

Robert Schuman Centre for Advanced Studies

The Measurement of Territorial Homogeneity: A Test on
Comparative Electoral Data since 1832

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RSC No. 2002/26

EUI WORKING PAPERS



EUROPEAN UNIVERSITY INSTITUTE

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Printed in Italy in April 2002
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ABSTRACT

This methodological paper deals with the problems of measurement of territorial homogeneity and regionalisation of voting behaviour. The use of indicators is analysed in relation to the complexity and diversity of electoral formulas, and measures are tested against the main sources of bias in a comparative and historical perspective. Using empirical examples based on a constituency-level dataset for 18 West European countries since 1832, this paper shows which measures are best suited for the comparison of party systems and of parties or party families (synchronously and over time), and substantially illustrates the main processes of formation of national electorates and party systems in Europe since the nineteenth century.

INTRODUCTION¹

The territorial homogeneity of voting behaviour – both electoral participation and the support for political parties – indicates the extent of the formation of national electorates and party systems. It can therefore be used as an indicator of historical processes of nation-building and employed to evaluate the impact of socio-economic transformations (industrialisation and urbanisation) as well as of political change (democratisation and mass politics) on the territorial structures of the vote. The use of a standard indicator allows the comparison of countries over time and the analysis of the great complexity of European territories in terms of religious, ethno-linguistic, rural-urban, class as well as centre-periphery cleavages.²

Electoral studies have traditionally concentrated on the functional dimension of cleavages (in particular the “left-right” dimension). The territorial dimension – although electoral geography is at the origin of electoral studies (for example, A. Siegfried’s *Tableau Politique de la France de l’Ouest* of 1913) – has on the contrary been largely neglected. Only recently has a renewed attention been devoted to the problems of territorial politics in the wake of events of regionalisation (Belgium, Italy, Spain among other cases) and of the process of supra-national construction of a state structure leading to the weakening of nation-states, and giving rise to several analyses of new regionalist phenomena (for example, De Winter and Türsan 1998; Keating 1998).

The use of indices of territorial homogeneity of political attitudes and behaviour, however, has not always been accompanied by a sufficient awareness of the problems linked to its measurement. This methodological paper wishes to contribute to the debate by discussing the main problems linked – in a comparative and historical perspective – to the great diversity and complexity of electoral formulas, as well as the main sources of bias in the measures which arise from 1) the size and number of territorial units (constituencies) and 2) the size of political parties (in terms of votes obtained). Showing advantages and disadvantages of each index, what follows discusses which measures are best suited for the comparison of party systems (synchronously and over time),

¹ This paper is based on a computerised collection of constituency-level electoral data (Caramani 2000) carried out at the *Mannheimer Zentrum für Europäische Sozialforschung* (University of Mannheim). I wish to renew my gratitude to all those persons who contributed to that project, especially Peter Flora and Franz Kraus. For comments on earlier versions of this paper, I am particularly indebted to Stefano Bartolini.

² For a thorough comparison, see my forthcoming volume on *The Formation of National Electorates and Party Systems in Europe. A Comparative and Historical Study* (manuscript available).

single parties (within countries), and party families (across countries). A sample of results is presented to support the technical discussion.

COUNTRIES AND PERIODS COVERED

The 17 countries considered in this paper are those listed in Table 1, and constitute a homogeneous “universe” of West European systems (Rokkan 1970: 110).³ The period of time covers approximately 150 years of electoral history, roughly from the democratic revolutions of 1848 – a crucial step towards parliamentary democracy in most European countries – to the present. However, among the 17 countries the period of time varies according to patterns of state formation and availability of sources.

As far as *patterns of state formation* are concerned, the starting point is determined by the timing of national unification or independence, and by the definite transition from estate (or absolutist) systems to modern parliamentary systems based on general territorial representation.⁴ Concerning the *availability of sources*, on the other hand, the recording of election results by official bodies was intrinsically linked to the bureaucratisation of the nation-state. The “cybernetic capacity” (Flora 1977: 114) of state administrations has progressively improved through the organisation of censuses, the publication of statistical yearbooks, and so forth. Electoral statistics appear later compared with other types of statistics. Whereas headings of financial or criminal statistics have appeared in all national yearbooks since the beginning of statistical activities, electoral information has only been included in some cases depending upon the degree of development of representative institutions, the stability of political regimes, the need for legitimacy of newly created institutions, secret voting, and the structuring of party systems. Statistics collected by private scholars compensate for the lack of official sources only in some cases. For these reasons, for earlier periods the number of countries is more reduced than today. Progressively, because of the availability of data and patterns of democratisation, more countries are included (more recently with Portugal and Spain since the 1970s).

³ Luxembourg has been excluded because of its small territorial size with only four constituencies.

⁴ No estate elections are included here, even though for some countries such data are available (for example, the Cisleithanian half of the Habsburg monarchy before World War I at the level of the *Kronländer*).

Table 1. Countries, periods, and number of parties and elections

No.	Countries	Period covered	Number of <i>elections</i> (turnout cases)	Number of <i>parties</i> (election averages)	Number of party cases
01	Austria	1919–95	21	4.0	84
02	Belgium	1847–1995	32	6.6	211
03	Denmark	1849–1998	65	5.1	330
04	Finland	1907–95	32	6.7	213
05	France	1910–97	17	9.0	132
06	Germany	1871–1998	36	8.4	297
07	Greece	1926–96	21	5.9	123
08	Iceland	1874–1995	42	3.5	150
09	Ireland	1922–97	26	5.2	133
10	Italy	1861–1996	33	6.5	213
12	Netherlands	1888–1998	30	7.5	226
13	Norway	1882–1997	33	5.2	156
14	Portugal	1975–95	9	4.5	41
15	Spain	1977–96	7	12.3	86
16	Switzerland	1848–1995	44	5.2	157
17	Sweden	1866–1998	45	7.3	329
18	United Kingdom	1832–1997	42	5.6	162
	Total	1832–1998	535	6.1	3,043

Notes: The analysis considers only parties that received at least five per cent of the vote within at least one constituency. The overall number of cases consists in all parties at each election for every country. Ireland 1832–1918 (last all-Ireland election) and Northern Ireland 1922–97 under United Kingdom.

Differences in the number of elections between countries (Table 1) depend also upon the frequency with which elections are held and upon authoritarian interruptions, and vary from a maximum of 65 elections for Denmark to a minimum of seven elections for Spain. Overall, the number of elections considered is 535.

DATA

The analysis of regional variations of voting behaviour (turnout and party votes) requires territorially disaggregated data, namely election results at the level of single constituencies.⁵ Data used for analysis in this paper are those published in

⁵ For details not included in this paper, readers can refer to (Caramani 2000), for the complete documentation and for official and secondary sources, in particular on electoral formulas and party systems. The CD-ROM which supplements the volume presents electoral results by

machine-readable form in the CD-ROM which accompanies the handbook on *Elections in Western Europe since 1815. Electoral Results by Constituencies*.

Elections and Electoral Systems

Results include general national legislative elections (and elections of constituent assemblies). They do not include results of elections to regional or communal bodies, or the European Parliament. Furthermore, data do not include referenda or other forms of direct democracy. Results have been collected for lower houses, whereas senates, houses of regional representation (*Bundesrat*, *Ständerat*, etc.), or chambers of higher estates have not been considered. The collection considers general elections and partial elections but not by-elections due to vacancies occurring during legislatures.⁶

This paper focuses on two main aspects of electoral behaviour: electoral participation (*turnout*) and electoral support for political parties (*party support*). Whereas, historically, a regionalised structure of turnout indicates the persistence of peripheral regions in terms of *socio-economic development* – economic structure (the persistence of traditional society), literacy, forms of political culture (local clientelism), etc. –, the latter is an indicator of the strength of the territoriality of *political cleavages*, both socio-economic (centre-periphery, wage-earners/employers-owners, rural/urban) and cultural (ethno-linguistic, religious).

Although the concept of territorial homogeneity is straightforward, the computation of indices of homogeneity is made problematic by the many specific features that characterise electoral systems. First, in case of multiple voting, each voter has as many votes as there are seats to be filled. In these cases, the number of valid votes largely exceeds the number of valid ballots since more votes can be cast on each ballot, and thus the equivalence “voters/votes” is lost. This system concerns notably Belgium and Switzerland – for which figures based on the “fictitious voter” estimate have been made available by the *Bundesamt für Statistik* – but also the United Kingdom in multi-

candidates and parties at the level of single constituencies which have been collected and entirely computerised according to standard rules. Data are available in different programmes (SPSS, SAS, Excel), formats (absolute figures, row and column percentage distributions), as well as structures: for analysing data (horizontal time dimension), building time series (vertical time dimension), and matching other socio-economic data sources (mixed structure).

⁶ Partial elections (or staggered elections) were particularly frequent in Belgium up to 1919 (*renouvellement partiel des chambres*). It means that elections do not take place in all territorial units. Elections were most often held within approximately half of the constituencies. These elections are not included in the analysis.

member constituencies. For the sake of comparability, 1:1 estimates “tracing back” the information available on the vote to the “one voter/one vote” equivalence have been considered rather than results based on votes (see Appendix).

Second, in case of repeated-ballot systems only first ballots have been used for the computation of indices of homogeneity. In two-votes systems (since 1953 in Germany voters have two votes: *Erststimmen* and *Zweitstimmen*), because the allocation of seats is carried out on the basis of the second vote, the *Zweitstimmen* are used for the computation of indices of homogeneity. In Italy (since 1994) 75 per cent of the seats of the Chamber of Deputies are allocated by plurality in single-member constituencies. The remaining 25 per cent of the seats are allocated by PR in 26 multi-member constituencies. PR votes have been used for the computation of indices.

Third, as far as parties and candidates are concerned, under plurality systems results are available for single candidates. In the United Kingdom or in Denmark until World War I there were often two, three, or more candidates of the same party contesting the same constituency. Candidate figures (with the exception of independent candidates) have been aggregated to obtain party votes, and indices of homogeneity have been computed on the aggregated party variables.⁷

Fourth, the computation of indices of homogeneity is made problematic by two typical features of early elections:

- *Missing information* meaning that contested elections have taken place but information on electorate, voters, or party votes is not available. Figures of *total valid votes* are in most cases based on the original sources. When these figures are missing, the total number of valid votes has been estimated on the basis of known party votes. If among party votes some are missing, the total number of valid votes includes only known information. The percentage of the parties’ strength for which information is known is, in these cases, overestimated.
- *Uncontested constituencies* meaning that only one candidate is present in a constituency and is declared elected without election (or two candidates in a two-member constituency, and so on). In some cases, the partisan affiliation

⁷ Unknown votes (in which the party affiliation of candidates is not known) never enter the computations: this concerns Denmark, Iceland, Italy, and Sweden; for Denmark, also the ‘nej’ (no) votes against unopposed candidates have been excluded.

of the elected candidate(s) is known and estimates have been produced (see below and Appendix).

Political Parties

Parties should have a certain relevance in order to be included in the analysis and enter the computation of indices of territorial homogeneity, in particular when party system averages are computed. The criterion applied in order to select parties has been a size criterion in purely numerical terms. However, given the territorially disaggregated nature of the data, this relevance should not be limited to the national level. Therefore, political parties have been selected when they poll *at least five per cent of the vote within at least one territorial unit*, meaning that such parties poll *at least five per cent of the total nation-wide vote* (see, for the same criteria, Rose and Urwin 1975: 18; Urwin 1983: 228). Parties that do not fulfil this criterion have been excluded.

Levels of Territorial Aggregation

Insofar as the analysis of territorial homogeneity of voting behaviour requires regionally disaggregated data, elections results by parties have been collected at the level of single constituencies or – in some cases – other lower sub-national units. The choice of the level of aggregation used in the analysis has always been to take the more precise level available in the sources, even though in some cases party votes are available only for upper levels of aggregation and not for constituencies (for example, Italy 1861–1913). Table 2 gives the levels of aggregation of the data for each period.⁸

With respect to inter-temporal comparability, the *continuity of territorial units over time* represents the main problem. It is possible to build continuous time series only in those cases in which territorial units did not change. In Switzerland, for example, since 1919 the cantons are the electoral units which changed only once with the creation of the canton of Jura (secession from Berne). In most cases, however, constituencies change more often: in Ireland at almost every election.

Three types of territorial changes make inter-temporal comparability problematic: national boundary changes; drastic redistricting; minor redistricting within the same organisation of constituencies. The basic files used in the analysis contain results by *constituencies* (parliamentary constituencies,

⁸ Levels of aggregation in the table are limited to two. Minor changes explain why the ‘N’, the number of territorial units, changes within the same period of time.

Wahlkreise, circonscriptions, collegi, valgkredse, etc.) and correspond to periods of time characterised by *continuous national boundaries and districting*. The period covered by the files is determined by drastic redistricting or modifications of national boundaries. Within these periods often minor changes occur, such as: addition of new units (for example, the Åland Islands in Finland in 1948), disappearance of units (the German constituencies of Elsaß-Lothringen ceded to France after World War I), two or more merged units (in Austria Nordtirol and Lienz were merged to form Tirol in 1923), split of units or secession (Jura's secession from Berne in Switzerland in the 1970s).⁹

MEASURES

Attempts at operationalising processes of homogenisation or diffusion of electoral behaviour can be subdivided into two broad categories: 1) indices and measures based on single elections; 2) indices and measures based on the *change* that occurred between two or more elections.

The first type of operationalisation mainly includes measures of dispersion which are typical of descriptive statistics, as well as other indices based on the distribution of votes across regions at a given election.¹⁰

⁹ To retain as much continuity as possible in the data, territorial units that did not change keep their regional code throughout the entire file. With the creation or disappearance of territorial units in given election years, units are simply added or omitted. In the case of a merger, the two or more 'old' units disappear and a new unit is created. The same applies in the case of a split of units (the 'old' unit disappears and two or more new units are created). In the case of drastic changes in the overall organisation of constituencies, new files have been created.

¹⁰ Of particular relevance are Stokes' articles on the variance components model (1965 and 1967) which have constituted the starting point of the debate around the problems of nationalisation. For a theoretical and methodological critique of Stokes' work, see in the same issues of the *American Political Science Review*, Katz (1973a and 1973b) and Stokes (1973) for a 'Comment'. Claggett, Flanigan, and Zingale (1984) propose the more articulated reflection on the dimensions composing the concept of nationalisation (see also Claggett 1987). See Carrothers and Stonecash (1985) for a methodological critique and again Claggett, Flanigan, and Zingale (1985) for a 'Reply'.

Table 2. Countries, periods cove-

Countries	Basic territorial units (electoral constituencies)			Aggregated territorial units (second tier or administr. units)		
	Units	Period	N	Units	Period	N
Austria	<i>Wahlkreise</i>	1919–70	25	<i>Länder</i>	1919–95	9
	<i>Landeswk.</i>	1971–94	9			
	<i>Regionalwk.</i>	1995	43			
Belgium	<i>Arrondissements adm.</i>	1847–98	41	<i>Provinces</i>	1847–1995	9
	<i>Circonscrip.</i>	1900–91	30			
		1995	20			
Denmark	<i>Valgkredse</i>	1849–1915	100–113	<i>Amter</i>	1849–1968	22–3
		1918	110			
	<i>Amt- and Storkredse</i>	1920–68	22–3		1971–98	17
Finland	<i>Vaalipiirit</i>	1907–95	15–6			
France	See text			<i>Départements</i>	1910–97	88–96
Germany	<i>Wahlkreise</i>	1871–1912	382–97	<i>Staaten</i>	1971–1912	25–6
		1919	36			
		1920–33	35	<i>Länder</i>	1949–61	9–10
		1949–61	242–7			
		1965–72	248			
		1976–87	248			
		1990–94	328			
		1998	328			
1926–56	38–43	<i>Courts</i>	1926–96	9–13		
Provinces	1928–33				98	
	1952				99	
<i>Nomoi</i>	1958–96	55–6				
Iceland	<i>Kjördæmakosningar</i>	1874–1959	19–28	<i>Landskosningar</i>	1874–1995	1
		1959–95	8			
Ireland	<i>Dáil constituencies</i>	1922	28			
		1923–33	30			
		1937–44	34			
		1948–57	40			
		1961–65	38			
		1969–73	42			
		1977	42			
		1981–89	41			
		1992	41			
1997	41					

red, and levels of aggregation

Countries	Basic territorial units (electoral constituencies)			Aggregated territorial units (second tier or administr. units)		
	Units	Period	N	Units	Period	N
Italy	<i>Collegi or circoscri- zioni</i>	1861–1913	508	<i>Regioni</i>	1861–1921	14–6
		1882–90	135			
		1919	54			
		1921	40			
	<i>Collegi unin.</i>	1946–92	31–2		1946–96	20
Netherlands	<i>Kiesdis- tricten</i>	1888–1917	100	Provinces	1888–1998	11–3
	<i>Kieskringen</i>	1918–98	18–20			
Norway	<i>Amter and kjøstædter</i>	1815–1903	38–58	<i>Fylker</i>	1921–97	19–20
		<i>Landdistrt. Kjøstæd.</i>	1906–18			
	<i>Fylker</i>	1921–49	29			
		1953–97	19–20			
Portugal	<i>Circulos eleitorais</i>	1975–95	20			
Spain	<i>Provincias</i>	1977–96	52			
Sweden	<i>Valkretsar</i>	1866–1908	173–201	<i>Län</i>	1866–1994	25
		1911–20	56			
		1921–94	28–29		1998	22
		1998	29			
Switzerland	<i>Bezirke</i>	1848–17	47–52	Cantons	1848–1999	25–6
	Cantons	1919–99	25–6			
United Kingdom:	Parliamentary constituencies	1832–80	333–52			
Britain		1885–1910	542			
		1918–45	585–609			
		1950–70	613–8			
		1974–79	623			
		1983–92	633–4			
Ireland		1997	641			
		1832–80	64–6			
		1885–1910	101			
Northern Ireland		1918	103			
	1922–45	20				
	1950–79	12				
	1983–92	17				
		1997	18			

These measures will be dealt with below. The second type of operationalisation has given rise to major pieces of literature on the “nationalisation of electoral politics” (see Caramani 1994 and 1996 for a review). Instead of considering the distribution across regions of voting behaviour at one single election at the time, this approach considers *the distribution across regions of the rate of change between two or more elections*. Here, three subgroups can be distinguished:

- the technique of the *correlation between two elections*: examples are Converse (1969) on a comparison between the United States and France, Hoschka and Schunck (1976) on the evolution of regional patterns of electoral support in Germany between 1949 and 1976, and Pavsic (1985) on the homogenisation of the main Italian political parties from 1953 to 1983;¹¹
- the analysis of *uniform swings between two elections*: examples are, among others, Butler and Stokes (1974: 140–51), Johnston (1981a,b), Johnston and Hay (1982), Johnston, O’Neill, Taylor (1987), McLean (1973), Taylor, Gudgin, Johnston (1986), all mostly on British elections;
- models based on *the analysis of variance*: the main example is the mentioned debate on the *American Political Science Review* based on Stokes’ model with contributions by Katz, Claggett et al., Carrothers and Stonecash, and Stokes himself.

The fundamental prerequisite for indices measuring the change in the territorial distribution of voting behaviour between two elections, is the identical organisation of constituencies. In the long-term historical perspective these measures cannot be applied thoroughly. For this reason, this type of operationalisation has not been considered in this paper,¹² which is rather based on indicators of dispersion of votes across regions at single elections.

¹¹ The territorial homogenisation of the vote occurring between two (not necessarily subsequent) elections is measured by considering the non-standardised parameters (beta) of the bivariate regression between the disaggregated results (constituencies) of two elections with election ‘t’ on the horizontal axis and election ‘t+1’ on the vertical axis. A slope of the regression line inferior to one (the slope of the bisector of the graph) corresponds to an increase of the homogeneity between two elections.

¹² Techniques based on applications of the analysis of variance (see note 8 above) have mainly been devised to operationalise and evaluate *the level of the sources of political stimuli* – either the national, state, or district level, with the aim of showing the increasing impact of national issues, policies, personalities over local ones in voting decisions in American elections. As Claggett, Flanigan, Zingale (1984) have shown, these attempts turned out to be in vain, as individual attitudes (the location of relevant sources as perceived by voters) could not be measured through aggregated-ecological data (variance components within vs. between districts in the different American states).

These other measures and indices of territorial homogeneity of voting behaviour face two main sources of bias: the *size of political parties* (which does not concern turnout); the *size and number of territorial units* (constituencies) on which measures of homogeneity are computed. The remainder of this section reviews the attempts at operationalising the homogeneity of voting behaviour, with particular attention to these two issues.

Competition

The first operative definition was formulated by Schattschneider in his seminal work of 1960, in terms of “competitiveness” of the political system. Before 1896, the American electorate was “nationalised” insofar as “the major parties contested elections on remarkably equal terms throughout the country”. In “1892 there were thirty-six states in which on the face of the returns something like a competitive party situation existed” with parties receiving evenly matched amounts of votes. On the contrary, “by 1904 there remained only six states in which the parties were evenly matched” (Schattschneider 1960: 82–83). Therefore, the more numerous the states where two parties compete with equivalent forces, the more nationalised the electorate. Competitiveness here is an indicator of homogeneous electoral forces across the country.¹³

Also according to Urwin “the simplest indicator of nationalisation is the degree of partisan competition” (Urwin 1982a: 41). To operationalise this concept Urwin uses the *number of uncontested seats*, that is, the proportion of constituencies in which only one candidate is contesting the single seat to be returned. This technique is used to analyse the homogenisation of electoral politics both in the United Kingdom and in Germany (Urwin 1980, 1982a,b). Cornford (1970) develops a similar methodology focusing on the proportion of *safe seats* for each political party.¹⁴

¹³ The equivalence between homogeneous vote and competitiveness is however not direct as an hypothetical homogeneous distribution of votes across the country of 80 per cent for party A and 20 per cent for party B shows (see also Claggett, Flanigan, Zingale 1984).

¹⁴ The analysis of safe seats is particularly useful for the earlier phases of electoral development in which this type of constituencies were frequent. The higher the number of uncontested constituencies, the lower the proportion of districts covered by parties.

Territorial Coverage by Parties

A different approach to the territorial coverage by parties can be applied to later phases of electoral development or to countries during which – also because of PR electoral formulas – there are less or no uncontested constituencies. This approach considers the *percentage of constituencies in which a party is present*. For example, the *Volkswunie* in Belgium is present (on average of all elections) in 57.00 per cent of the constituencies, whereas the *Parti socialiste belge* (before it split according to the linguistic cleavage) in 96.47 per cent of the constituencies. By considering the average of values across parties, systemic measures can be obtained (for example in Switzerland only 43.95 per cent of the territory is covered by parties on average).

This type of measure will be called “presence” or “coverage” and does obviously not apply to turnout (voters always cover 100 per cent of the constituencies). Here, uncontested constituencies have been considered covered by the party of the unopposed candidate.

Measures of Homogeneity

Whereas the territorial coverage indicates the extent of the *spread* of parties across constituencies, these measures indicate the extent to which *support is homogeneous* across all constituencies. A party can be present in all constituencies, but still suffer from heterogeneous support.

Statistics provide several possibilities to measure the dispersion of values. The simplest measure is the *range* (the difference between the largest and smallest value of a distribution). Most measures are based on the *dispersion of regional values around the national mean*. The *mean absolute deviation* (MAD), or “index of variation” for Rose and Urwin (1975: 24), is the sum of the deviations from each single value (party’s share of votes in a region) and the mean of all these values, divided by the number of regions. Deviations are summed without regard to plus and minus signs (absolute values). Another solution to the problem of plus and minus signs is to square each deviation instead of taking absolute deviations. The measure in this case is the *mean squared deviation* (MSD).¹⁵

Measures which are more frequently used are the variance and the standard deviation. The *variance* (S^2) is the same as the MSD with the difference that instead of dividing the sum of squared deviations by the number

¹⁵ All formulas are given in the Appendix.

of regions 'n', the sum is divided by 'n-1'. The *standard deviation* (S) is simply the square root of the variance, which is taken to compensate for having squared the deviations in the variance.

The paper of A. Lee (1988) proposes an index based on the differences between the percentage a party obtains in each constituency and the national value. Absolute differences are summed and then divided by two to avoid double counting. The *Lee index* corresponds to the MAD, except for the denominator which is two instead of 'n' (number of regions). This index is used by Budge and Hearl (1990) and by Hearl, Budge, and Pearson (1996).

The literature has often emphasised the limits and the failings of some of these measures (Taylor and Johnston 1979: 152–53). In particular, it has been pointed out that the standard deviation and the MAD (index of variation) attribute higher values to large parties and lower values to small parties (Blalock 1972; see also Allison 1978) since they are computed from deviations from the party's mean vote. Indices take low levels of dispersion to very regionalised but small parties. Furthermore, the standard deviation and the MAD take higher values of dispersion in case of a low number of regions. Finally, both are not standardised and therefore without upper limits.

Therefore, other measures have sometimes been preferred, such as the *variability coefficient* (CV) which divides the standard deviation by the mean, in an attempt to adjust the standard deviation for the size of parties. However, it has been claimed that the CV is sensitive to differences in the size of the compared samples and universes, that is, the number of regions: the values of the CV diminish when the number of units increases (Martin and Gray 1971, and Smithson 1982). This makes cross-national comparisons problematic. Furthermore, this index too has no upper limits and its values are highly dispersed.¹⁶

Several proposals have attempted to adjust indices for both party size and number of regions. Dividing the core expression of the Lee index, for example, by the sum of the shares of the vote in individual regions (the national vote in other words), the influence of the size of parties is eliminated. This index is here named IPR (see the Appendix for the formula) and varies between 0 and 1 and thus permits an easy interpretation.

¹⁶ Ersson, Janda, and Lane use the *standardised and weighted variability coefficient* (SCVw). Unlike the CV, this coefficient takes the size of the regions into account (size of the electorate), but is biased with respect to the number of units (Ersson, Janda, and Lane 1985: 176).

Rose and Urwin (1975) – to compensate for the drawbacks of the standard deviation – have proposed the *cumulative regional inequality index* (CRII). This index aims to take into account the influence on the degree of homogeneity of differences in size (in terms of number of electors) of territorial units. The CRII is based on *percentages of parties' vote distribution by constituencies*, rather than on *percentage distribution of votes by parties* or on *absolute figures*. It is computed by subtracting the percentage of votes obtained in one region (with respect to the national score) from the percentage of voters of that region, adding the absolute values of these differences and dividing the result by two. If divided by 100, this index also varies between 0 and 1. This measure, however, overestimates the differences in the size of regions and is not applicable to turnout levels since its computation is based on the difference between voters and party votes in each constituency.

Not all percentage figures can be computed, however, especially for earlier periods because of *missing information and uncontested constituencies preventing the computation of national totals*, which affect the computation of a certain number of indices.¹⁷ For this reason, the analysis of earlier periods – for which missing information and uncontested constituencies are higher – is particularly problematic.¹⁸ In the case of uncontested constituencies, different types of estimates have been produced. In most cases all votes (100 per cent) have been attributed to the winning party or candidate (if the party affiliation is known). For the computation of indices, unopposed parties or candidates in uncontested constituencies have been estimated receiving 100 per cent of the votes. This applies both to single-member and multi-member uncontested constituencies. Since voting did not take place in such constituencies, this estimation has been extended to turnout, although 100 per cent of voters is overestimated especially in earlier periods.

To carry out the test which follows, for party support (not applicable to turnout), all previous indices have been computed on the *total number of constituencies* (with constituencies in which the party was not present coded “zero per cent”), as well as on only the constituencies in which the party *is present* (with constituencies in which the party was not present excluded from the computation of indices). Turnout values of indices computed on all constituencies or on contested constituencies only are the same. Also for the

¹⁷ For example, the CRII for which percentages of parties' vote distributions by constituencies are necessary ('column percentages') instead of percentages of votes by parties ('row percentages').

¹⁸ Strictly speaking, in the case of missing information at the constituency level, national totals should also be set as missing (even when only one unit is missing). This rule has not always been followed rigidly to increase the period of time covered.

CRII the distinction is not applicable since the index is computed on the basis of the differences between party votes' and voters' distributions.

A TEST ON HISTORICAL AND COMPARATIVE ELECTORAL DATA

A test of all these measures is carried out next in order to verify empirically the influence of the levels of territorial aggregation and the size of political parties.

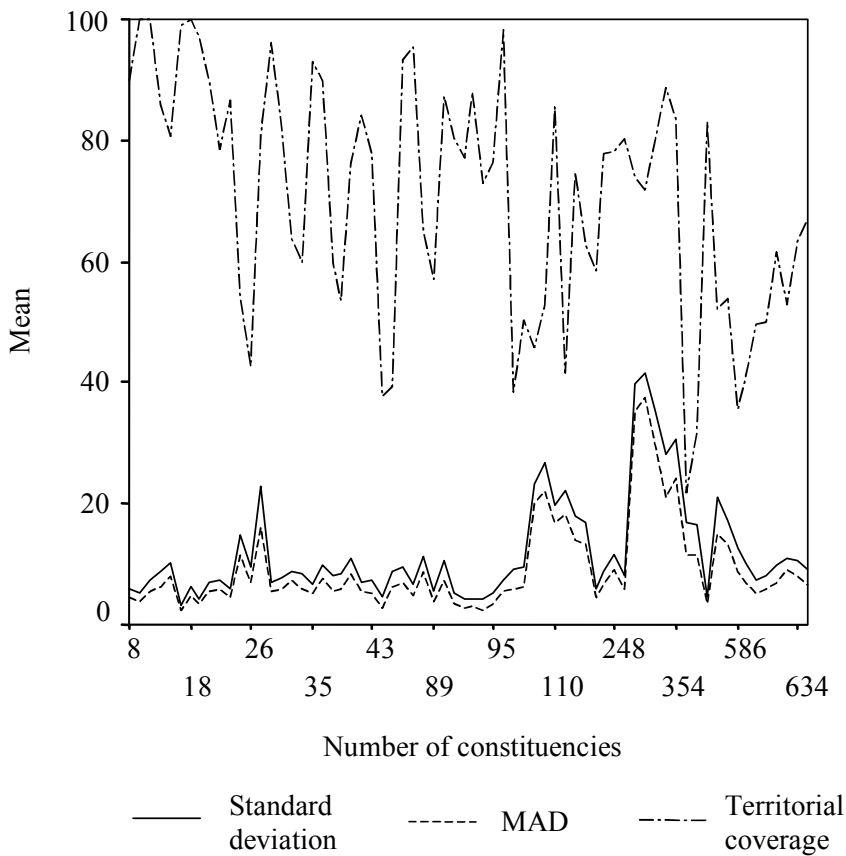
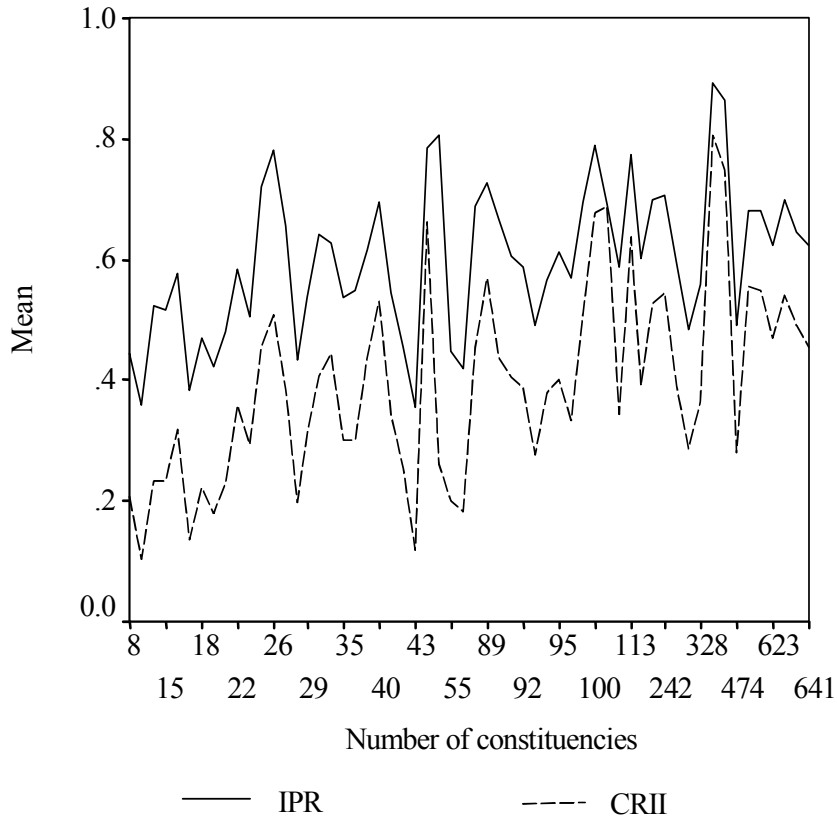
Number and Size of Territorial Units

To what extent does the level of aggregation of election results actually influence the level of homogeneity as measured by the different indicators? This is particularly relevant as we compare different countries over different periods during which either majoritarian systems were in force (based on a high number of constituencies) or PR systems (with fewer and larger constituencies).

Generally, statisticians expect that the lower the number of territorial units, the less variation across them, because of the larger size of units and the elimination – through aggregation – of extreme and outlying values. Empirically, all indices seem to be characterised by some degree of increase in the levels of territorial disparity when the number of constituencies increases (see Figure 1).¹⁹ There are however important differences between indicators. The IPR and the CRII both vary between 0 and 1 and, as can be seen in the first of the two graphs, take higher values as the number of constituencies increases. The pattern is parallel. Also the variability coefficient (CV, not displayed in the figure) follows a similar trend. Similarly, the territorial coverage by parties decreases with high number of constituencies. On the contrary, the standard deviation and the mean deviations (MAD and MSD) seem to be less influenced by the number of constituencies (see the second of the two graphs). Both follow a parallel pattern and have their values raising in correspondence with the number of constituencies of Denmark (1849–1915), Germany (1871–1912), and The Netherlands (1888–1917). The Lee index (not displayed in the figure because of scale differences) follows a similar but accentuated pattern.

¹⁹ There are no important differences between figures obtained for turnout and those concerning party support. For this reason, the two graphs present results only for party support.

Figure 1. Frequency distribution of levels of territorial disparity according to the number of territorial units (8–641)



The lesson from this first test is therefore that measures adjusted for the size of parties (IRP, CV, and CRII) are more influenced by the number of constituencies than measures which are not adjusted for the size of parties (standard deviation, MAD, and territorial coverage).

Size of Political Parties

Therefore, the second empirical test concerns the size of political parties and its influence on the indicators. Two different types of indices of homogeneity can be distinguished: those influenced by the size of parties and those that control for the size of parties.

According to Blalock (1972) the correlation between the size of the units of analysis (in this case parties) and the standard deviation is not intrinsically linked to its statistical formula. We rather *expect* that for large units the deviation from the mean value is also large, and that for small units the deviation is small. In other words, the correlation between the size of units and the standard deviation is empirical.²⁰

Results of the test of this relationship which has been conducted on electoral data are displayed in Table 3. The correlation has been carried out for all indices and for both party support and turnout (even though for turnout variations of “size” are less meaningful than for party figures). Party support figures are further subdivided between figures on all constituencies and figures only on constituencies in which the party was present. These latter figures are based on a more reduced number of cases because, for parties, which are present in only one constituency, no index has been produced since there is no variation.

According to results, all indices appear to vary according to the size of parties (the mean votes polled across constituencies), either positively or negatively. In the first case, there are five indices that are positively correlated with party size (the larger the parties, the larger the levels of heterogeneity of regional support): MAD, MSD, standard deviation, variance, and the Lee index.

²⁰ ‘One might expect that with a very large mean he would find at least a fairly large standard deviation’ (Blalock 1972: 88)

Table 3. Correlation (Pearson's r) between the size of parties (and levels of turnout) and levels of homogeneity

Indices	Number of units	National mean of constituency levels of party votes (%)		National mean of constituency levels of turnout (%)
		All constituencies	Only contested constituencies	
Territorial coverage	Overall	.47 (3,015)		
	1–50	.46 (1,962)		
	51–200	.47 (672)	–	–
	Over 200	.66 (409)		
MAD	Overall	.63 (3,015)	.69 (2,930)	-.63 (419)
	1–50	.60 (1,962)	.69 (1,906)	-.73 (285)
	51–200	.69 (672)	.66 (647)	-.53 (92)
	Over 200	.69 (409)	.62 (406)	-.87 (43)
MSD	Overall	.50 (3,015)	.51 (2,930)	-.49 (419)
	1–50	.42 (1,962)	.46 (1,906)	-.63 (285)
	51–200	.59 (672)	.58 (647)	-.47 (92)
	Over 200	.63 (409)	.55 (406)	-.85 (43)
Standard deviation	Overall	.61 (3,015)	.67 (2,930)	-.66 (419)
	1–50	.57 (1,962)	.66 (1,906)	-.74 (285)
	51–200	.68 (672)	.63 (647)	-.54 (92)
	Over 200	.65 (409)	.64 (406)	-.88 (43)
Variance	Overall	.50 (3,015)	.48 (2,930)	-.49 (419)
	1–50	.42 (1,962)	.46 (1,906)	-.63 (285)
	51–200	.59 (672)	.48 (647)	-.47 (92)
	Over 200	.63 (409)	.54 (406)	-.85 (43)
Variability coefficient	Overall	-.42 (3,015)	-.38 (2,930)	-.74 (419)
	1–50	-.49 (1,962)	-.35 (1,906)	-.80 (285)
	51–200	-.51 (672)	-.46 (647)	-.63 (92)
	Over 200	-.48 (409)	-.51 (406)	-.92 (43)
Lee index	Overall	.33 (3,015)	.39 (2,930)	-.25 (419)
	1–50	.56 (1,962)	.67 (1,906)	-.62 (285)
	51–200	.65 (672)	.54 (647)	-.53 (92)
	Over 200	.69 (409)	.48 (406)	-.85 (43)
IPR	Overall	-.59 (3,015)	-.39 (2,930)	-.80 (419)
	1–50	-.58 (1,962)	-.37 (1,906)	-.85 (285)
	51–200	-.58 (672)	-.51 (647)	-.66 (92)
	Over 200	-.70 (409)	-.46 (406)	-.92 (43)
CRII	Overall	-.49 (3,015)		
	1–50	-.51 (1,962)		
	51–200	-.40 (672)	–	–
	Over 200	-.69 (409)		

Note: Computations exclude “other parties” and independent candidates, as well as second ballots, partial elections, *Erststimmen*, etc. In parenthesis, the number of cases (parties for “party vote” and elections for “turnout”).

In the second case, there are three indices that are (weakly) negatively correlated with party size, corresponding to the three “adjusted” indices: IPR, CRII, and CV. As far as the territorial coverage is concerned, the high coefficients indicate simply that the larger the party, the more territory it tends to covers and vice versa.

First, coefficients of correlation have been produced disregarding the number and size of territorial units (3,015 cases): Pearson’s r are all high ranging between $\pm.33$ and $\pm.63$. In a second phase of the test, coefficients have been produced by controlling for the number and size of territorial units. As it appears, results do not vary drastically when the number of constituencies changes. The index which is most weakly influenced by the size of parties is the Lee index, although this changes when the number of constituencies increases. But this is true for all indices: *the higher the number of constituencies, the stronger the impact (both positive and negative) of the size of parties on the levels of territorial disparities (especially when the number of constituencies is higher than 200).*

As far as turnout is concerned, things look quite different. The number of cases (419) corresponds to elections for which information is available. Territorial coverage does not apply to turnout since voters are always “present” in all constituencies (a constant value of 100 per cent) and the CRII cannot be computed for turnout. All remaining indices are strongly negatively correlated with the size of turnout: *the larger turnout, the smaller the differences in turnout rates between regions.* This finding must be interpreted considering the generally high levels of turnout (on average over 419 election 75.80 per cent). Furthermore, low levels of turnout characterise earlier periods when territorial disparities – as will be seen below – were also stronger. Finally, these figures are strongly influenced by the low turnout rates in Switzerland. If this country is left out, the Pearson’s r indicates a weaker correlation (about .10 less on every index with the exception of the Lee index). However, this finding is also a first indication of the historical formation of mass electorates, with a parallel process of extension of voting rights to the masses and their progressive homogenisation across regions.

Correlation between Indicators

Finally, it is useful to know the degree of correlation between indicators themselves. It was seen in Figure 1 that the different indices follow two parallel patterns on the basis of whether or not they are adjusted for party size. This is confirmed by the correlation matrix in Table 4 between indicators for both party support (lower half of the table) and turnout (upper half).

Table 4. Correlations (Pearson's r) between indicators for party support and turnout

Indices	Cove- rage	S	Vari- ance	CV	MAD	MSD	Lee index	IPR	CRII
									<i>Turnout</i>
Coverage		–	–	–	–	–	–	–	–
Stddev	-.03		.93	.97	.99	.93	.48	.97	–
Variance	-.04	.90		.91	.96	1.00	.48	.85	–
CV	-.75	-.15	-.09		.97	.91	.43	.98	–
MAD	.03	.98	.88	-.21		.96	.50	.96	–
MSD	.03	.90	1.00	-.09	.88		.49	.84	–
Lee index	-.08	.55	.47	-.05	.55	.48		.44	–
IPR	-.93	.05	.06	.72	-.01	.07	.06		–
CRII	-.93	.08	.11	.80	-.03	.11	.16	.95	
	<i>Party support</i>								

Notes: N=3,015 (party votes) and 419 (turnout). Territorial coverage and CRII not applicable to turnout. For party support, indices have been considered on all constituencies.

Considering party support first, the table shows that indices which are adjusted for party size are strongly correlated with each other: standard deviation, variance, MAD, MSD, and Lee index are correlated from a minimum of .47 (between variance and Lee index) to a maximum of .98 (between standard deviation and MAD). Between the variance and the MSD there is a perfect correlation of 1.00 since the two formulas are basically the same. On the other hand these indices are weakly correlated with the indices that do not control for party size: CV, IPR, and CRII (from a minimum of -.01 to a maximum of .16). These indices too are strongly correlated with each other from a minimum of .72 (between CV and IPR) to a maximum of .95 (between IPR and CRII).

The percentage of territorial coverage, on the other hand, is weakly correlated with the indices not controlling for party size: standard deviation (-.03), variance (-.04), MAD (.03), MSD (.03), and Lee index (-.08). On the contrary, the territorial coverage is strongly *negatively* correlated with the indices adjusted for party size: CV (-.75), IPR (-.93), and CRII (-.93). The more a party covers territory, the less there are regional disparities. As far as turnout is concerned, all indices are strongly positively correlated, from a minimum of .43 (between Lee index and CV) to a maximum of .99 (between MAD and standard deviation).

In conclusion, all indices of territorial disparity are in some way influenced by both the number of territorial units and the size of parties. The

Figure 2. Typology of indicators on the basis of their sensitivity to party size and number and size of territorial units

		Size of political parties (mean votes across constituencies)	
		Sensible (positively)	Sensible (negatively)
Number of constituencies	Sensible	Territorial coverage (number of constituencies in which party is present as a % of the total number of constituencies)	Index adjusted for party size and number of regions (IPR), Cumulative regional inequality index (CRII), Variability coefficient (CV)
	Non sensible	Standard deviation (S), Mean absolute deviation (MAD), Mean sum deviation (MSD), Variance (S ²), Lee index	–

Note: Only party support figures. Typology does not apply to turnout figures.

three indices which are adjusted for party size (IPR, CRII, and CV) are more influenced by the number of territorial units and are negatively – but weakly – correlated with party size. The non-adjusted indices are less influenced by the number of territorial units and are positively correlated with party size. Furthermore, the impact of the size of parties is stronger with large numbers of constituencies. Finally, indices are strongly correlated with the other indices of the same group. This information is summarised in Figure 2.

THE ANALYSIS OF PARTY FAMILIES

The lesson of these three different empirical tests is that indicators must be used carefully and that they serve different purposes. The *comparison of parties and party families* (both synchronically and diachronically) necessitates indicators proving “blind” as much as possible in regard to the size of parties, otherwise the largest political families (for example, socialists, Catholics, etc.) would always look less nationalised than the smaller ones (agrarians, communists, etc.). Furthermore, also the comparison of parties belonging to a same family or within a same country must also be based on indices controlling for their size.²¹

²¹ The following shortcuts are used for each of the 10 party families: social democrats, conservatives, liberals, communists, Catholics, (inter-confessional) people’s parties, Protestants, regionalists, agrarians, greens. These categories do not mean that parties have been aggregated together. Each party is dealt with individually. For *each party only one code is applicable and two parties of the same country were never given the same code*. For example, in those countries in which beside the historical social democrats (coded ‘s’) there is a second socialist party, this is coded with its acronym (for example, the *Venstresocialisterne*–Danish Left Socialist Party is coded ‘vs’; the *Partito social-democratico italiano*–Italian Social Democratic Party is coded ‘psdi’).

Such an example is given in Figure 3 where a series of standard codes have been given to parties.²² First, the standardisation of codes for political parties has been carried out *across countries*. The same code has been given to the main historical parties of the socialist family (or social democratic or labour parties) which formed at the end of the nineteenth century (for example, the German Social Democratic Party or the British Labour Party); similarly, the same code has been given to the main historical communist parties that broke away after World War I from these socialist parties (for example, the Italian Communist Party, the French Communist Party); and the same code to the main denominational people's parties (for example, the Italian Christian Democracy and the German Christian Democratic Union), and so on.

Second, in order to ensure *historical continuity*, codes have been left unchanged when the name of the political party changed. Party codes have been standardised according to a criterion of *organisational continuity* rather than on an ideological basis. This implies that even important ideological changes reflected by a change in the name do not lead to a change of code. This choice has been made to increase the temporal continuity of the data and makes it easier to “follow” party developments through time.

From Figure 3 it appears that both agrarian and social democratic parties – expression of the urban-rural and class cleavages – spread rapidly across national territories in the last decades of the nineteenth century. These are the parties that appeared with industrialisation and urbanisation, and with the enlargement of suffrage. Social democrats relied initially upon an uneven support mainly from the urban industrialised centres where they first presented candidates. Workers' mobility, engendered through urbanisation, the changing society from agricultural to industrial, accompanied by mass electoral suffrage and the electoral success of social democratic parties, caused the rapid spread of their organisations and candidates.

The urban-rural cleavage too was characterised by strong territorial differences in the nineteenth century. The process of industrialisation, however, weakened the social base of agricultural traditional societies and – by World War II – most farmers' and peasants' parties had disappeared. On the other hand, the larger agrarian parties of the Nordic countries nationalised after World War II when they transformed into ideologically broader “centre parties”.

Unlike agrarians and social democrats, conservatives and liberals underwent a process of early and progressive nationalisation. These are the two

²² For the classification see Bartolini, Caramani, and Hug (1997 and 1998) and Caramani and Hug (1998), as well as Caramani (2000: 9–12 and 995–1002).

families that dominated nineteenth century's politics. They had the "monopoly of representation" since the earliest days of parliamentary life and have occupied the territorial "space of competition" from the beginning. Whereas agrarians and social democrats are parties that appeared with industrialisation and universal suffrage, conservatives and liberals are parties born "within parliaments", and from the first competitive elections they mobilised a restricted – census and capacity-based – electorate. The only party family that always remains highly regionalised, is the regionalist party family.

FROM PARTY TO PARTY SYSTEM MEASURES

Having seen how the homogeneity of the vote for single parties can be measured – useful for the comparison of individual parties – we must now consider how these indices can be used for the measurement of *systemic values* of homogeneity, that is, the extent to which an *entire party system* is homogeneous or regionalised. This is crucial for *the comparison of party systems*, that is, *countries* (both synchronically and diachronically).

The impact on regionalism of a large party should be considered more important than the impact of a small party. Conversely, the limited regionalisation of a large party should be considered more important than a strong regionalisation of a small party. In other words, when comparing countries it is important to weight the size of parties. An important consequence concerns regionalist parties. In most cases these parties are small and their impact on the party system is limited. If their importance is overestimated by using an index which establishes the "one-to-one equivalence" between parties of very different sizes, it is possible that the actual territorial fragmentation of a system is overlooked.

The first principle is therefore that within each system *small parties and large parties should not have the same weight*. The aggregation of measures from individual parties into systemic values must therefore adjust for the size of parties. This is not a problem for those indices which are, as such, not adjusted to the party size: MAD, MSD, variance, standard deviation, and Lee index. For indices which were adjusted for party size (CV, IPR, CRII), however, the values of each party have to be multiplied by the mean share of its vote in the regions.

Figure 3. Evolution of territorial heterogeneity of support for main party families in Europe: 1840s–present

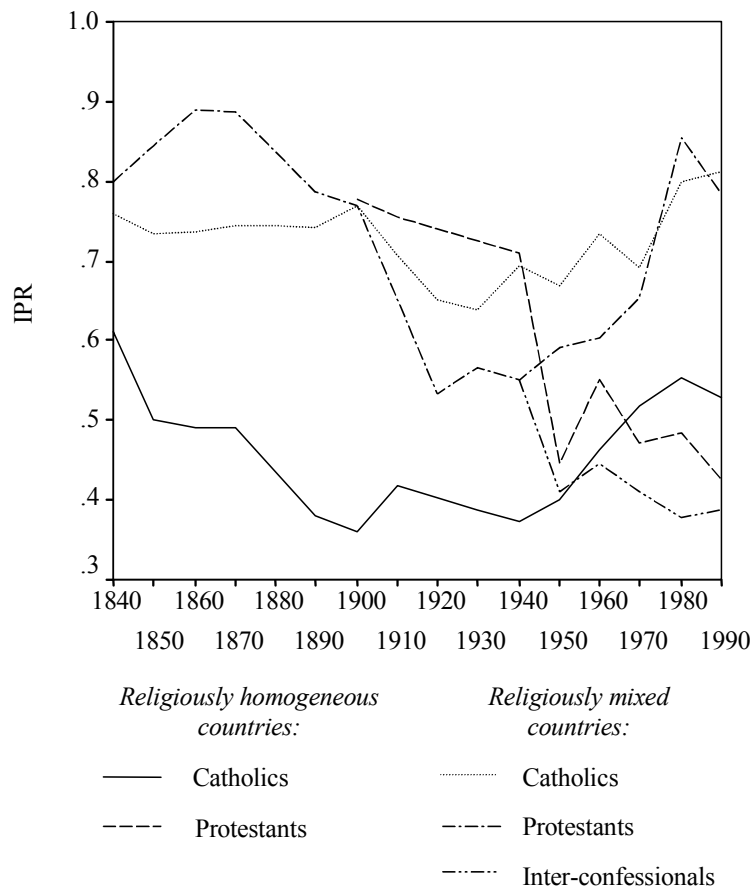
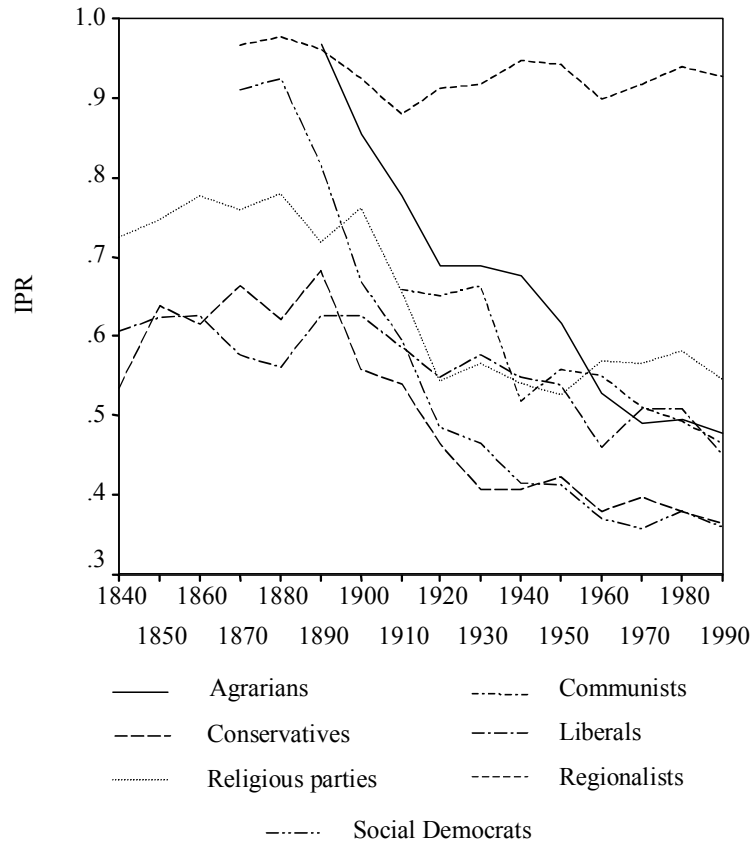
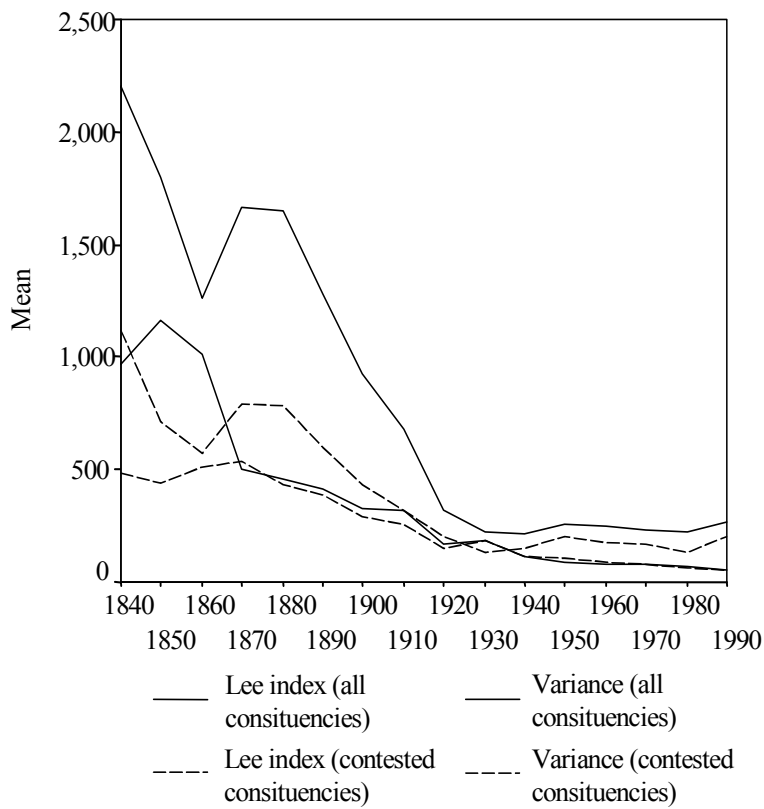
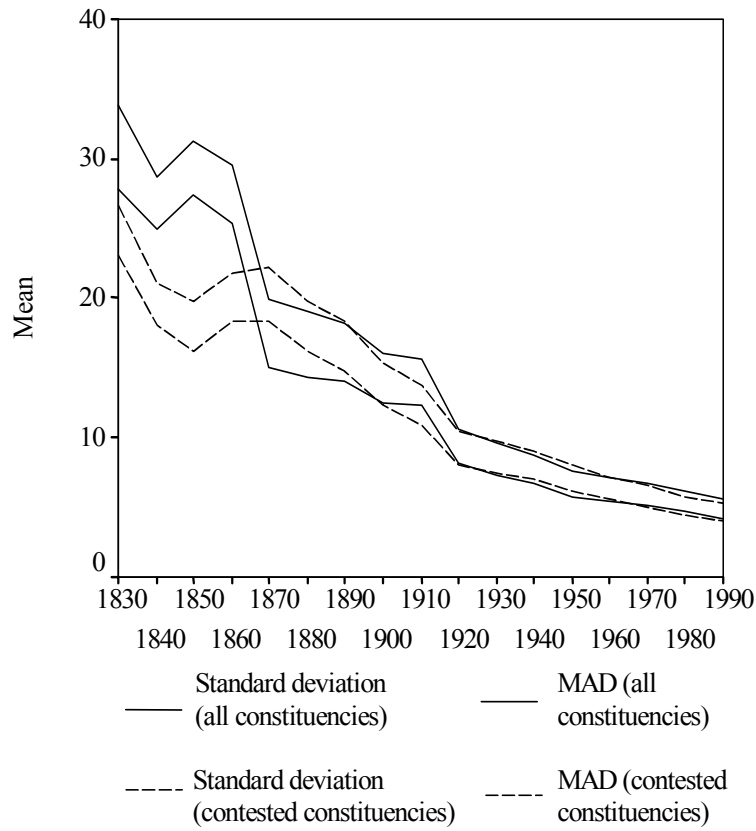


Figure 4. The reduction of territorial heterogeneity of party support in Europe: 1830s–1990s



Second, to define the level of homogeneity of a party system, we put together party values, as many as there are parties according to the criterion for selection (at least five per cent within at least one constituency) at each election. There are many ways of computing party system values. The most straightforward way is to take the *mean* of party values (for example of the standard deviation: *mean standard deviation*). In this way, however, small parties (which have small values of territorial differentiation because they are weighted through their size) have a strong “homogenising” effect on the overall system figure. Again, large parties must count more than small ones. Another way of aggregating partisan figures, is therefore the *sum* (*cumulative standard deviation*). This approach has the advantage of reducing the “homogenising” effect of small parties on the party system as a whole and, therefore, *to control for the format of party systems*: in effect, a system with many small parties (a fragmented multi-party system) will always appear more homogeneous than a system with few large parties (a two-party system). The sum must of course be divided by the number of elections.

The sum of individual party values too, however, is sensitive to the number of parties in a system. The more parties, the higher systems’ measures of territorial differentiation. While, therefore, the sum is useful to compare systems within same periods of time, it is not appropriate in a *historical perspective* (the number of parties increases towards the end of the nineteenth century and with the introduction of PR).

To avoid this, the threshold for inclusion in the computation of indices has been increased from five per cent within at least one constituency to seven per cent nation-wide. This seems to be the best compromise to control for both differences in the number of parties (over time and across countries) as well as party turnover, that is, the influence of sporadic parties. As an example, Figure 4 displays the levels of territorial homogeneity of party support as reported through different indices (standard deviation, MAD, Lee index, and variance).

CONCLUSION

From this empirical example – used to illustrate the operationalisation of the homogeneity of voting behaviour in Europe – a set of substantive conclusions can be drawn.

First, Figure 4 shows that the homogenisation of voting behaviour takes place “early” in the electoral history of Europe. Although the process of nationalisation of electorates and party systems is a continuous process – from the nineteenth century onwards – it is a process in two phases with the crucial moments of erosion of territorial cleavages taking place before World War I,

under the pressure of macro-processes such as industrialisation and urbanisation, state formation and nation-building, and the development of communication technologies. Curves of territorial diversity fall steep until World War I and then stabilise. World War I appears as the “crucial moment” in correspondence with the “massification” of politics: universal suffrage, mass parties for the mobilisation of mass electorates, and PR as a strong incentive for parties – in terms of obtained seats – to spread in all constituencies (also in those in which they have a weak support).

Second, the period since World War II is on the contrary a period of fundamental stability of territorial configurations, confirming other long-term analysis of the stabilisation of electoral alignments (Lipset and Rokkan 1967, Bartolini and Mair 1990). This means that no factor intervening after World War II was able to modify the territorial structures and further compress regional differences: neither the further development of communication technologies (electronic media), the transformation of social structures (tertiarisation and secularisation), nor the change of mass parties into broader catch-all parties deprived of solid socio-economic bases.

Third, the comparison of the evolution of the territorial structures of party families shows that the “left-right” dimension – or class cleavage – is a factor of territorial homogeneity of voting behaviour. On the one hand, the parties which dominated early democratic parliamentary life (liberals and conservatives) were able to spread and occupy territories since the beginning of competitive elections. On the other hand, parties issued from the Industrial Revolution (industrialisation and urbanisation) as well as from the “massification” of politics (enlargement of suffrage, mass parties, PR) – mainly socialist and agrarian parties – homogenised rapidly towards the end of the nineteenth century.

Yet, regional diversity has not disappeared. Different patterns of state formation (secession, independence, unification) and nation-building (whether or not multi-cultural solutions were viable) have led in some cases to culturally homogeneous territorial systems, whereas in other cases to culturally fragmented and diverse territorial systems. The comparative analysis shows the impact of two main types of party families on regional fragmentation since World War II: ethno-linguistic parties and denominational parties (see second graph in Figure 3) in the linguistically and religiously mixed countries mostly located in the European “city-belt”. On the contrary, the most homogeneous cases are those of the religiously homogeneous countries of the North, where Protestantism acted as a strong factor for the nationalisation of religion and language.

APPENDIX

Data have been computerised in different formats (absolute figures, row and column percentage distributions) to allow for the computation of the different indices, as well as in different structures: for analysing data (horizontal time dimension), building time series (vertical time dimension), and a mixed structure to match other socio-economic data sources (see Caramani 2000).

1. Indices based on percentage distribution of votes by parties

Mean absolute deviation: $MAD = \sum |X - \bar{X}| / n$
also called “index of variation” (Rose and Urwin 1975: 24).

Mean squared deviation: $MSD = \sum (X - \bar{X})^2 / n$

Variance: $S^2 = \sum (X - \bar{X})^2 / n-1$

Standard deviation: $S = \sqrt{S^2}$ or $S = \sqrt{\sum (X - \bar{X})^2 / n-1}$

Lee index = $\sum |X - \bar{X}| / 2$

Variability coefficient: $CV = S / \bar{X}$

IPR = $\sqrt{n} \sum |X - \bar{X}| / (2(n-1) \sum X)$

2. Indices based on percentages of parties’ vote distribution by constituencies

Cumulative regional inequality index: $CRII = 1/2 \sum |votes - voters|$

(not applicable to turnout). The formula is divided by 100 to vary between 0 and 1 (Rose and Urwin 1975). When voters figures not available, electorate used.

3. All constituencies vs. constituencies in which party is present

For party support all previous indices have been computed on 1) the *total number of constituencies* (uncontested=0) and 2) only on the constituencies in which the party *was present* (uncontested=system missing). This distinction does not apply to the CRII nor to turnout figures.

4. Territorial coverage by parties

The simplest measure to assess the spread of parties across regions is to compute *the percentage of constituencies in which a party is present* (numerator) *on the total number of constituencies* (denominator). A constituency in which a party is unopposed (an uncontested constituency) is considered as a constituency in which the party is present. The computation of this percentage is complicated by *missing data* for some constituencies, that is, it is not known whether a party is present or not in a number of constituencies. This occurs especially for earlier periods. In such cases *the territorial coverage by parties is underestimated*. To adjust for this the number of missing constituencies has been subtracted from the total number of constituencies. This is not applicable to turnout, which is always “present” in 100 per cent of the constituencies. The following table lists the cases in which information on some or all constituencies is missing (for party votes):

Country	Election years	Cases (parties)	Total number of constituencies	Number of <i>missing</i> constituencies
Belgium	1848, 1859, 1888, and 1894	All parties	41	1
Denmark	1879, 1901, 1915	All parties	101–113	1
Germany	1912	<i>Nationalliberale, Konser-vative, Zentrum, Polen, Wirtschaftsvereinigung, Deutsche Reichspartei, Deutsche Reform Partei</i>	397	3–329
Iceland	1916, 1922, 1926	All parties	25–26	25–26
Netherlands	1888–94	All parties	100	16
Switzerland	1848–69	All parties	25 cantons	6 cantons

Notes: Countries with missing information at constituency level for *turnout* (as well as persons entitled to vote) not listed. The total number of constituencies varies according to districting in different years. The number of missing constituencies varies according to parties and to first/second ballot. For Switzerland, constituencies not available.

5. Estimates

a) *Party support*: unopposed parties or candidates in uncontested constituencies have been estimated receiving 100 per cent of the votes. This applies both to single-member and multi-member uncontested constituencies.

b) *Turnout*: voting did not take place in such constituencies. Turnout has been estimated at 100 per cent, although this is an overestimation especially for earlier periods.

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