–right scale for our seventeen countries in the early 1980s. Examination of the citizen distributions in the early 1990s shows no striking differences.

To explore the implications of different election laws, let us assume initially that there are ten parties, each offering election promises corresponding to the ten positions on the left–right scale. Let us also assume, in this ‘naïve’ baseline

(Footnote continued)

higher thresholds, but also suffer from substantial malapportionment of seats across districts. We cannot disentangle the effects here, but this malapportionment undoubtedly leads to some over-attribution of disproportionality. Note that disproportionality in Norway declined from about 6 to about 4 after the rules were revised, decreasing effective magnitude as well as improving apportionment (see appendices on the internet version of this article) Thirdly, we classify Australia and France with the other (simple plurality) single-member district systems (as does Lijphart), despite special features of their election rules (preferential vote, two-round majority vote). While these special features may well affect party competition, their impact on difficulty of entry to the legislature, and especially the local–national cancellation problem discussed below, is similar to the simple plurality systems.

TABLE 1 *Voter Self-Placement on Left–Right Scale: Early 1980s or Closest Election Survey*

Country	Year	Citizens (%) at Each Scale Point†										Med.	Mean	SD
		1	2	3	4	5	6	7	8	9	10			
Australia	1981	2	1	6	9	36	14	12	10	4	5	5.5	5.8	1.9
Austria	1975	3	3	10	10	16	19	13	14	6	7	6.0	6.0	na
Belgium	1981	3	4	9	8	21	22	11	9	4	9	5.7	5.8	2.2
Canada	1981	2	1	4	6	37	20	12	11	4	4	5.7	5.9	1.8
Denmark	1981	3	3	7	10	31	17	13	9	5	3	5.5	5.6	1.9
Finland	1981	2	3	7	11	26	14	13	15	6	3	5.7	5.9	2.0
France	1981	7	5	15	13	31	11	9	5	1	3	4.8	4.8	2.0
W. Germany	1983	1	3	10	15	28	14	14	9	4	3	5.4	5.5	1.9
Italy	1983	6	8	16	14	29	13	5	4	2	3	4.6	4.6	2.1
Netherl.	1982	4	5	12	13	19	12	12	12	4	6	5.4	5.5	2.4
N. Zealand	1981*	2			24		49		22		2	5.5	5.5	na
Norway	1981	2	2	9	10	27	13	14	13	4	6	5.7	5.8	2.1
Spain	1981	4	7	16	16	25	13	9	7	2	2	4.8	4.9	2.0
Sweden	1981	3	6	14	12	22	12	11	11	5	5	5.3	5.4	2.3
Switzerl.	1976	2	1	9	11	25	18	13	12	4	4	5.7	5.8	na
UK	1983	3	2	7	10	27	16	14	14	4	4	5.7	5.8	2.0
USA	1981	2	4	6	7	26	18	14	12	5	6	5.8	5.9	2.1

\* The survey in New Zealand (Clive Bean *et al.*, *New Zealand Voting Survey, Post Election 1981* (Canberra: Social Science Data Archives, 1981)) used 1–5 scale; however, mean and median were recomputed as if based on a ten-point scale.

†Most 1981 distributions and scores are from the 1981 World Values Study. Others in the early 1980s, but not 1981, are from closest Eurobarometer surveys. Mid-1970s scores in Austria and Switzerland from the Barnes and Kaase eight-nation study, as these are not included in the 1981 World Values Study. However, they are included in the 1990 World Values study and subsequent analysis uses those data.

model, that each voter votes for the party closest to him or her. Initially, consider that the election rules provide for a single national, multi-member district in which all parties gaining over 0.67 per cent of the votes win a percentage of legislative seats proportional to their percentage of the vote. (This characterization corresponds roughly to the electoral rules used in the Netherlands.) Given these circumstances we can see that the election outcome would result in all ten parties attaining legislative representation and a distribution of preferences in the legislature extremely similar to the distribution of preferences in the electorate. Specifically, there would be: (1) no vote–seat disproportionality; (2) a close match between the standard deviations of citizen and legislative preference distributions; (3) close correspondence between the citizen and legislative medians.

Now, we can consider what would happen if we gradually increased the minimum percentage of the votes necessary to qualify for seats in the legislature while holding constant the number of parties and the assumption of sincerely voting citizens. Obviously, as we increase the threshold, parties at left–right positions favoured by small numbers of citizens start to drop out. We can see that with the citizen distributions in Table 1, as we approach about 5 per cent, a number of small parties would be disqualified in each country. As we approach 10 per cent, more parties would be eliminated. Given the ‘bell-shaped’ distributions seen in Table 1, these would continue almost everywhere to be parties at the two extremes. While Table 1 suggests some asymmetrical ‘lumpiness’ at a few points, the effects are pretty smooth, and they continue, ever sharper as we approach even 20 per cent.

This baseline model suggests that as we increase the threshold, we would observe: (1) increasing vote–seat disproportionality, as small parties are eliminated; (2) declining variance in the preferences in the legislature, both absolutely and relative to the citizen variance, because the eliminated parties tend to be those at the extremes;<sup>13</sup> (3) continued good approximation between the median ideological position in the legislature and the median ideological position of the electorate. Moreover, as the threshold increases, at some point the median party in the legislature will gain a majority of seats. This majority will be associated with relatively high vote–seat disproportionality and, at the same time, with good correspondence between the citizen and legislative medians. These results would presumably please majoritarian theorists, but be disturbing for those who favour broader representation of all points of view in policy negotiations. It is precisely this expected pattern of high disproportionality, reduced variance and good correspondence of medians that should make us wary of assuming that disproportionality in vote–seat relationships will necessarily be normatively undesirable for everyone. High disproportionality can coexist with good representation as measured by other criteria, e.g. median correspondence.

<sup>13</sup> We shall not explore the question of the relationship between the variances of citizen and legislative preferences in this article, but it remains an interesting subject for further analysis.



The imagined results of our base-line model are, on the surface, implausible. They assume that politicians and voters will ignore the increase in the threshold as they form and support parties, and as the parties choose policy positions. On the contrary, strategic politicians and strategic voters should prefer not to waste their efforts/votes on policy positions/parties that are likely to lose. In the next section we reconsider the implications of increasing the threshold if we allow for such strategic behaviour.

#### ELECTION RULES AND VOTE–SEAT DISPROPORTIONALITY

The base-line model provides us with certain expectations about the manner in which rising thresholds are going to affect the relationship between votes and seats. However, there are several difficulties with this naïve view of the way thresholds work. One difficulty is that it is highly implausible that voters and, especially, politicians will be so naïve as to ignore the effects of higher thresholds as they cast votes and organize political parties. A second difficulty relates to the manner in which we conceive of disproportionality in the first place. Parties gain votes and seats at the district level, but disproportionality scores are calculated at the national level. These complications can introduce systematic downward pressures on vote–seat distortion in high threshold systems.

#### *Downward pressures on disproportionality in high threshold systems*

In the base-line model, we assumed that voters and politicians do not act strategically. Sophisticated voters and politicians should anticipate the effects of electoral systems and respond. Such strategic behaviour is likely to affect whom voters support, which parties will be sustained by politicians, and where these parties will locate in ideological space. A large body of theory has addressed this problem. Gary Cox provides the most recent and extensive treatment, which explicitly extends and integrates the work of those in the Duverger tradition with results in positive political theory.<sup>14</sup> Cox generalizes Duverger's famous 'law' that single-member district rules tend to propel two-party systems into what he calls the ' $M + 1$  rule'. According to this rule, the number of parties in equilibrium will be no greater than  $M + 1$ , where  $M$  is the district magnitude. The intuitive reason for this result is that if more than  $M + 1$  parties exist, some of them are certain not to gain representation, and strategic voters will desert them in favour of parties that may gain entry into the legislature. In response, strategic politicians will not form more than  $M + 1$  parties. A slightly different terminology says that the 'carrying capacity' for political parties of an electoral system is defined by  $M + 1$ . Under Cox's  $M + 1$  rule, we would therefore expect *fewer* parties to compete in higher threshold

<sup>14</sup> Gary Cox, *Making Votes Count: Strategic Co-ordination in the World's Electoral Systems* (Cambridge: Cambridge University Press, 1997).

systems. Because a reduction in the number of parties limits the number of parties that can be excluded (in the limit to one party), it can also reduce the potential for vote–seat distortion. As a consequence, disproportionality may increase less with increases in the effective threshold than our base-line model might lead us to expect. This first type of downward pressure is essentially the phenomenon discussed by Taagepera and Shugart as the ‘Law of Conservation of Deviation from Proportionality’.<sup>15</sup>

A second complexity has received less attention. This complexity is created by the particular understanding of disproportionality prevalent in the literature on electoral law. Disproportionality is usually thought of as a national-level problem and disproportionality scores are calculated using national-level vote and seat shares. However, parties gain votes and seats at the *district level*. In some electoral systems, these two levels coincide (for example, the Netherlands). In most circumstances, however, a nation’s geographic area is subdivided into a number of electoral districts. Such subdivision opens up the possibility that over and under-representation for individual parties cancels out over the various districts. The final disproportionality score will therefore depend on the manner in which seat and vote shares across electoral districts add up and cancel out as we calculate national vote and seat shares.

A simple example can illustrate this. Assume an SMD plurality rule system with two districts of equal size. In the first election, party *A* wins 49 per cent of the vote in District 1, and 49 per cent of the vote in District 2, while party *B* captures the remaining 51 per cent in both districts. Party *B*’s national vote share is 51 per cent and its seat share is 100 per cent. The disproportionality index is equal to 49. In the second election, party *A* wins 49 per cent in District 1, and 51 per cent in District 2, while *B* wins the remaining votes. *B*’s national vote share is 50 per cent, its vote share is 50 per cent, and the disproportionality index is equal to zero. The huge shift in the index in response to a mere 1 per cent shift in the national vote share is created simply by a change in the manner in which over- and under-representation do or do not cancel out over districts as we aggregate to the national level. ‘Cancellation’ effects can play an important role in determining vote–seat disproportionality.

These cancellation effects are likely to be particularly important in SMD systems, and of less significance in PR systems. PR systems typically employ a relatively small number of electoral districts with high magnitude to elect their parliaments. Moreover, the allocation rules are designed to reflect vote and seat shares fairly accurately. As a result, the percentage of the vote that can be ‘wasted’ by any one party in a given electoral district is constrained to be relatively small. When we aggregate across electoral districts to the national level, we are therefore aggregating over a limited number of units, each of which does not experience high vote–seat distortion. Even without ‘cancelling’ effects across districts, we therefore do not expect to see much disproportionality at the

<sup>15</sup> Taagepera and Shugart, *Seats and Votes*, p. 123; Cox, *Making Votes Count*, p. 173.

national level.<sup>16</sup> Of course, this is exactly what these systems aim at. The point of PR systems is precisely to reflect the vote distribution as closely as possible into the legislative distribution, and their success in doing so is evident in Figure 1.

In SMD plurality rule systems, however, the percentage of the vote that can be ‘wasted’ in any given district can be, and usually is, quite substantial, especially if the race is competitive. In aggregating to the national level, we are aggregating over a large number of districts, each of which is likely to experience high disproportionality. The disproportionality at the national level will therefore depend crucially on the ‘cancellation effects’ across electoral districts, i.e., on the manner in which parties are ‘compensated’ for under-representation in some districts by over-representation in others.<sup>17</sup> If cancellation works well, disproportionality can be low in SMD systems even though there is large distortion in each individual district. If cancellation fails, however, disproportionality can be substantial. The precise point of partisan gerrymandering in SMD systems is to exploit this fact by ensuring that the cancellation process (or rather, the failure thereof) systematically works against a particular party.

*Failures to reduce disproportionality: co-ordination and convergence failures*

These downward pressures create the potential for high threshold systems to feature low disproportionality. However, it is unlikely that they will systematically depress vote–seat distortion to the level prevalent in low threshold systems. This is so because a number of conditions must be met in order to make the downward pressure of high threshold systems effective. First, the number of parties must be reduced in order to limit the potential for wasted votes. Secondly, wins and losses must cancel in significant ways across districts. The disproportionality of such systems is therefore highly susceptible to any failure of these conditions to be met.

Consider the difficulties introduced by the cancellation process. Higher thresholds create the potential for higher disproportionality at the district level. Whether or not this disproportionality will carry over from the district-level to the national-level will depend on cancellation, i.e. on how under- and over-representation for parties will cancel across districts. Since the deviations that must be balanced are potentially larger the higher the threshold, cancellation effects will take on greater significance in high threshold systems. As a

<sup>16</sup> This argument implicitly assumes that the number of parties does not exceed the carrying capacity of the electoral system in significant ways. If there are ‘too many’ parties competing, and many fail to gain representation (for example, by falling below a legal threshold), disproportionality can be very high even in PR systems. The Russian parliamentary election of 1995 provides a perfect example. Of the twenty-seven parties competing, twenty-three fell below the 5 per cent threshold, making them ineligible for distribution of list seats. The least squares index for the election is equal to 11.1, rather large by any PR standards.

<sup>17</sup> See also Taagepera and Shugart, *Seats and Votes*, pp. 109–10.

consequence, higher threshold systems will be more susceptible to cancellation failures, and such failures impose greater costs in terms of disproportionality. In particular, we do not expect cancellation to work efficiently when systematic distortions favour one or the other party in the races, leading one party consistently to finish in second (or third, etc.) place. A number of events can produce such distortions. The most significant and obvious one would be a failure of one, or both, of the parties to converge to the median voter. If voters are systematically favouring one party, it is unlikely that the over-representation of the favoured party will be balanced out by losses in other districts. Short-term effects, such as scandals, economic performance, or the popularity of a particular political figure may also lead to distortions that hinder effective cancellation.

Moreover, a failure to reduce the number of parties is likely to exacerbate this cancellation problem.<sup>18</sup> The larger the vote share that can be wasted by a party that does not gain seats or that is severely under-represented in the legislature, the higher vote–seat distortion will be. Clearly, this cost of a failure to reduce the number of parties increases with the threshold. Since in SMD systems, multi-party competition usually implies that some parties are severely under-represented in the legislature, failing to co-ordinate on the proper number of parties is particularly disastrous for disproportionality in SMD systems.<sup>19</sup> At the same time, these systems are the most likely to feel the constraint of the  $M + 1$  rule because their carrying capacity for political parties is low. (The effective numbers of parties in the PR systems in our dataset are almost certainly all below the carrying capacity of those systems.) SMD systems are therefore especially susceptible to this co-ordination failure. Indeed, there is some *prima facie* evidence that failure to reduce the number of parties in SMD systems does increase disproportionality. For the twenty-one SMD elections in the set, the simple Pearson correlation between the effective number of parties in the election and the disproportionality score is 0.48, (significant at the 5 per cent level assuming the appropriateness of ordinary regression).<sup>20</sup>

The most important implication of our argument is that SMD systems do not

<sup>18</sup> As Cox (*Making Votes Count*, pp. 79f.) points out, the reduction to  $M + 1$  parties poses a co-ordination problem faced by politicians and voters. Voters have an interest in concentrating their votes on parties that can gain representation. Politicians, in turn, want to co-ordinate by only offering parties that can gain sufficient support, and refrain from maintaining permanent losers. Creating mutual expectations about the *particular* parties that will gain sufficient votes is the co-ordination problem that must be solved. If this problem is not solved, too many parties will be competing with the result that several parties are shut out of the legislature. Several things can account for such failure to reduce the number of parties. There may be insufficient information to create clear expectations about which parties will not gain representation and should therefore withdraw. Or politicians may care intensely about the future, and stay in a race not to win, but to establish a position for coming elections. In either case, we would not expect parties to disappear in response to strategic behaviour.

<sup>19</sup> The 1983 election in Britain provides a particularly powerful example of this. The Social-Democratic/Liberal Alliance gathered 25.4 per cent of the national vote, but only ended up with 3.5 per cent of the seats precisely because they ended up in second place in many constituencies.

<sup>20</sup> Also, see the data displayed in Figure 10.1 of Taagepera and Shugart, *Seats and Votes*, p. 107.

necessarily lead to high disproportionality, but merely have the potential for such distortion, depending on how effectively the downward pressures we have discussed – strategic reduction of parties and cancellation effects – serve to reduce disproportionality. These downward pressures are dependent on a number of contingencies. The importance of these contingencies (which may or may not hold in any particular election) suggests that disproportionality in SMD systems should vary to a greater extent than disproportionality in PR systems. This conclusion produces a testable prediction. If we are right, the standard deviation of disproportionality should be much larger in SMD systems than in PR systems. The scatter plot in Figure 1 suggested such a pattern. Table 2 (on p. 401), which shows the means and standard deviation of disproportionality across four categories of the effective threshold, confirms that this is the case. The standard deviation of disproportionality in the SMD systems is strikingly higher than in any of the three categories of PR systems. It is a little more than double the standard deviation of all PR systems combined. Clearly, disproportionality varies to a much greater extent under plurality rule.

#### ELECTION RULES AND CORRESPONDENCE OF MEDIANS

Increasing the effective threshold of an electoral system thus clearly leads, on average, to higher disproportionality and greater variation in disproportionality. This is one main reason why some theorists have concluded that PR systems deliver better representation than Westminster, SMD systems. However, in our naïve baseline model (assuming multiple parties and sincere voters), we suggested that poor representation in the sense of vote–seat disproportionality need not imply poor correspondence of the citizen and legislative medians. Increasing the effective threshold implied increasingly poor vote–seat correspondence, but relatively unchanging correspondence between the position of the median voter and the median legislator. In this section we want to find out whether electoral rules do in fact make little difference for correspondence of the preference medians. As far as we know, this has not previously been investigated. Should the implications of the naïve model fail to hold, we want to try to understand why they do not. For the question of median correspondence, the number of political parties is less important than the positions they take in ideological space relative to voters. We thus begin by asking about the substantive party positions various electoral systems are likely to generate.

#### *Theoretical Foundations of Median Correspondence under PR*

There is relatively little rigorous analysis of the incentives created by PR rules for ideological party competition.<sup>21</sup> Such theoretical results as we do have tend to support the intuitive notion, broadly confirmed by empirical evidence,

<sup>21</sup> David Austen-Smith and Jeffrey Banks, 'Elections, Coalitions and Legislative Outcomes', *American Political Science Review*, 82 (1988), 405–22; Gary Cox, 'Centripetal and Centrifugal

that PR systems (provided there are more than two parties competing) encourage parties to distribute themselves across the ideological spectrum. Cox has shown that in equilibrium, parties should position themselves along the left–right dimension at intervals roughly equal in terms of the percentage of the electorate located between them.<sup>22</sup> Austen-Smith and Banks, assuming that voters act strategically, derive a similar result, with one party taking the position of the median voter while the other two parties in their model locate symmetrically around the median. As Cox has concluded, ‘equilibria in multi-party PR systems are expected to be such that (1) each party has a fairly well-defined and narrow ideological appeal, and (2) parties are dispersed fairly widely over the ideological spectrum.’<sup>23</sup>

A pleasant consequence of these results is that PR systems in general hold out great potential for good median correspondence. The position of the median voter should be closely represented by a party. At worst, if there is an even number of evenly-spaced parties, the two most centrist ones will be equidistant from the median.<sup>24</sup> And if the voter-distribution is dense so that most voters are clustered around the median (as in many of the empirical distributions in Table 1), the two closest parties should not be very far away from the citizen median. If a very high threshold, historical or cultural circumstances, or economies of scale reduce the number of parties competing in a PR system to only two, then a single party will achieve a majority and, by definition, will include the median legislator. Good preference correspondence will then depend entirely on the winning party being at the position of the median voter. Fortunately for correspondence (and normative majoritarian theories of desirable representation), Downs’s theory of two-party competition predicts convergence of both parties to the position of the median voter.<sup>25</sup> Under any national PR system, regardless of threshold, we can therefore expect good correspondence of citizen and legislative medians and (in that sense) good preference representation. We can also predict fairly clearly the circumstances under which good preference representation would fail:

- (1) If the number of parties is not reduced as the threshold increases, or if parties fail to find the proper competitive spaces, substantial distance between the citizen and legislative medians can result. In particular, if too many parties compete for the same ideological position, they might split the vote around

(F’note continued)

Incentives under Alternative Voting Institutions’, *American Journal of Political Science*, 34 (1990), 903–35.

<sup>22</sup> Cox, *Making Votes Count*, p. 230.

<sup>23</sup> Cox, ‘Centripetal and Centrifugal Incentives under Alternative Voting Institutions’, p. 922.

<sup>24</sup> Cox (*Making Votes Count*, p. 230) suggests an upper bound of  $(1/(M + 1))$  as the largest niche that can exist between two competing parties under PR. This implies that distance from the median should be bounded above by  $(1/(M + 1))/2$  of the citizenry. Given the centrist distributions of our sample, which tend to have 25 per cent of the citizenry clustered around the median, this should be quite close.

<sup>25</sup> Anthony Downs, *An Economic Theory of Democracy* (New York: Harper and Row, 1957).

that position in such a way that a substantial number fall under the threshold. As a result, the position will not be appropriately represented in the legislature. If this happens, the legislative median will shift. Depending on the exact location of the voter median, this may increase the distance between citizen and legislative median. (Note that this form of failure *always* implies vote–seat misrepresentation, but it only contributes to preference misrepresentation under some circumstances.)

- (2) If no party or parties locate in the region of the citizen median, or if voters fail to support the ones that do, naturally the legislative median must emerge at some distance from the citizen median. Similarly, in a two-party situation, if both parties fail to converge to the median voter, or if the party located at the median does not win a majority, the winner will have the legislative majority position and be off the median.

### *Theoretical Foundations of Median Correspondence in SMD Systems*

Correspondence between medians in single-member district systems presents greater theoretical complications. On the one hand, the pure theory of electoral competition in these types of systems predicts that they should experience two-party competition for the position of the median voter.<sup>26</sup> Accordingly, correspondence between medians should be good. However, this prediction depends on a number of specific conditions that are usually left undiscussed, namely: (a) the number of parties, (b) the constraints placed on district competition by national party labels and organizations, (c) the relationship between the median voters in the districts and the median voter nationally.<sup>27</sup> It is noteworthy that this ‘district–national’ problem, which we already encountered in the ‘cancellation problem’ for disproportionality, re-emerges here.

These conditions are important because parties face problems in determining how much to adapt their national positions to the local preferences and where to compete when district medians vary substantially across districts. Parties may handle this in different ways depending on the organizational and institutional features that shape cohesion of party promises and behaviour.<sup>28</sup> They may

<sup>26</sup> Cox, *Making Votes Count*; Downs, *An Economic Theory*, Maurice Duverger, *Political Parties: Their Organization and Activity in the Modern State*, translated by B. North and R. North (New York: John Wiley, 1954).

<sup>27</sup> Downs’s and Cox’s theories are both district-level theories that avoid the ‘local–national’ problem (especially points (b) and (c)) by sticking to district-level competition. The problem emerges when we generalize from the district-level to the national level. One situation is fairly simple. If there are only two parties, and the geographic districts have roughly the same median preferences as the country at large, then each district should have Downsian convergence to the median by both parties. The parties face no ‘local–national’ problem in seeking the median. It will not matter which party wins in a given district, or which wins more districts. The legislative winner, who holds the median legislator, will be at the voter median. This, in essence, is the situation usually assumed when we generalize from Downs’s and Cox’s district-level theories to the national level.

<sup>28</sup> Fiona McGillivray, ‘Comparative Institutions and Policy Outcomes’ (unpublished doctoral dissertation, University of Rochester, New York, 1994).

choose to run a national campaign and not adapt to local conditions, or they may run localized campaigns and worry less about a consistent national image. Nevertheless, even if cohesive two-party competition at the national level were to result in at least one party offering the policy-position of the median (national) voter, a legislature may result whose median sharply diverges from the citizen median. Similarly, even if parties adapt to local conditions and converge to the position of the median voter in the districts, a legislature can emerge whose median is located far away from the national citizen median.<sup>29</sup> Moreover, variation in district medians is not uncommon. It can be created by geographic variations in preferences (such as in Canada), but also by malapportionment (districts containing different numbers of constituents), or by gerrymandering (drawing district boundaries to partisan advantage.) Indeed, this would seem precisely to be the point of much gerrymandering. The effects of this district–national problem on the correspondence between national citizen and legislative medians are fairly unpredictable.

A second complication is connected to the number of competing parties. If more than two parties compete in a district under single-member districts, the results are unpredictable. The current state of research suggests that there probably are no equilibria configurations for party placement under plurality rule in one dimension if more than two parties are competing. However, if any such equilibrium does exist, the competing parties must be somewhat dispersed across the ideological spectrum.<sup>30</sup> The parties need not converge to the district or national medians to maximize their chance of winning. The legislative median may well reflect this non-convergence, especially if the parties are nationally cohesive. Thus, the clearest predictions for single-member districts are:

- (1) Preference representation may fail in purely two-party systems if the pure Downsian model fails – if the role of activists, multiple levels of candidate selection (primaries and general elections) or a concern about variation in the geographic configuration of preferences within and across districts lead two dominating parties to fail to converge to the national median. Obviously, these considerations do not mean the parties are not acting strategically, just that additional factors are potentially relevant to their strategic decisions. It is noteworthy that, here, as in the analysis of disproportionality, SMD systems are distinct in that they raise additional considerations because of the geographic distribution of preferences.
- (2) Preference representation may well fail if more than two parties are competing against each other in the districts. This can be a co-ordination problem in Cox's sense.<sup>31</sup> Multiparty competition may then lead strategically acting parties to fail to converge to the median voter, with all the

<sup>29</sup> See the appendices to the internet version of this article for analytic examples.

<sup>30</sup> Cox, 'Centripetal and Centrifugal Incentives under Alternative Voting Institutions,' p. 913f.

<sup>31</sup> It should be noted that Cox (*Making Votes Count*, p. 75) delineates some conditions under which multi-party competition can constitute 'Non-Duvergerian' equilibria.



geographic considerations also operating to create variance in the expectations. Moreover, the presence of multiple parties may split the votes in a way such that the party closest to the median is not even the plurality winner. This is a special version of  $M + 1$  failure, but one with potentially very large impact on preference correspondence.

### *Empirical Tests of Election Rules and Preference Misrepresentation*

To test preference (mis)representation we need direct measures of the preferences of citizens and of the positions of the parties in the legislatures.<sup>32</sup> Naturally, it is conceptually and empirically difficult to measure the relationship between citizens' preferences and parties' positions and policies in different countries. Public policy in modern society covers an enormous range of possible activities. Different societies have different needs and different traditions. Even within the same countries different citizens care about different issues. Moreover, many citizens will be uninformed about the details of policy issues and the reasonableness of different alternatives. A common response in the face of this complexity consists in collapsing the problem of identifying a citizen's detailed policy preferences into a stance towards a general policy direction in the discourse of the citizen's society.

The instrument that we use for doing so here consists of a voter's self-placement on the 'left–right' ideological continuum, obtained from various Eurobarometer surveys and the two World Values Studies. In the democracies in our analysis in this period, the language of 'left' and 'right' reflects a (loosely) unidimensional discourse familiar to citizens and elites. It is not only the most widely available single measure of the preferences of citizens in different countries, but seems to meet better than any alternative our need to capture comparably the general stances of citizens and the general policy orientations of the parties that compete for policy-making positions. Over the years, the left–right language has assimilated various specific issues and alternatives that have become important to voters and the parties who appeal to them. In the 1960s and 1970s the degree of government ownership in the economy was perhaps the most important component, although views on defence policy also mattered. The former issue was revitalized by debate about denationalization in the 1980s, while the collapse of international communism made relations with the Soviet Union less important. In some countries 'left and right' encompassed views on the role of the Church in politics, in others it did not. With the rise of 'new politics' issues of environmental protection and citizen participation, the left–right dialogue also came to incorporate these issues to varying degrees in

<sup>32</sup> We assume that 'party' is the appropriate unit in the legislature, given the very highly cohesive party voting in the legislatures of virtually all these (parliamentary) systems (see Michael Laver and Norman Schofield, *Multiparty Government* (Oxford: Oxford University Press, 1990) Appendix A). The legislative median is the position of the party that contains the median legislator, assuming all members of the party take the same position.

different countries.<sup>33</sup> In the United States, the terms ‘liberal’ and ‘conservative’ are used with similar meaning in this discourse. Although the degree to which a single dimension successfully assimilates the different issues no doubt varies across party systems, the left–right scale seems fairly effective in assimilating many different issues and reducing them to a single dimension. Studies of mass publics and political elites in many of our countries show that they are able to think about public-policy issues using the language of left and right and to place themselves meaningfully on this scale.<sup>34</sup>

We employ a ten-point left–right scale in the analysis that follows. It is critical to emphasize that we do not assume that the same numerical position on this scale implies the same substantive policy position in different countries. Almost certainly, it does not. A middle of the road position on health policy in the United States is quite different than a centrist position on health policy in Britain. However, as long as the distances between points are roughly comparable across countries, this divergence in substantive positions is irrelevant. After all, we do not want to compare the preferences of citizens in one country to the preferences of citizens in another country, but only the divergence between citizen and party position in the legislature within one country. To place parties on the left–right scale, we are fortunate to have available two surveys that asked country experts to place the parties in their countries on a ten- or eleven-point left–right scale.<sup>35</sup> These surveys are of great value because they do not focus on international standards of left and right, but should tap the national political discourse, and thus be comparable to the self-placement of the citizens of the specific country.<sup>36</sup>

<sup>33</sup> Inglehart, ‘The Changing Structure of Political Cleavages’, pp. 25–69.

<sup>34</sup> See especially Inglehart and Klingemann, ‘Party Identification, Ideological Preference, and the Left–Right Dimension among Western Mass Publics’. Also see Samuel H. Barnes, *Representation in Italy: Institutionalized Tradition and Electoral Choice* (Chicago: University of Chicago Press, 1977); Francis Castles and Peter Mair, ‘Left–Right Political Scales: Some Expert Judgments’, *European Journal of Political Research*, 29 (1984), 73–88; Philip E. Converse and Roy Pierce, *Political Representation in France* (Cambridge, Mass.: Harvard University Press, 1986); Russell Dalton, ‘Political Parties and Political Representation: Party Supporters and Party Elites in Nine Nations’, *Comparative Political Studies*, 18 (1985), 267–99; Russell Dalton *et al.*, eds, *Electoral Change in Advanced Industrial Societies*; Huber, ‘Values and Partisanship in Left–Right Orientations’; John D. Huber and Ronald Inglehart, ‘Expert Interpretations of Party Space and Party Locations in 42 Societies’, *Party Politics*, 1 (1995), 73–111; Ronald Inglehart, *Culture Shift in Advanced Industrial Society* (Princeton, NJ: Princeton University Press, 1990). However, we must be cautious about using this tool in new democracies where the left–right (or other) language of discourse may not have had time to settle on common meanings. Survey and anecdotal evidence suggest that in Russia in the early and mid-1990s, for example, there was considerable disagreement about the meaning of ‘left’ and ‘right’ as descriptions of positions on the critical issue of transforming of the old command control economy. See the discussion and analysis of the substance of left and right positions in different countries in Huber and Inglehart.

<sup>35</sup> Castles and Mair, ‘Left–Right Political Scales’; and Huber and Inglehart, ‘Expert Interpretations of Party Space and Party Locations in 42 Societies’. We reconfigured the eleven-point scale employed by Castles and Mair to obtain placements on the ten-point scale (see appendices on the internet version of this article).

<sup>36</sup> In a relatively small number of surveys, principally those associated with the European Elections of 1989 and 1994 (but also in Australia 1996, New Zealand 1993 and in Sweden generally),

TABLE 2 *Vote–Seat Disproportionality and Distance between Citizen and Legislative Medians by Type of Election Laws*

Election law category	Disproportionality		Distance of legislative (party) median from citizen median <sup>†</sup>		<i>N</i> of cases
	Mean	Standard deviation	Mean	Standard deviation	
<i>PR effective threshold</i>					
Below 4%	1.7	(0.53)	0.68	(0.51)	20
4% to 7%	2.7	(1.04)	0.49	(0.45)	20
7.1 to 13%	7.1	(1.97)	0.94	(0.94)	9
<i>Single Member Districts</i>	12.5	(5.02)	1.47	(0.71)	21
Totals	5.9	(5.47)	0.89	(0.74)	70

\*Gallagher disproportionality index; see fn. 10.

<sup>†</sup>Party positions on left–right scale from Castles and Mair (transformed to ten-point scale) and Huber and Inglehart; citizen positions primarily from World Value and Eurobarometer surveys; see appendices on the internet version of this article.

Table 2 shows the averages and standard deviations of vote–seat disproportionality and the absolute distance between median citizen and the median legislative party position across four categories of effective threshold. The first column reaffirms the discussion above: higher effective thresholds are associated with ever greater disproportionality of party representation in the legislature. The second column shows that the standard deviation of disproportionality also increases sharply with the effective threshold, as we predicted above.

Table 2 also shows the absolute distance between the median citizen and the legislative median. Here we see that the low and medium-low PR systems are successful in electing legislatures whose median is quite close (about 0.6 of a point on the ten-point scale) to the citizen median. The high threshold PR

(*F*'note continued)

citizens were asked to place the parties on a left–right scale. Despite some obvious individual errors, the mean citizen placements of the parties correspond closely to the expert placements in Huber and Inglehart's 1993 survey. Using eighty parties in thirteen countries (including Portugal and Ireland) the correlation between mean citizen placement of a party and the expert placement was 0.92; the unstandardized regression coefficient in an equation using the citizen placement to predict the expert placement was 1.08 (intercept =  $-0.44$ ). Most of the relative outliers are small parties. If we look at the ten legislative median parties in the latest election used in our primary analysis and for which both data are available (excludes Austria, Canada, Finland, Italy, Norway, Switzerland, United States), the regression coefficient is 0.99 (intercept =  $-0.12$ ),  $R^2 = 0.91$ . Despite the small number of cases, which prevents our using citizen estimates to replicate the general analysis, the close correspondence strongly supports the comparability of expert party placements to citizen self-placements in the local discourse.

systems show greater average distances and greater standard deviations. However, it is the SMD systems that stand out most strikingly as failing to achieve good correspondence between citizen and legislative medians. The average legislative median is more than twice as far from the median citizen in these systems as in the PR systems.

The results for the PR systems are, on average, consistent with our theoretical expectations. There is substantial variance (the standard deviation is about as large as the score itself in the PR systems), but most of these systems seem to be performing rather well in creating correspondence between median citizen and median legislator. The results for the SMD systems, by contrast, are quite contrary to the theoretical expectation. On average the median legislator is one-and-a-half scale points from the median citizen in these systems. Given the sharp divergence from theoretical expectations in the single-member district systems, but not (on average) in the other systems, the puzzle of this particular representation failure is the target of further analysis below.

Before moving on to this task, however, it is useful to ‘cross-check’ our results by confirming the robustness of the distinct difference between the relatively good performance of the PR systems in achieving correspondence between citizen and legislative medians and the poorer performance of the SMD systems. To do so, we employ three alternative measures to estimate the distance between median citizen and legislator. The first two measures draw on a study that asked country experts to place the parties in their respective countries on several specific issue scales rather than on a general left–right scale.<sup>37</sup> The Laver and Hunt survey employed a twenty-point scale (which we converted to a ten-point scale), and it was conducted roughly at the midpoint between our two main expert studies. Given the time period for our sample, the two issues included in the Laver and Hunt analysis that seem to correspond most closely to the general left–right scale consist of the items placing parties on the issues of public versus private ownership in the economy and on the trade-off between taxes and services.<sup>38</sup> For each of these issues, we calculated the distance between the median citizen position on the left–right scale and the median party position (where the median party is the median party according to that scale).

The third (and very different) alternative measure we employ to estimate the placement of parties is provided by a large project that studied and coded the manifestos of political parties from the end of the Second World War until the early 1990s (in most of our countries).<sup>39</sup> Although these data were collected for

<sup>37</sup> Michael Laver and W. Ben Hunt, *Policy and Party Competition* (London: Routledge, 1992).

<sup>38</sup> Respondents were asked to locate the position of the party leaders on ‘Public ownership’: Promote maximum public ownership of business and industry (1); Oppose all public ownership of business and industry (20). Similarly, on ‘Taxes versus public services’: Promote raising taxes to increase public services (1); Promote cutting public services to cut taxes (20.)

<sup>39</sup> Ian Budge, David Robertson and Derek Hearl, eds, *Ideology, Strategy and Party Change: Spatial Analyses of Post-War Election Programmes in Nineteen Democracies* (Cambridge: Cambridge University Press, 1987).

other purposes, Laver and Budge developed a scheme for classifying manifesto sentences as being 'left' or 'right' and determining the relative proportion of left and right mentions to estimate the positions of the parties (naturally, the scale runs from  $-100$  to  $+100$ ).<sup>40</sup> Once again, we can use this measure to estimate which party contains the median legislator. However, it is still necessary to transform the proportion of mentions to correspond to the ten-point left–right scale used by citizens. To do so, we use a standard ordinary least squares (OLS) regression to predict the expert placement position of parties in the Castles and Mair and the Huber and Inglehart studies from the manifesto score and country dummy variables, using all the parties for which we have data (a total of 260). The coefficients from this regression were then used to estimate a predicted ten-point left–right position for each of the median parties according to the manifestos data.<sup>41</sup> Once again, we can then calculate the absolute distance between the median legislator and the median citizen on the ten-point scale.

Table 3 shows the results of analysing this distance using the three alternative measures. The table reports results of a standard OLS regression in which the absolute distance between median citizen and legislator is predicted using three dummy variables that correspond to the three PR categories. The SMD systems thus comprise the missing category. Each column in the table corresponds to a different procedure used to measure the placement of the parties.<sup>42</sup> If the poorer performance of the SMD systems is robust to the procedure used to measure the party positions, then we should see consistently negative coefficients in all the columns and the coefficients should be of similar size, as all measures have been transformed to the ten-point left–right scale. However, because the number of cases varies and because the use of specific issues and of the manifestos presumably takes less account of the local context than the local experts on the party systems would take, we expect fewer of the coefficients to be statistically significant in the columns on the right of the table.

The table results are very reassuring for the robustness of the main results. On the far left we have replicated the results reported in Table 2 using the dummy-variable regression. This measure has the largest number of cases and is conceptually, we believe, the most appropriate general measure of median correspondence. The negative coefficients of  $-0.8$  and  $-0.99$  for the two low-threshold PR elections show that the medians in those legislatures are

<sup>40</sup> Michael Laver and Ian Budge, 'Measuring Policy Distances and Modelling Coalition Formation', in M. J. Laver and Ian Budge, eds, *Party Policy and Government Coalitions* (New York: St Martin's Press, 1992), pp. 15–40.

<sup>41</sup> It is important to note that the manifesto classification scheme does not take account of the local political discourse. Inspection of the manifestos' data shows clearly that by the international coding criteria, the discourse in some countries is more 'left' and the discourse in others more 'right'. Hence the need to add country dummies to the regression equation to calibrate the mid-point of the local discourse. We are grateful to Professor David Weimer for suggesting this approach.

<sup>42</sup> Most procedures yield the same party at the median, but where they do not, the party that is the legislative median on the scale in question is the one used to determine the distance from the citizens. The samples on which the different regressions are based vary because not all measures were available for all cases in the full dataset (see the appendices to the internet version of this article).

TABLE 3 *Election Laws and Left–Right Distance between Citizen and Legislative Medians: By Alternative Measures of the Position of Median Party in Legislature*

Election law category†	Expert left-right placements‡	Expert issue placement§		Party manifesto proportion left–right issue mentions¶
		Public ownership	Taxes v. services	
<i>PR Threshold</i>				
Below 4%	– 0.80 (0.20)**	– 0.80 (0.36)*	– 0.49 (0.34)	– 0.55 (0.21)**
4–7%	– 0.99 (0.20)**	– 0.73 (0.37)*	– 0.35 (0.34)	– 0.56 (0.21)**
7.1–13%	– 0.54 (0.25)*	– 0.60 (0.51)	– 0.38 (0.43)	– 0.10 (0.28)
Constant	1.47 (0.14)**	1.84 (0.26)**	1.36 (0.24)**	1.22 (0.15)**
Number of cases	70	38	38	50
<i>R</i> <sup>2</sup>	0.30	0.15	0.06	0.18

†Single Member District is reference category.

‡Elections 1977 through 1987 use 1982 expert survey from Castles and Mair; eleven-point scale transformed to ten-point scale; elections 1988 through 1994 use 1993 expert survey from Huber and Inglehart.

§Elections 1984 through 1994 use 1989 expert survey from Laver and Hunt; twenty-point scale transformed to ten-point scale.

¶Elections 1977 through 1991 use Manifestos project data, with code left–right assignment from Laver and Budge; left–right proportions transformed to ten-point scale using regression of manifesto left–right proportions and country dummies to predict expert left–right placement of all parties.

\*Significant at 0.05. \*\*Significant at 0.01

nearly a full scale point closer to the citizen median than those produced by the SMD elections. At three-and-a-half to five times their standard errors these distances are highly significant (assuming the independence of the cases). The high threshold PR cases are more similar to the SMD systems, but still a significant distance closer to the citizen medians.

The next column of the table shows strikingly similar results using the Laver–Hunt measure of party positions on public ownership. All the coefficients are also negative and even of roughly similar magnitude to those in Column 1. With many fewer cases (because the survey is only at a single time point) and a more specified issue, the standard errors are larger, but distances in the two lower threshold PR cases are still significantly less (at the 5 per cent level) than in the SMD cases. Even the third column, which shows the tax/service trade-off issue, has consistently negative coefficients about the size of their standard errors, although only 60 per cent the size of the coefficients in the first two columns. Finally, the last column shows the results based on the transformed manifestos data. Once again, we see the familiar pattern of negative coefficients, with the two low threshold PR systems around half a scale point closer to the citizen median than in the SMD systems. The standard errors are fairly low and the differences from the SMD results are strongly significant. The highest threshold PR systems, however, are only slightly closer to the median than the SMD systems. Nevertheless, these results also support the general pattern of the findings.

We should re-emphasize that, in terms of conceptual fit, we are most confident in the general expert left–right placements in measuring citizen–legislative distances. It is also the case that these measures are the most widely available and therefore maximize the observations on which the analysis is based. Thus, we view the three alternative measures primarily as secondary measures used to validate the central result. Clearly, this cross-check confirms that the general result – on average the legislative medians are located at a greater distance from the citizen medians in the SMD systems than in the PR systems – is quite robust. It seems appropriate, then, to conclude by a more detailed examination of the sources of that distance, following our earlier theoretical expectations of where the connection might break down.

#### *Party Competition and the Citizen Median in SMD Electoral Systems*

Our expectations about good preference representation in the single-member district systems stemmed from the combination of predictions of two of the most famous theories of political parties: Duverger’s prediction that single-member district election rules will tend to be two-party systems and Downs’s theory that two-party competition will drive both parties to converge to the median voter. This combination is elegantly elaborated by Cox.<sup>43</sup> We have already seen that parties do not seem to reduce sufficiently in many of the single-member district

<sup>43</sup> Cox, *Making Votes Count*, pp. 236f.

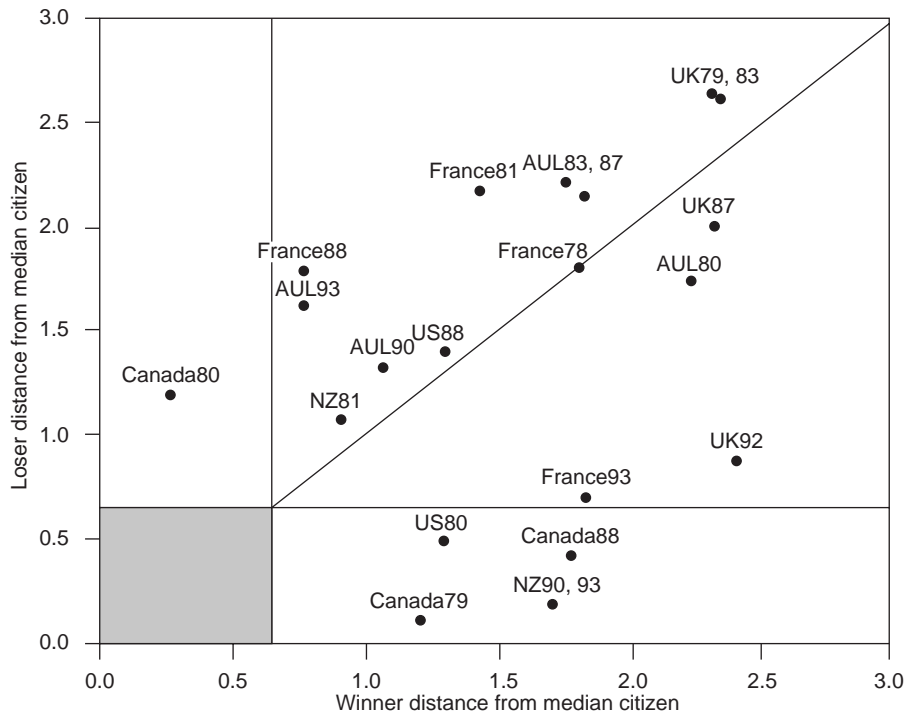


Fig. 2. Distance of parties from median citizen in single-member district elections

systems and this is associated with disproportionality in vote–seat representation. Here we can begin by examining convergence to the median voter, the proximate ‘Downsian’ prediction. If this fails, we can consider why. Figure 2 shows a scatterplot of the twenty-one single-member district elections in our set. The two dimensions show the left–right distance between the two largest parties and the median voter. The horizontal dimension has the winning party and the vertical dimension shows the losing party. The Duverger–Downs prediction would be that both parties should be close to the median voter, so that all the points should be located close to the point of origin.

Here, again, it is hard to know exactly what ‘close’ should be in the left–right metric, but we can recall that in the PR systems the median legislator was 0.64 from the median citizen. It seems reasonable, then to assume that a fair ‘Downsian’ prediction would be that both parties would be within or around the crosshatched area of the figure. We would also predict the elections to be close to the 45° line – parties are equi-distant from citizen median – and if they are not, they should be above it (winning party is close to median). Of course, what stands out overwhelmingly in Figure 2 is that none of the elections find the two large parties within the cross-hatched area. At least in comparison to the median



legislature in PR systems, the large parties in the SMD systems are just not very close to the median voter.

If we look in more detail at Figure 2, we do see some elections that are close to the 45° line, showing the winning and losing parties similarly distant from the median voter. The closest of these, in New Zealand 1981 and Australia 1990, look a bit like the configuration discussed in our 'naïve' high threshold model. They have quite high disproportionality because of the elimination or serious under-representation of smallish parties. But because the main parties are fairly close to the median, the correspondence of legislative and citizen medians is fairly good – about one point away. New Zealand 1981 is especially interesting from that point of view, because the winning National party actually received only 38.8 per cent of the vote and came in second in votes to the Labour party. With a non-plurality winner and very large disproportionality (at 16.67, the fourth highest in our sample), the outcome is a representational disaster as measured by the vote–seat relationship. But in terms of left–right distance from the electorate (0.9), the outcome is fairly respectable.

The United States is perhaps the best fit to the Duverger–Downs prediction, as that nation has the only truly two-party system among these cases and finds the two parties fairly similar in distance from the electorate. But neither US case matches Downs very well. In 1980 the Democrats (winning in the legislature, but not in the presidential election, of course) are only about half a point from the median, but the Republicans are nearly 1.5 points on the other side of it. In 1988, the two parties are symmetrically distant from the voter median – nearly on the 45° line – but each is about 1.4 scale points away. As US congressional studies have also shown, the parties diverged sharply from each other in the 1980s; they are about 2 scale points apart in the (recalibrated) Castles–Mair expert survey in 1982, but about 3 points apart in the Huber–Inglehart expert survey in 1993. No matter which side won under the latter conditions, the legislative median would be more than double the distance from the citizen median in the average PR system.

Moving out along the 45° line, we find elections with both parties increasingly far from the median. In the famous British election of 1983, both major parties are very far indeed from the median voter, nearly 2.5 points, (although the winning party is slightly closer). As is, of course, empirically well known, this election is a disaster from the Duverger–Downs point of view. There was very high disproportionality, with the Social Democratic–Liberal Alliance capturing about a quarter of the vote and only 3.5 per cent of the seats. With both traditional parties having diverged in opposite directions, no matter which main party had won the election, it would have been very far from the median voter. In France, too, we are not surprised to find the major adversaries in 1978 and 1981, here represented by the closer individual parties, the Socialists and the Union pour la Démocratie Française (UDF), rather than the Socialist/Communist coalition versus the UDF/Gaullist coalition – which would have been even further apart – far apart from each

other and the median voter. What is not so well known is the degree to which elections in Australia at about the same time show a similar disaster for centrism and representation of the median voter.

There are quite a few cases of asymmetric convergence. That is, one party is fairly close to the median, while the other is farther away. In strict two-party competition, we would, of course, expect the closer party to win. But in most of these elections there are more than two parties competing and the various ways of splitting the vote lead to unpredictable outcomes. There is marked asymmetry (note the points well away from the 45° line) in all three Canadian cases, and in Britain, France and New Zealand in the later time period. In Canada 1980, France 1988 and Australia 1993 the asymmetric competition was won by the closer party. Despite large vote–seat disproportionality, these elections had good representation in the congruence of citizen legislative medians (and governments). Unfortunately for congruence in single-member districts generally, however, such victories for the closer party were no more likely than the opposite.

In Canada the Conservatives ‘won’ in 1979 and again in 1988, showing up in Figure 2 with the ‘wrong party’ winner at a substantial distance from the median. In 1979 this oddity is a result of the custom of allowing the largest legislative party to form a minority government if no party wins a majority; the legislative median was actually with the Liberals (and the Conservative government soon collapsed, leading to a new election). In 1988 the Conservatives won 57 per cent of the seats with only 43 per cent of the vote. Such under-representation of the two more ‘leftist’ parties appears as a classic ‘co-ordination’ failure and leads to a legislative median far to the right of the citizen median. In Britain in 1992 the winning incumbent Conservatives are further from the median than Labour, which is, however, still quite a way from the median. There is, in fact, a party near the median, the Liberal Democrats, who consistently lose the district races and fail to prevent single-party majorities in the legislature in the 1980s and 1990s. In New Zealand in 1993 the badly split vote and high disproportionality again allowed the National party to win a legislative majority with under 40 per cent of the vote (actually only 35 per cent, although it was the plurality winner), but the party was nearly twice as far from the median voter as in 1981. The defeated Labour party had been repudiated by its left wing after its conversion to more conservative economic policies while in office in the 1980s, and lost the 1990 and 1993 elections despite being close to the citizen median. In France 1993 the defeat of the incumbent Socialists, which are much closer to the median, may testify to the power of anti-incumbency vote apart from the left–right positionings.

We suggested in the theoretical discussion that the failure of the parties to converge to the median would probably be the proximate cause of divergence between the citizen median and the legislative median in the single-member district systems. This is largely true. Most of the elections are multi-party contests and Downsian convergence of both parties to the median is rare, at best. But there is more to the story. We also noted that in multi-party contests,

asymmetric competitions won by the ‘wrong party’ might feature importantly. The failure of the voters to support parties close to the national median, such as the French Socialists and New Zealand Labour in 1993 and the British Liberal Democrats generally, is indeed part of the picture in the single-member district systems. Generally, these outcomes can be explained by ‘co-ordination failures’ in the sense that too many parties are competing. But they may also represent district medians that are rather different from the national median, some aspect of multi-dimensionality not consistently reduced to the single left–right scale (such as government scandals or foreign policy), inertia in citizen expectations about nationally ‘dominant’ and ‘minor’ parties, or something else.

It is clear that the Duverger–Downs–Cox predictions look best in the United States where the district level contests are dominated by only two political parties. To this extent, the suggestion that multi-partism would be the less proximate cause of failure of party convergence in the SMD systems has some plausibility. But even in the United States the parties are not converging as completely as they apparently once did. In so far as the split in the Labour party and the formation of the Social Democrats enhanced British ‘multi-partism’, it followed the sharp movement of the Labour party to the left, rather than preceded it. At an even larger level than we can here investigate, the changing fortunes in Britain of two-party domination, vote–seat disproportionality, and divergence of the large parties from the citizen median from the 1950s through 1997 seems to illustrate a volatility of representation in these systems for which the standard model in its current state of development remains insufficient.

#### CONCLUSION: EFFECTIVE THRESHOLDS, DISPROPORTIONALITY AND REPRESENTATION

Our purpose in this article has been twofold. On the one hand, we wanted to return to a relationship that has been extensively studied by political scientists interested in electoral systems: the relationship between electoral systems and disproportionality. Although it is well documented that less permissive electoral systems, usually operationalized as systems with higher effective thresholds, are associated with higher vote–seat distortion, the causal connection between the two is often underdeveloped. In the first part of this article, we tried to highlight some of these connections in more detail. Surprisingly, doing so generated new insights into the connection between vote–seat distortion and electoral systems. Most importantly, our emphasis on the importance of cross-district cancellation suggested that high threshold systems do not necessarily lead to higher disproportionality, but merely create the potential for it. However, the conditions necessary to reduce disproportionality are rather stringent. Accordingly, the average disproportionality as well as the variance of vote–seat distortion is expected to be higher in high threshold systems. Our data were indeed consistent with this hypothesis.

Part of the interest in the relationship between seats and votes, at least implicitly, derives from the assumption that the votes citizens cast reveal something about their preferences. However, there are two problems with this

view. First, how citizens vote, and what choices they face (i.e. what parties compete for office) is itself, at least in part, a product of the electoral system. Strategic voters and politicians can behave in ways that obscure the relationship between preferences and votes; hence votes are imperfectly suited to measuring the quality of preference representation.

A second problem with disproportionality as a measure of the quality of representation is that vote–seat disproportionality treats as equally serious all failures of large parties to achieve legislative representation proportionate to their voter support. But for theorists favouring a majoritarian approach to democratic government, what matters for representation is whether the elected majority in the legislature prefers policies favoured by a majority of the citizens. The majoritarian vision that underlies much justification of SMD electoral systems holds explicitly that the point of elections is decisively to choose a government that can directly implement policies preferred by a majority of citizens and is highly accountable.<sup>44</sup> Such decisiveness may well entail reduction in the range of represented views. What matters for representation is not vote–seat proportionality, but whether the elected majority is representative of what the majority of citizens want. Some vote–seat disproportionality might help achieve this goal; other disproportionality might hinder it.

Both of these arguments suggest that it would be desirable to find more direct measures of citizen preferences in an attempt to evaluate the quality of representation. In this article, we have suggested one particular measure, namely the correspondence between the medians of citizen and legislative preference distributions on the left–right scale. The most important finding is that although the measure of median correspondence is conceptually better suited for evaluating the quality of representation in SMD systems, these systems do not perform as well as PR systems under this criterion. We gained further confidence in this result, at least for this sample of elections, by examining several different measures of party placements, including their published manifesto positions. At least empirically, PR systems seem to produce systematically closer correspondence between medians.

Cox's suggestion that strategic failures, whether of voters or parties, should be more costly for preference representation in the SMD systems does look remarkably acute.<sup>45</sup> The failure of parties to converge to the citizen median and/or to reduce the number of competitors to the carrying capacity of the electoral system can pull legislative medians quite far from the citizens. In some of our PR systems, too, there seem to be similar phenomena: parties near the median not getting the votes one would expect (the Freie Demokratische Partei (FDP) in Germany) or larger than expected gaps near the median in the policy space (Sweden). But because the PR systems do not usually create single-party majorities, these 'failures' are less devastating for representation of the citizen median.

Our empirical findings have normative significance because they undercut an

<sup>44</sup> Lijphart, *Democracies*; Powell, 'Constitutional Design and Citizen Electoral Control'.

<sup>45</sup> Cox, *Making Votes Count*, pp. 237, 253.

important line of defence for majoritarian democracy's lack of regard for vote–seat distortion. High disproportionality might be acceptable, even desirable, if it is incurred as the price of good median correspondence and retrospective accountability. But in fact, majoritarian democracy is outperformed by its PR competitors in both vote–seat proportionality and correspondence of the citizen and legislative medians. (Any given SMD election outcome, however, might fail in one respect and not the other.)

In closing, let us point out some remaining problems and opportunities for future work. One obvious extension, already in progress, is to move the analysis of left–right congruence beyond the legislature to consider in addition the relationship between the citizen median and the positions of parliamentary governments and other influential policy makers. In high-threshold systems, especially SMD systems, the election of single-party majorities implies that the legislative median and the government median will be identical. Obviously, this need not be true in low-threshold systems, where coalition or minority governments may have varying relationships to the legislative and citizen medians.<sup>46</sup>

A second area for future work consists in attempting to construct more sophisticated or alternative measures to investigate the relationship between citizens and their representatives. A number of difficulties, including the restriction to one dimension, as well as the nature of survey data, make the use of medians on the left–right scale less than ideal. It would be desirable to consider multiple dimensions, substantive issues, and policy behaviour as well as positions. However, the difficulties are formidable. A third direction is to investigate the micro-level connections that are hidden in our analysis. Two questions are particularly important in our assessment: what is the impact and importance of geographic variation in party support; what impact does the precise number of competing parties have? Finally, the paper raises interesting problems for theoretical approaches to party politics, and in particular, for the theory of party competition. Empirically at least, the theoretical notions of Duverger–Downsian competition in single-member district systems do not appear to be reflected well in the data. At the same time, this divergence from our theoretical expectations has important implications. One explanation is that our theories of party competition, at least in their naïve form, fail to capture important aspects of the strategic situation in which parties find themselves. We suspect that the district–national level problem and the geographic distribution of party support will be important in this regard.

<sup>46</sup> We simply do not have the space to explore these relationships in this article. The need to consider coalition governments and the proper treatment of minority governments, as well as institutional factors giving more influence to the opposition parties, create quite complex analysis problems in many of the PR design systems. However, Huber and Powell ('Congruence between Citizens and Policymakers in Two Visions of Liberal Democracy,' pp. 310ff.) reported that for thirty-eight governments in the early 1980s 'proportional influence' systems and (in their regressions) 'proportionality of electoral outcomes' were associated with greater congruence between government and citizen median. More extensively, see G. Bingham Powell Jr, *Elections as Instruments of Democracy: Majoritarian and Proportional Visions* (New Haven, Conn.: Yale University Press, forthcoming), especially chap. 9.

*(A) The Primary Measure of Citizen and Party Positions on the Left–Right Scale*

The fundamental selection criterion for our sample was the availability of the particular measure we were interested in, namely the left–right placement of political parties and citizens on the ten-point left–right scale. Two studies report the average placements of political parties in a series of countries, based on surveys of country experts.<sup>47</sup> The Castles and Mair study uses an eleven-point scale for this purpose. We converted the eleven-point scale measures to an equivalent ten-point score. The formula used for this transformation of an eleven-point value ( $y$ ) into an equivalent ten-point value ( $x$ ) is given by:

$$x = 5.5 - \frac{9}{10}(5 - y).$$

Measures of citizen self-placement on the left–right scale were collected primarily from two different series of studies available through the ICPSR archive: the World Values Survey, conducted in spring 1981 and in the summers of 1990–91, and the Eurobarometer studies, which are undertaken in the Member States of the European Community every six months. Both series of studies ask respondents to rank themselves on the ten-point scale. We also used data from the Australian National Elections studies for 1987, 1990, 1993 (on-line data from the Australian Social Science Data Archive); from the 1981 New Zealand Election Study;<sup>48</sup> the 1990 and 1993 New Zealand Election Studies, for which data were generously provided by Professor Jack Vowles; a 1977 Norwegian Study reported by Henry Valen;<sup>49</sup> and a 1979 Spanish election study.<sup>50</sup> The five-point scale used in New Zealand 1981 and the seven-point scales used in New Zealand 1990 and 1993, as well as the nine-point scale used in Norway 1977, were all converted to ten-point scales, in fashion similar to the Castles and Mair eleven-point conversion. In the New Zealand 1981 case, the median was almost exactly at the centre of the five-point scale.

Given these resources, we next had to decide on our sample of elections. Two considerations drove our selection. The first is that while there is some inertia in party systems, political parties do move in ideological space, and can occupy new issue positions or give up old ones. As a consequence, we did not want to include elections that were too far away from either of the two expert studies. Any cut-off point is (of course) arbitrary in some sense. We selected five years. Thus, only elections that took place within five years of one of the expert surveys were included (the Castles and Mair survey was conducted in 1982, the Huber and Inglehart survey in 1992). For elections between the surveys, the scores for the closer survey were used. We faced the same problem in dealing with citizen placement on the left–right scale. Since public opinion is presumably more volatile than the positions of political parties, we decided that a

<sup>47</sup> Castles and Mair, 'Left–Right Political Scales; and Huber and Inglehart, 'Expert Interpretations of Party Space and Party Locations in 42 Societies'.

<sup>48</sup> Clive Bean *et al.*, *New Zealand Voting Survey, Post Election 1981* (Canberra: Social Science Data Archives, 1981).

<sup>49</sup> Henry Valen, 'Structural Cleavages and Ideology in a Multiparty System: Norway' (paper presented at the 1979 International Political Science Association Meeting, Moscow, 1979).

<sup>50</sup> Richard Gunther, Giacomo Sani and Goldie Shabad, *Spain after Franco: The Making of a Competitive Party System* (Berkeley: University of California Press, 1988), p. 263.

more stringent cut-off would be appropriate for citizen surveys. We settled on only including elections that took place within a 24-month period of either a Eurobarometer study or a World Values Survey. These criteria left us with seventy cases (see Table A1).

We should point out that there are two countries for which the relevant data are available, but which we chose to exclude. There were seven elections in Ireland and one election in Japan that could have been added to the dataset. We did in fact do so, and reran all the analysis including these cases. The impact of them was negligible, and did not change any of the substantive results we present. The argument in favour of excluding these cases from the analysis is based on the measure of effective threshold. This measure was designed to deal with variation among PR systems.<sup>51</sup> It does not deal well with SMD systems, which is why these systems have been assigned an arbitrary value that places them in a category of their own. The difficulty with Ireland and Japan is that their electoral systems (single transferable vote (STV) and single non-transferable vote (SNTV), respectively) do not fit cleanly into either the PR or the SMD category. To apply the effective threshold formula to them produces a measure that places these systems in the category of high-threshold PR systems, which is misleading. We have therefore chosen to eliminate them from the analysis.

### *(B) Secondary Measures of Left–Right Party Positions*

To validate the central finding of the analysis, which derives from the distance between the position of the median party in the legislature according to the expert studies and the median citizen position, we collected various alternative measures for the position of political parties on the ten-point left–right scale. The first two measures are taken from Laver and Hunt's (1989) expert survey that asked experts to place the parties in their respective countries on a twenty-point scale on various issue dimensions.<sup>52</sup> The two issue dimensions we employ are the public ownership issue and the trade-off between taxation and spending. The twenty-point scale position was recalibrated to a ten-point position in a fashion similar to the recalibration of the Castles and Mair scale.

The third alternative measure derives from the party manifestos data project.<sup>53</sup> Laver and Budge provide a method for assigning parties to a left–right continuum according to the relative proportions of left and right mentions in their manifestos.<sup>54</sup> This scale thus runs from  $-100$  (all left mentions) to  $+100$  (all right mentions). In order to make the scale comparable to the citizen scale, it was necessary to recalibrate this scale to estimate party positions on the ten-point scale. Unlike the procedure used for the expert studies, it is not possible to simply rescale the distances algebraically. The reason for this is that there is little reason to suppose that the midpoint of the Laver and Budge scale corresponds to the midpoint of the ten-point scale, because the manifesto coding procedures are not sensitive to the local political discourse within a country. Thus, estimating a ten-point party position from the manifestos, data is not straightforward. The procedure we have used here is the following. Using all the countries in our original dataset, we have created a 'party dataset' containing the manifesto position of each political party running in one of the countries as well as the party's expert placement on the ten-point scale according to the Castles and Mair or Huber and Inglehart surveys. There are 260 parties in this dataset. We then ran an OLS regression with the expert ten-point score as the dependent variable and the manifesto positions and country dummies as the independent variables. The adjusted  $R^2$  of this regression is 0.65. The coefficients of this regression were then used to estimate a predicted ten-point left–right score for each party according to the party's manifesto position.

<sup>51</sup> Lijphart, *Electoral Systems*, 1994; and see Arend Lijphart, 'The Difficult Science of Electoral Systems: A Commentary on the Critique by Alberto Penades', *Electoral Studies*, 16 (1997), 71–7.

<sup>52</sup> Laver and Hunt, *Policy and Party Competition*.

<sup>53</sup> Budge, Robertson and Hearl, *Ideology, Strategy and Party Change*.

<sup>54</sup> Laver and Budge, 'Measuring Policy Distances', pp. 25–7.

*(C) The Measures*

The four crucial variables we needed to construct for our analysis are the effective threshold, the disproportionality index, the legislative median and the citizen median. We took the effective threshold directly from Lijphart's 1994 study.<sup>55</sup> The disproportionality index was calculated directly from national election data.<sup>56</sup> The citizen median was calculated as the grouped median of the reported survey results. In other words, we assumed that the respondents within one category are uniformly distributed across that interval, and then calculated the 50 per cent cut-off point as the median. To calculate the legislative median, we combined information about the strength of the parties in parliament with the information derived from our four measures of the estimated party position. We assumed that each party is a cohesive actor, that is, all members of a party are located exactly at the party's estimated left-right position. We then calculated the legislative median as the position of the party containing the median legislator.

*(D) List of cases*

Table A1 displays the list of cases included in each analysis. Note that there are three different samples, determined by the availability of the various measures necessary to conduct the analysis. DATASET A contains the full seventy cases on which the analysis of disproportionality and the analysis of median correspondence according to the expert party placements on the left-right scale are based. DATASET B are the cases we use for the analysis comparing the median legislative party according to Laver and Hunt's public ownership and service vs. tax dimensions to the median citizen. Because Laver and Hunt's survey was conducted in 1989, the 'five-year rule' constricts us to use only those elections in DATASET A that occurred in or after 1984. Because the Laver and Hunt study does not include Switzerland, we also lose the 1987 Swiss election. DATASET B contains thirty-eight cases. Finally, DATASET C is comprised of the cases that we use for the analysis of the relationship between the median legislative position according to the predicted left-right score from the manifestos' data and the citizen median. This dataset is limited by the fact that the manifestos' data are not available for all elections in the late 1980s and the early 1990s. DATASET C contains fifty observations.

<sup>55</sup> Lijphart, *Electoral Systems*, pp. 160–2.

<sup>56</sup> The electoral data were taken primarily from Thomas T. Mackie and Richard Rose, *The International Almanac of Electoral History*, 3rd edn (Washington, DC: Congressional Quarterly Inc., 1991), updated for more recent elections using *Keesing's Archives*.



TABLE A1 *List of Countries and Elections in the Analysis*

Country	Election month	Effective threshold	Contained in datasets
Australia	10/80	35.00	A,C
Australia	3/83	35.00	A,C
Australia	7/87	35.00	A,B
Australia	3/90	35.00	A,B,C
Australia	3/93	35.00	A,B
Austria	10/90	2.60	A,B,C
Austria	10/94	2.60	A,B
Belgium	4/77	4.80	A,C
Belgium	12/78	4.80	A,C
Belgium	11/81	4.80	A,C
Belgium	10/85	4.80	A,B,C
Belgium	12/87	4.80	A,B,C
Belgium	11/91	4.80	A,B
Canada	5/79	35.00	A,C
Canada	2/80	35.00	A,C
Canada	11/88	35.00	A,B,C
Denmark	2/77	1.60	A,C
Denmark	10/79	1.60	A,C
Denmark	12/81	1.60	A,C
Denmark	1/84	1.60	A,B,C
Denmark	9/87	1.60	A,B
Denmark	5/88	1.60	A,B
Denmark	12/90	1.60	A,B
Denmark	9/94	1.60	A,B
Finland	3/79	5.40	A
Finland	3/83	5.40	A
Finland	3/91	5.40	A,B,C
France	3/78	35.00	A,C
France	6/81	35.00	A,C
France	3/86	12.00	A,B
France	6/88	35.00	A,B,C
France	3/93	35.00	A,B
Germany	10/80	5.00	A,C
Germany	3/83	5.00	A,C
Germany	6/87	5.00	A,B,C
Germany	12/90	5.00	A,B,C
Germany	10/94	5.00	A,B
Italy	6/79	2.00	A,C
Italy	6/83	2.00	A,C
Italy	8/87	2.00	A,B,C
Italy	4/92	2.00	A,B,C
Netherlands	5/77	0.67	A,C
Netherlands	5/81	0.67	A,C
Netherlands	9/82	0.67	A,C
Netherlands	5/86	0.67	A,B,C
Netherlands	9/89	0.67	A,B,C
Netherlands	5/94	0.67	A,B
New Zealand	11/81	35.00	A,C

TABLE A1 *List of Countries and Elections in the Analysis—  
continued*

New Zealand	10/90	35.00	A,B,C
New Zealand	11/93	35.00	A,B
Norway	9/77	8.90	A,C
Norway	9/81	8.90	A,C
Norway	9/89	4.00	A,B,C
Norway	9/93	4.00	A,B
Sweden	9/79	4.00	A,C
Sweden	9/82	4.00	A,C
Sweden	9/88	4.00	A,B,C
Sweden	9/91	4.00	A,B
Switzerland	10/87	8.50	A
United Kingdom	5/79	35.00	A,C
United Kingdom	6/83	35.00	A,C
United Kingdom	5/87	35.00	A,B,C
United Kingdom	4/92	35.00	A,B
United States	11/80	35.00	A,C
United States	11/88	35.00	A,B,C
Spain	3/79	10.20	A,C
Spain	10/82	10.20	A,C
Spain	6/86	10.20	A,B,C
Spain	10/89	10.20	A,B,C
Spain	6/93	10.20	A,B

APPENDIX 2: CANCELLATION IN SMD SYSTEMS

The purpose of this section is to provide an example to show analytically that disproportionality in SMD systems results from cancellation failure. We begin by making a few simplifying assumptions. Assume we are in an SMD plurality rule system. Under Cox's  $M + 1$  rule, we expect two parties to compete. (Implicitly, we are assuming that we are dealing with national parties, i.e. that the same two parties compete in all districts.) Let  $D$  denote the total number of districts. Let  $K$  be the number of districts won by the majority party, where

$$K \geq \left\lceil \frac{D+1}{2} \right\rceil.$$

For tractability, assume that each party wins each district it gains with the same vote share. Let  $\alpha$  denote the vote share of the majority party in each of the  $K$  districts it wins, and let  $\beta$  denote the vote share of the majority party in each of the districts it loses, where  $\alpha > 0.5$  and  $\beta < 0.5$ . The majority party is thus over-represented by  $(1 - \alpha)$  in the districts it wins, and under-represented by  $\beta$  in the districts it loses (and vice versa for the minority party). The least-squares index can then be calculated from the equation given above as:

$$\begin{aligned} LSq &= \sqrt{\frac{1}{2} \left\{ \left[ \frac{K}{D} - \left( \frac{\alpha K}{D} + \frac{\beta(D-K)}{D} \right) \right]^2 + \left[ \frac{D-K}{D} - \left( \frac{(1-\beta)(D-K)}{D} + \frac{(1-\alpha)K}{D} \right) \right]^2 \right\}} \\ &\Leftrightarrow \\ LSq &= \sqrt{\left[ \frac{(1-\alpha)K - \beta(D-K)}{D} \right]^2} = \left| (1-\alpha)\frac{K}{D} - \beta\frac{(D-K)}{D} \right|. \end{aligned}$$

We can see that the final disproportionality score is comprised of the difference between the over- and under-representation by the majority party, weighted by the share of districts won and lost by the majority, respectively. In other words, the degree of disproportionality is determined by how well over- and under-representation of a party cancel over districts. It is obvious that whether or not the least-squares index will be large or small depends on the exact distribution of the vote, i.e., on the values of  $K$ ,  $\alpha$  and  $\beta$ .

APPENDIX 3: THE IMPACT OF GEOGRAPHIC DISTRIBUTIONS OF PREFERENCES

The purpose of this appendix is to provide two examples that demonstrate that, depending on the geographic distribution of the vote, competition by nationally cohesive parties that do not adapt to local conditions as well as by incohesive parties that do adapt to local conditions can produce legislative medians that are far from the national voter median. Assume there are eight electoral districts with three voters each. The three numbers following the district in the following list indicate the ideal point of those voters on the ten-point left-right scale.

- D1: 4 6 7    D5: 4 5 6
- D2: 4 6 7    D6: 4 4 5
- D3: 3 6 7    D7: 3 4 4
- D4: 4 6 6    D8: 3 3 3

Given this distribution of preferences, the national voter median is at 4.

(a) *Nationally Cohesive Parties.* Assume that a nationally cohesive party converges to the national median, i.e. the party (call it L) is located at 4, and competes on this basis in all districts.

In this case, a second party (call it R) could locate anywhere in the open interval from 4 to 6, win the election, and pick up the legislative median because it would win in districts 1 through 5. Thus, the geographic distribution of the vote makes it possible for a party infinitesimally close to 6, and almost two points from the median voter, to win the election.

*(b) Parties that Adapt to Local Conditions.* Now assume that parties are free to adapt to local conditions, and can converge to the median voter in each district. In this case, the national legislature will just be a reflection of the median voters in each district, and the legislative median will be located somewhere between 5 and 6, again a considerable distance from the national voter median at 4.