

Changing biases in the operation of the UK's electoral system, 1950–97

DAVID ROSSITER, RON JOHNSTON, CHARLES PATTIE,
DANNY DORLING, IAIN MACALLISTER and
HELENA TUNSTALL

Abstract

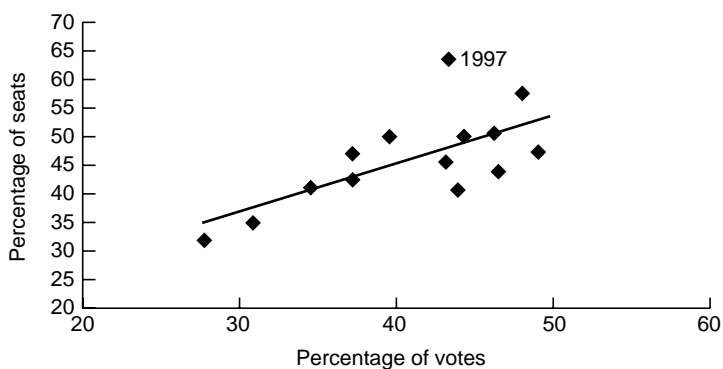
The biased outcomes of recent British general elections, whereby the two main parties (Conservative and Labour) would have achieved different percentages of the seats in the House of Commons for the same percentages of the votes cast, are explored, using a method of bias decomposition developed by a New Zealand political scientist. Overall, the situation changed markedly between 1950 and 1997: the biases in the system strongly favoured the Conservatives in the 1950s and early 1960s, but Labour in 1992 and 1997. Examination of the seven components of the bias measure shows that most of these moved in Labour's favour over the 50-year period, with a major shift between 1992 and 1997 because of the greater geographical efficiency of the Labour party's vote at the latter date: reasons for this are suggested.

The Labour Party won the British general election of 1 May 1997 with 43.3 per cent of the votes but 63.6 per cent of the seats: it was an 'electoral landslide' rather than a 'popular landslide'. Such a biased outcome favouring the party with the largest share of the votes is quite common in plurality electoral systems (see for example, Rae 1971, Lijphart 1994, and Taagepera and Shugart 1989), but in the United Kingdom it is generally assumed that the bias favours the Conservative party much more than Labour: since 1950, when the current system of constituency definition was introduced, Labour has never won more than 57.6 per cent of the

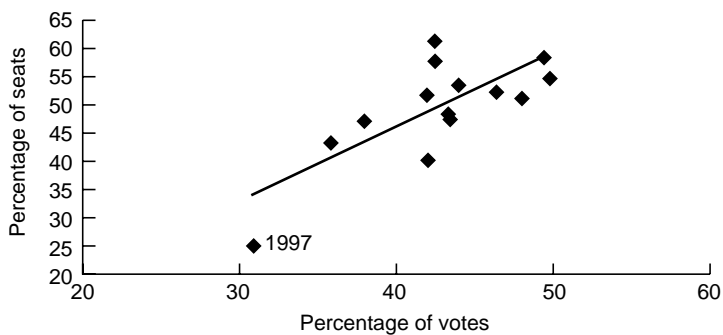
seats (in 1966), even though it exceeded its 1997 share of the votes cast on six occasions between 1950 and 1966. To what extent was the 1997 result different, and why? To answer this, we apply a method of analysing bias in single-member plurality constituency systems to a study of the UK since 1950, explore variations in the nature and extent of such bias over the country's last fourteen general elections and suggest how Labour's ability to exploit that bias enabled it to win such a substantial 'electoral landslide' in 1997.

Figures 1 and 2 set the context for this exploration by indicating how markedly the 1997 general election result deviated from the preceding thirteen.¹ Figure 1 shows the relationships between the percentage of the votes cast for, and the percentage of the seats won by, each of the three political parties which now contest every seat in Great Britain.² Each indicates not only that the 1997 result differed substantially from the general trend, but that it was the largest residual: 1997 clearly differed significantly from all of the others in the allocation of seats relative to votes. Labour obtained by far its largest proportion of the seats, with a share of the votes that was close to its median percentage across all fourteen elections (Figure 1A). It did very much better than predicted by its vote share, whereas the Conservatives did very much worse in 1997 than their party's linear relationship suggests, with what was by far its lowest share of the votes cast (Figure 1B). Finally, the Liberal Democrats, like Labour, did very much better in 1997 than their general trend over the full set of elections suggests (Figure 1C), getting much their largest share of the seats with a percentage of the votes cast that had been exceeded on five previous occasions.

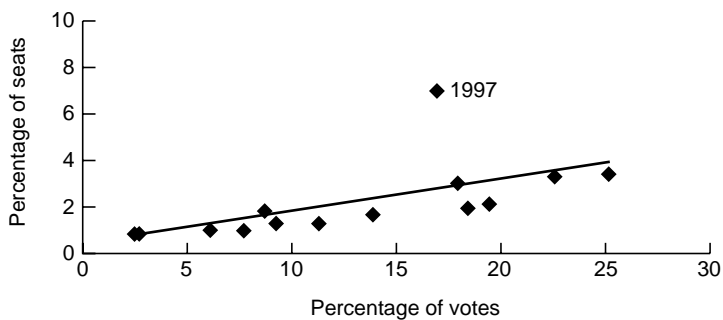
The two sets of percentages in Figure 1 are combined in Figure 2 as each party's seats:votes ratio, the ratio of its percentage of the seats to percentage of the votes (a ratio of 1.0 indicates that a party got the same percentage of the seats as of the votes, whereas a ratio exceeding 1.0 indicates a greater share of seats than votes). Once again, 1997 stands out, with Labour and the Liberal Democrats getting their largest ratios by substantial margins, whereas the Conservatives obtained their lowest. Both Labour and the Conservatives recorded ratios above 1.0 at nearly every election (Labour's fell below 1.0 on three occasions—all in the 1950s: the Conservatives' ratio was below parity at only one election prior to 1997—in 1966, when Labour had a majority over them of 96 seats: Table 1); apart from the 1951 and 1955 elections, when they fielded very few candidates, the Liberals only once achieved a ratio as high as 0.2 before 1997. Overall, the pattern is typical of that associated with first-past-the-post



A The Labour party



B The Conservative party



C The Liberal Democrat party

Figure 1. The relationship between votes won and seats won (percentages of the total) 1950-97

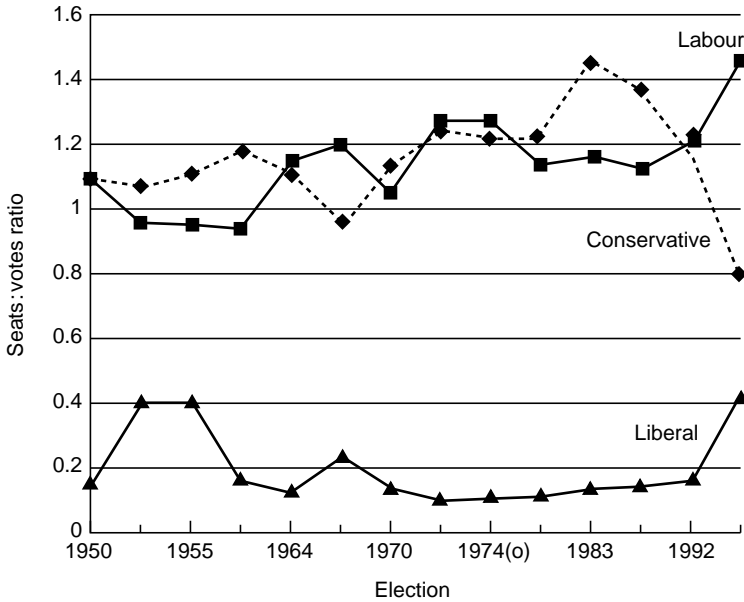


Figure 2. Seats:votes ratios, 1950–97

electoral systems, with the two largest parties achieving a substantially larger percentage of the seats than of the votes, and their smaller competitor performing much less well in the contest for seats than for votes. From the 1960s on, the ratios for Labour and the Conservatives generally increased. This trend occurred when the Liberals,³ plus the nationalist parties in Scotland and Wales, increased their share of the votes, but won very few additional seats: as the Conservative plus Labour share of the total votes cast fell—from 96.8 per cent in 1951, through 87.5 in 1964, and 74.9 in February 1974 to 70.0 in 1983, recovering slightly thereafter (76.3 in 1992)—so their seats:votes ratio increased. But then in 1997 there was the great divergence between the Conservative and Labour seats:votes ratio.

The UK electoral system has thus resulted in biased election outcomes which increasingly favoured the two largest parties between 1950 and 1992, but favoured only one of them in 1997. The remainder of this paper explores those changes in more detail, and suggests reasons for the aggregate trends shown in Figure 2.

Table 1: The bias components 1950–97

	NEQ	CSV	A	MPW	NI	MPV	E	I	T	M1	M2
1950	3	-6	-2	-4	-10	-7	-23	-2	-51	16	5
1951	4	-5	-4	-4	-10	0	-39	-1	-59	-26	-17
1955	4	-8	1	-4	-10	-3	-13	-1	-34	-68	-60
1959	6	1	1	-3	-12	-11	-29	-4	-51	-107	-100
1964	6	13	10	4	-12	-25	-13	-7	-24	13	4
1966	6	21	17	4	-11	-22	-13	-5	-3	110	96
1970	7	39	17	4	-8	-14	-39	-4	2	-42	-30
<i>1974(February)</i>	5	19	16	5		-32	11	-6	18	4	-33
<i>1974(October)</i>	6	19	17	2		-17	-28	-2	-3	42	3
1979	8	31	12	1		-20	-1	-5	26	-70	-43
1983	10	13	12	12		-19	-28	-5	-5	-188	-144
1987	14	23	10	13		-24	-34	-8	-6	-147	-102
1992	12	29	19	20		-30	-7	-5	38	-65	-21
1997	11	13	24	33		-36	48	-11	82	253	167

Notes: NEQ—national electoral quotas; CSV—constituency size variations; A—abstentions; MPW—minor-party wins; NI—Northern Ireland; MPV—minor-party victories; E—efficiency; I—interactions; T—total.

The final two columns show the Parliamentary majorities: M1—the Labour–Conservative majority; M2—the winner’s majority over all other parties (in each a negative figure indicates a Conservative majority and a positive figure a Labour majority: note that in February 1974 Labour had a majority over the Conservatives, but was in a minority against all other parties).

The elections are arranged in blocks to represent the periods between constituency redistributions. Elections shown in italics were won by the Labour party.

Assuming that the Conservative and Labour parties had an equal share of their joint percentage of the votes cast. A positive bias is pro-Labour; a negative bias is pro-Conservative.

Defining and decomposing bias

The method of defining and decomposing bias applied here was developed by a New Zealand political scientist in the late 1950s (Brookes 1959, 1960). It is especially suited to the analysis of single-member constituency systems in which two political parties predominate, which Duverger (1954) and Rae (1971) showed is characteristic of the plurality (or first-past-the-post) system, and has previously been applied to explore the nature and extent of bias in New Zealand and the UK (Johnston 1977, 1992; Johnston, Pattie and Fieldhouse 1994).

Defining bias

Brookes' method focuses on the two largest parties in an electoral system, and its measurement of bias is based on the outcome of a uniform switch of support from one party to another across all constituencies, with all other parties' shares of the electorate (plus abstentions) remaining unchanged—it is a measure of the extent to which one party is advantaged over another in the translation of its geography of votes into seats. Thus, for example, if Labour won 43.3 per cent of the votes cast and the Conservatives 30.7, for the two to obtain an equal share (at 37.0 per cent each) would involve Labour losing 6.3 percentage points of its vote share in each constituency, and for its opponent to gain the same number of percentage points everywhere. Having done this, it is a straightforward task to calculate which party would win each constituency (as in Norris 1997).⁴

This procedure is one of several attempts to measure the amount of bias in an election result. It is based on establishing a counter-factual situation against which the actual result can be compared, which assumes a uniform switch in votes across all constituencies between the two parties being considered. This is clearly an oversimplification: whereas a uniform swing did largely characterise British election results in the 1950s and 1960s, inter-election change is now much more variable across the constituencies. As an illustrative device Brookes' method has a number of advantages, however; not least the easily appreciated metric it employs (bias is measured as differences in the number of seats won) and its ability to decompose the bias into its various components using that metric, something that no other method does (Grofman, Koetzle and Brunell 1997). As such, it is a valuable heuristic device. Other approaches (as in Dunleavy and Margetts 1997) compare one party's actual performance against a norm such as proportional representation, rather than its opponent's, employ metrics that are not as readily appreciated as differences in the number of seats each party would obtain, and cannot decompose the bias into its various components on that single metric.

Total bias is calculated either by comparing the actual result at a general election with an alternative distribution of votes between the two main parties, usually the reverse of that result (i.e. from *A* getting 50 and *B* 40 per cent to *A* with 40 and *B* with 50), or by estimating what the result would be with an equal share (i.e. half of their joint share of the total votes cast, with both getting 45 per cent). The amount of bias in the first case is the difference between the number of seats which one of the parties would have secured with the given percentage of the votes, and that which

the other would have obtained if the vote percentages were reversed; in the second case, where vote shares are equal, the difference in the performance of the two parties provides the total bias figure.

Decomposing the bias

Brookes provided not only a simple, readily appreciated measure of bias, but also a means for its decomposition into the various factors which produce it: we have adapted and extended his procedure. (Brookes' full algebra can be found in one of his original papers—Brookes 1960—and also in Johnston (1977) and Johnston, Rossiter and Pattie (1999).

This decomposition is based on an appreciation that the smaller the number of votes needed to win a seat, the more effective a party's vote tally may be; i.e. the larger its seats:votes ratio. This can be illustrated by two constituencies, one with 50,000 electors and the other with 70,000, in which all electors turn out to vote and all vote for either party A or party B. In the first constituency, 25,001 votes are needed for victory, whereas in the second 35,001 are required. If an electoral system contains two groups of constituencies, one with 50,000 electors each and the other 70,000, then, if two parties share the majority of the votes cast and each of them has a substantial proportion of that total, a party whose vote-winning power is concentrated in the former group will almost certainly win more seats relative to votes, and have a higher seats:votes ratio, than will one whose support is concentrated in the latter group of larger constituencies.⁵

Bias can also occur because of spatial variations in the performance of minor parties and in the number of electors who abstain.⁶ Take two constituencies (*Y* and *Z*) with 70,000 electors each. In *Y*, 8,000 of the electors support party *C* and a further 5,000 abstain:⁷ this leaves 57,000 electors shared between parties *A* and *B*, so 28,501 votes are sufficient for victory. In constituency *Z*, on the other hand, party *C* wins just 2,000 votes and only 3,000 electors abstain, leaving *A* and *B* contesting the support of the other 65,000, with 32,501 votes needed for victory. If one of those parties has its support concentrated in the constituencies with relatively large numbers of abstainers and/or supporters of the third party, then its seats:votes ratio will probably be larger than that for a party whose vote-winning capacity is concentrated in constituencies with few abstainers and minor-party supporters.

Brookes identified three size components to electoral bias: they relate to the number of electors per constituency and the relative importance of minor parties and abstainers across constituencies. His final component

was related not to the size of a party's support but rather to the efficiency of its distribution across the constituencies. This concept of efficiency can be appreciated by considering a two-party contest in which party *A* wins not only 51 per cent of all of the votes cast, but also 51 per cent of those cast in each constituency, thus winning every seat; a highly efficient outcome. The degree of efficiency reflects the distribution of a party's votes across three categories: wasted; surplus; and effective. *Wasted votes* are those cast for its candidates who lose and gain the party no representation; *surplus votes* are those which are additional to the number necessary for victory in a constituency, (for example if the second-placed party wins 20,000 then 20,001 are needed for victory, so if the winning party gets 30,000 votes, 9,999 of them are surplus); and *effective votes* are those necessary for victory in seats that a party wins, i.e. one more than the number obtained by the second-placed party. The larger the proportion of a party's votes which are effective rather than surplus or wasted, the better its performance at winning seats relative to votes and the more efficient its vote distribution.⁸ Brookes' algebra calculates this, like the size components, as the advantage or disadvantage which a party obtains, measured as the number of seats.

Changing a party's proportion of wasted, surplus and effective votes was long a strategy employed by gerrymanderers in the United States (Orr 1969, classified the several variants of the strategy). There a 'packed gerrymander' was one in which an opponent's votes were concentrated into a small number of districts, which were won by very large majorities and produced high proportions of surplus votes for the opposition party but relatively small proportions of wasted votes for the party doing the gerrymandering. 'Cracked gerrymanders', on the other hand, diluted the opposition's votes across a much larger number of districts, which it would lose, though not by a large margin, thus wasting a large proportion of its votes. Of the two, cracked gerrymanders are more prone to 'backfire' against the party controlling the redistricting, so that, with a relatively small fall in its proportion of the votes, it could lose a large number of seats: packed gerrymanders are most likely to be effective, even though they are more likely to ensure that your opponent wins some seats. Gerrymandering is, of course, not possible in the UK, where redistricting is undertaken by independent Commissions, although the parties do try to influence the procedure at the public consultation stage (Rossiter, Johnston and Pattie 1999). Nevertheless, it is possible for the equivalent of packed and cracked gerrymanders to emerge from a non-partisan procedure (as Gudgin and Taylor 1979, demonstrated): the efficiency component of

Brookes' bias measure identifies the extent of such 'non-partisan gerry-mandering' on the efficiency of parties' vote distributions.

Finally, there are interaction effects involving two or more of the separate components, such as the combined influence of constituency size and level of abstentions.

We have adapted Brookes' method by separating out different aspects of two of his components. Variations in constituency size within the UK occur for two reasons. First, there are differences in average constituency size across the four constituent countries; England, Scotland, Wales and Northern Ireland. The legislation covering constituency definition (the Parliamentary Constituencies Act 1986) guarantees Scotland and Wales a minimum number of MPs (71 and 35 respectively) while stipulating both a minimum and a maximum for Northern Ireland (16 and 18):⁹ no figure is given for England, but the Act states that the total for Great Britain (i.e. the UK excluding Northern Ireland) should not be substantially greater or less than 613. This formulation has been in place since the current system was introduced in 1944; except that in 1977 Northern Ireland's complement was increased from 12 to between 16 and 18, inclusive. Since then, England's electorate has increased more rapidly than either Scotland's or Wales's and the average size of constituencies in the countries has diverged. At the 1997 general election the average number of registered electors per constituency in each was:

England	69,578	Scotland	55,339
Northern Ireland	66,122	Wales	55,563

Clearly, a party with strong support in Scotland and Wales is likely to have a larger seats:votes ratio than one whose main support is in England.

Second, constituencies vary in their size within each of those countries. Although the Boundary Commissions are required to recommend constituencies with electorates as close to the relevant national electoral quota as is practicable, some variation around that figure is inevitable, because local government wards are used as the building-blocks for creating constituencies within borough and county boundaries. Furthermore, although the Commissions seek to minimise variations across constituencies in the number of electors in their provisional recommendations, arguments presented to them during the public consultation stage for different constituency boundaries, some of which are accepted and incorporated into the final recommendations, almost invariably increase the variations across constituencies somewhat. (On the work of the Boundary Commissions, see

Rossiter, Johnston and Pattie 1999.) Nevertheless, over the five reviews conducted since 1944, the range of variation has been reduced quite substantially: in England, for example, the mean deviation as a percentage of the quota declined from 11.88 at the Initial Review (1947) to 5.77 at the Fourth Periodic Review (1995), and the standard deviation fell from 8.95 to 4.68. Variations remain, however, and can be the basis of different seats:votes ratios for the parties if their support is concentrated in either the larger or the smaller constituencies.¹⁰

We have split Brookes' minor-party component into three sub-components. The minor-party victories component applies to those constituencies won by neither the Conservative nor the Labour party, an increasing number since 1970, and we have treated these in the bias calculations as detrimental to the second-placed party in the constituency; that is, if a minor party won the seat with the Conservatives second, this is a bias of one seat against the Conservatives. Second, Northern Ireland victories relate to seats there; before 1970, the Unionist parties were allied with the Conservatives in Great Britain and took that party's whip in the House of Commons, so up to that date we calculate the bias effect with them as the local representatives of the Conservative party. Finally, there is the minor-party votes component as introduced by Brookes.

In total, then, we decompose bias in UK elections into the following components:

1. National electoral quotas;
2. constituency size variations;
3. abstentions;
4. minor-party victories;
5. Northern Ireland victories;
6. minor-party votes;
7. efficiency.

In addition there are interaction effects between each pair, triplet and so on which we have not calculated separately; the figures reported here refer to the net interaction effect only.

The overall pattern

Figure 3 traces the overall bias at each election since 1950 for two situations: if the distribution of votes between the Conservative and Labour parties was reversed (actual); and if the two parties had an equal

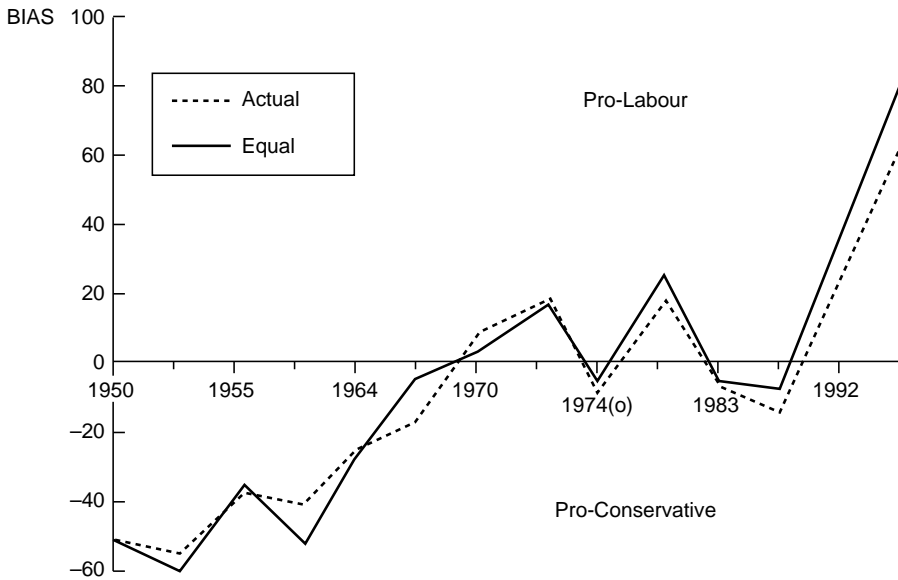


Figure 3. Trends in the total bias, 1950-97

share of their combined total of the votes (equal). It shows a general trend over the half-century from results which were initially biased substantially towards the Conservative party to a situation at the end of the period when they were even more substantially biased towards Labour. The two series are virtually parallel so, for the remainder of the paper, we focus on one of them only; that estimated for when the parties have an equal share of the votes (see Table 1; in this, and all other tables and figures in the paper, pro-Conservative biases are shown as negative numbers and pro-Labour biases as positive).

Figures 4-6 present the trends in the bias components (excluding that for Northern Ireland). Figure 4 shows the two size biases, from both of which Labour has benefited substantially since the 1960s. It was favoured by the *national quotas* throughout the half-century, but the size of that advantage has quadrupled since the first election, after the current system of creating constituencies was introduced, for two main reasons. First, Scotland and Wales have not only retained their guaranteed minimum numbers of seats (71 and 35 respectively) but have also been allocated additional ones (Scotland now has 72 and Wales 40), over a 50-year period

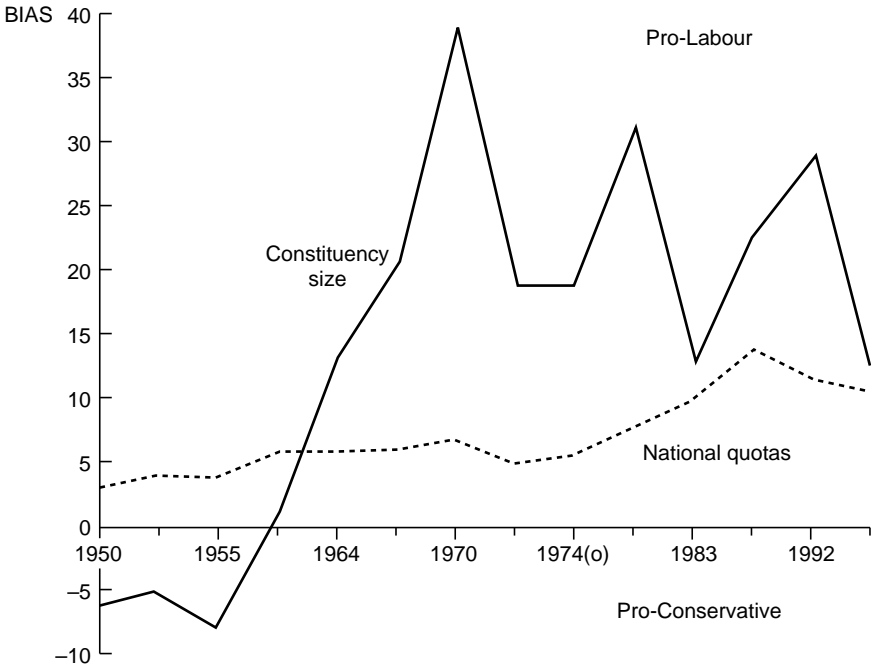


Figure 4. Trends in the size-bias components (if parties had equal vote share)

when their populations have grown much more slowly than England's: England's complement has not increased proportionately (it had 489 in 1950 and 529 in 1997). Thus, the difference in the average electorates has increased. In 1947, after completion of the Boundary Commissions' Initial Review, the average English constituency had 58,734 electors, compared to 51,641 for Wales and 49,620 for Scotland; in 1995, after the latest review, the respective figures were 68,626, 55,559 and 54,569. So in 1947, the average Scottish constituency had 84.5 per cent of an average English constituency electorate, whereas in 1995 the figure was 79.5 per cent; the comparable percentages for Wales were 87.9 and 81.0. Second, the Conservative party's support in Scotland and Wales declined substantially over the period, culminating with its failure to win a single seat in either country in 1997 (McLean 1997, and Mitchell, 1997).

The Conservatives benefited from the *constituency size variations* component at the first three elections, but from 1964 on this advantage switched to Labour. In both the Initial Review of constituencies (completed

in 1947) and the First Periodical Review (1954), the Boundary Commissions, and especially the English Commission, operated a 'rural weighting' factor: on average, rural constituencies, in which the Conservatives were generally much stronger than Labour, had fewer electors than their urban counterparts. This policy ended with the Second Periodical Review (reported in 1969 but not implemented until after the 1970 general election: see Rossiter, Johnston and Pattie 1999), thereby eliminating the Conservatives' advantage from this component. Labour benefited from it thereafter because of the relationship between the geography of its support and the pattern of population redistribution in Great Britain. Labour's voter heartlands are in urban Britain, especially urban-industrial Britain; a concentration which was accentuated in the 1970s and 1980s. Most large urban areas have lost population to the suburbs and beyond so that, after each Boundary Commission Review, their inner city constituencies have steadily declined in size relative to those in suburbia, exurbia and rural areas. As the inner-city constituencies lost electors, so Labour's advantage from the constituency size variations bias component increased (Figure 4), because of its relative electoral strength there. Each Boundary Commission redistribution reduced that advantage, however (compare 1970 with February 1974, 1979 with 1983, and 1992 with 1997 in Table 1), because the Commissions are required to create constituencies with equal electorates 'so far as is practicable'; after each review, therefore, continued population shifts away from the inner cities re-established Labour's substantial advantage from this component, worth 39, 31 and 29 seats to it at the end of the period when each set of constituencies was in use (1970, 1979 and 1992).

Figure 5 shows three more of the components, two of which favoured Labour. Labour obtained a substantial advantage from the *abstentions* component at each election after 1960, as it usually wins more seats than the Conservatives in constituencies with low turnout rates. Thus, although it is widely believed that Labour performs better when turnout is high nationally,¹¹ this is not necessarily the case when votes are translated into seats. The highest abstention rates tend to be in the inner-city areas, where Labour is strong and where higher turnout would be unlikely to result in it gaining further seats; it would simply increase the party's number of surplus votes and reduce its seats:votes ratio.

Minor-party wins also operate to Labour's advantage, increasingly so since 1979. The Liberal Democrats and their predecessors have occupied the majority of the seats won by minor parties, most of them in areas of relative electoral weakness for Labour and with the Conservative party

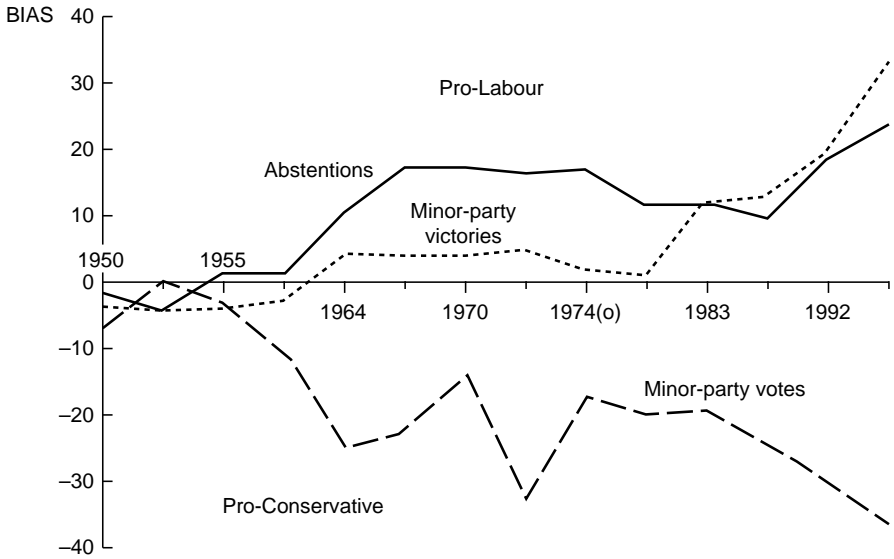


Figure 5. Trends in the abstentions and minor-party bias components 1950–97 (if parties had equal vote share)

occupying second place. Their success at recent elections, especially in 1997 when the number of Liberal Democrat MPs increased from 20 to 46, has thus been of considerable benefit to Labour relative to the Conservatives. So in 1997, the Conservatives came second in 39 of the 46 seats won by the Liberal Democrats; they also came second in 6 of the 10 won by the nationalist parties. The Conservatives benefit from the distribution of *minor-party votes*, however, because most of the seats where the Liberal Democrats do well, but not well enough to win, are Conservative-held, thus reducing the effective number of votes required for victory in such constituencies. This has been worth around twenty seats for the Tories since the 1960s, when the Liberal revival began. In 1997, it more than counter-balanced Labour's advantage from the minor-party victories component.

Finally, Figure 6 shows the trend in the *efficiency* component, indicating a very significant recent shift. Labour benefited from this component only once before 1997; in February 1974, when it won more seats than the Conservatives, but fewer votes. However, at the most recent election its advantage was greater than any that the Conservatives had obtained in

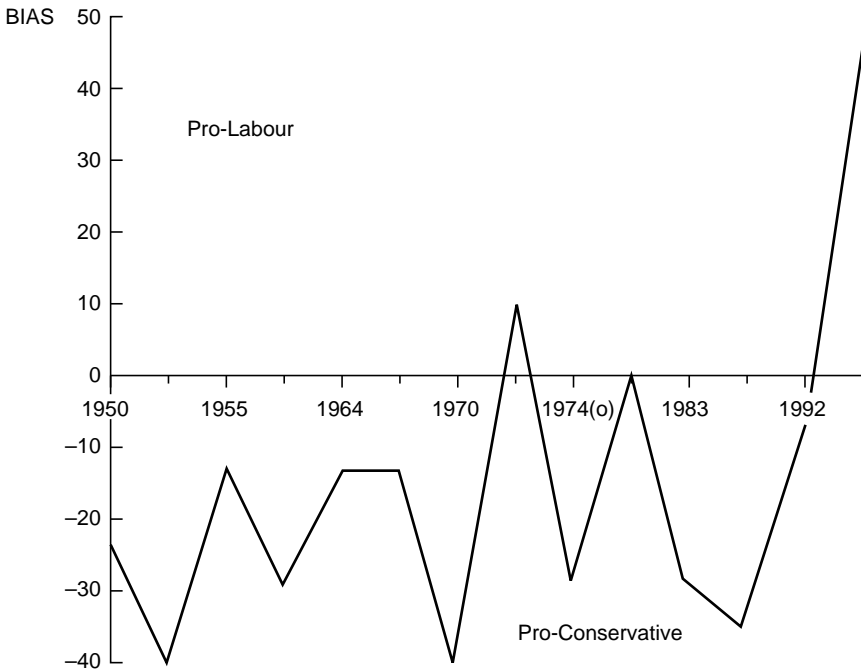


Figure 6. Trends in the efficiency bias component 1950–97 (if parties had equal vote share)

12 of the previous 13 contests. Labour has traditionally been disadvantaged on this component because it has tended to win seats by larger majorities than its main opponent: a larger proportion of Labour MPs have held safe seats relative to their Conservative counterparts and Labour has ‘piled up’ more surplus votes in ‘non-partisan packed gerrymanders’ as a consequence. This ‘inefficient’ distribution profited the party at its low electoral points in 1983 and 1987; without those safe seats, most of them in the north and in urban areas, it would have suffered even more devastating defeats at the hands of the Conservatives than was the case (Johnston, Pattie and Allsopp 1988). However, when the parties are more evenly balanced in their share of the votes it acts to Labour’s disadvantage, because of its larger proportion of surplus votes in safe seats.

The interaction factors among the various components have been small at every election in net terms, relative to the total bias (Table 1) and have invariably favoured the Conservative party.¹²

Throughout most of the 50-year period, therefore, Labour’s chances of winning a majority at general elections were substantially constrained by

the efficiency component, which led to the widespread belief that biases inherent to the electoral system operated to the Conservative party's advantage (the winning party's majority at each election is shown in Table 1.) This was certainly the case until the 1970s, as Figure 3 shows; from then on the biases were more neutral in their impact, because they cancelled each other out, until 1992 and especially 1997. At the first five elections in the sequence, the efficiency component averaged just over half of the total bias advantage accruing to the Conservatives; it ensured that they won the 1951 election, when Labour gained a larger share of the votes but fewer seats than the Conservatives; it sustained the substantial Tory majorities of 1955 and 1959; and it was almost sufficient to deliver victory for the party again in 1964 when Labour's majority over the Conservatives was just four seats and it was in a substantial minority in terms of seats overall (see Table 1).

In 1966, when Labour had a majority of 96 seats, the pro-Conservative efficiency bias partly countered Labour's growing gains from the constituency size variation and abstentions components in an ageing set of constituencies. At the following election the total bias was slightly pro-Labour, but the large efficiency component was crucial to the Conservative victory by 30 seats; especially so as the constituency size variation component was at an all-time pro-Labour high. The constituencies used in 1970 were created in 1954 using 1953 electoral data.¹³ They should have been replaced in 1969, but this was delayed by the incumbent Labour Government, which feared that it would lose seats if the forthcoming election were fought on the new constituencies;¹⁴ it did this by placing the Boundary Commissions' recommendations before Parliament, as it was bound to do, and then having its back-benchers vote them down (see Rossiter, Johnston and Pattie 1999). In February 1974, the total bias and its efficiency component both favoured Labour for the first time: the Conservatives regained a slight total bias in that year's second election, thanks to another substantial efficiency component. The latter disappeared in 1979, however, when the total bias strongly favoured Labour, because of its substantial advantage from the constituency-size variations component, in constituencies which were defined using 1965 electoral data, collected in late 1964, while the Conservatives retained only a minuscule advantage from the efficiency component.

The 1983 and 1987 general elections saw the Conservatives regain a substantial efficiency bias, without which the total bias would not have been in their favour. This came about, as noted earlier, because, although Labour's vote collapsed nationally (from 37 per cent in 1979 to 28 per cent

in 1983), this was spatially very uneven, leading to an exaggeration of what by then was widely known as the north–south divide in Great Britain’s electoral geography (Johnston, Pattie and Allsopp 1988). Labour’s vote distribution was consequently much less efficient than it had been at several of the preceding contests. Because of its low vote this ‘inefficiency’ did not harm the party’s electoral prospects, however, but rather ensured that its Parliamentary representation remained relatively high and its seats: votes ratio was well above 1.0. So in 1983 it won 28 per cent of the votes and 209 seats, whereas the Liberal-Social Democratic Alliance won 25 per cent of the votes but only 23 seats; with 30 per cent of the votes or less, it seems, an inefficient vote distribution can reduce the potential impact of a landslide against a party, which may account for the bias against the Conservatives in 1997 (see Taagepera and Shugart 1989).¹⁵

Labour’s 1987 recovery was spatially uneven and failed to erode the Conservative advantage stemming from the efficiency component, which again ensured a slight total bias in the Tories’ favour. In 1992, however, the Conservative efficiency advantage was very substantially cut, as Labour challenged hard in the marginal seats it needed to win for victory, rather than focus its efforts on its safe seats (see Denver and Hands 1997). Labour’s growing advantage from the constituency-size variation and abstentions components in the ageing constituencies (produced using 1976 data) further eroded the Tories’ bonus from the various biases, and the increased number of minor-party victories meant that the Conservatives’ substantial gains from the minor-party votes component were much reduced compared to previous elections: as the Liberal Democrats won seats as well as votes, two of the bias components moved against the Tories. Thus, by 1992, there was a substantial total bias in Labour’s favour; this was more than doubled in 1997 when the drop in the constituency-size variation component following the introduction of new constituencies (based on 1991 electoral data) was more than compensated for by a 48-seat advantage for Labour in the efficiency component.

The changing direction and magnitude of the efficiency bias component thus appears to be a key feature of the 1997 result, an issue to which we return below.

The geography of bias

At several points in the preceding discussion we have suggested that the bias advantages and disadvantages displayed in Figures 4–6 reflect geographical variations in support for the political parties and changes in those

Table 2: Regional biases 1950–97

	SE	E	SW	GL	WM	EM	YH	NW	NE	S	W	NI
1950	-49	-27	-25	-6	10	11	16	-9	23	-2	17	-10
1951	-49	-31	-25	0	10	5	14	-9	17	-2	21	-10
1955	-47	-23	-25	-4	12	9	16	-4	17	4	21	-10
1959	-47	-29	-28	-8	8	7	12	-4	19	9	22	-12
1964	-51	-29	-29	1	-6	5	18	17	23	17	22	-12
1966	-51	-27	-25	0	2	5	22	19	23	18	22	-11
1970	-51	-29	-27	14	-2	3	23	13	23	23	20	-8
1974(February)	-59	-20	-29	10	10	0	22	26	23	19	16	
1974(October)	-61	-24	-32	8	10	-1	18	21	22	21	15	
1979	-55	-22	-33	8	6	-3	22	28	26	36	13	
1983	-70	-31	-35	4	5	-4	19	27	24	39	17	
1987	-72	-36	-36	-8	3	-10	24	31	27	49	23	
1992	-64	-35	-23	-1	2	0	20	37	27	46	29	
1997	-63	-28	-25	12	10	2	24	46	27	48	29	

Notes: SE—Southeast; E—Eastern; SW—Southwest; GL—Greater London; WM—West Midlands; EM—East Midlands; YH—Yorkshire and Humberside; NW—Northwest; NE—Northeast; S—Scotland; W—Wales; NI—Northern Ireland.

The elections are arranged in blocks to represent the periods between constituency redistributions. Elections shown in italics were won by the Labour party.

Assuming that the Conservative and Labour parties had an equal share of their joint percentage of the votes cast. A positive bias is pro-Labour; a negative bias is pro-Conservative.

variations over the 50-year period. Since 1974, this has increasingly been represented as having two elements (Curtice and Steed 1982): an inter-regional division in support for the parties (the ‘north–south divide’) and an intra-regional division between town and countryside (the ‘urban–rural divide’). To explore these further, we have calculated the total bias for both divides over the period 1950–97.

For the inter-regional divide, we employ the standard regions used for government statistical and administrative purposes, excluding Northern Ireland. The biases suggest a clear split of Great Britain into three regional groups (Table 2): one where the Conservatives have always been substantial beneficiaries; one where Labour has been; and a third where the biases have generally been smaller and more variable.

The first group comprises three of the regions that make up southern England—the Southeast, the Eastern and the Southwest region. On average, these have had pro-Conservative total biases of 56, 58 and 28 seats

respectively over the fourteen elections, a total of 104. That pro-Tory advantage was constant over most of the period, though it was substantially above average in 1983 and 1987 when the Conservatives under Margaret Thatcher won virtually every seat there.

The second group comprises five regions where Labour has been the substantial beneficiary, although this only began in 1964 in two of them (the Northwest and Scotland) where the Conservative vote was relatively strong until the 1970s. However, whereas the size of the Conservative advantage in the first group was fairly consistent over the full period except for 1983 and 1987, Labour's advantage in these 'northern' regions has increased significantly, reaching 126 in 1983 and then 153, 159 and 174 in the three succeeding elections.

Together, the figures for these two groups provide very substantial evidence of spatial polarisation in the operation of Great Britain's electoral system, which became exaggerated over time because of changes in the geographies of their vote winning. The Conservatives were the party of the south and Labour of the north, in terms of seat winning much more than vote winning, and between those two very partisan core areas were three regions (Greater London, the East Midlands and West Midlands) where the biases were smaller and more variable. These formed the 'middle ground': Labour had more positive biases there at the elections which it won than at those which it lost.

Regarding the urban-rural divide, the Boundary Commissions are required to classify each constituency as either 'borough' or 'county', because electoral law allows candidates to spend more on campaigns in the latter (more rural) areas than in the former, on the grounds that urban populations are more accessible and easier to contact than their rural counterparts. Figure 7 uses that classification, and shows clear polarisation by seat type, with Labour always benefiting from the biases in the urban areas and the Conservatives benefiting in the rural districts. Labour's urban advantage increased substantially after 1959, more than doubling by 1966, as the Boundary Commissions' rural weighting disappeared, whereas the Conservatives' advantage in the 'county constituencies' was consistently around 100 right through to 1992. The last two elections (1992 and 1997) saw Labour's advantage in the urban areas increase substantially from its plateau in the 1970s and 1980s at around 100 seats, whereas the Conservative advantage in the rural areas fell very substantially (from 111 in 1983, to 66 in 1997).

Figure 8 and Table 3 bring the north-south and urban-rural divides together, with the regions combined into three (South, Midlands and

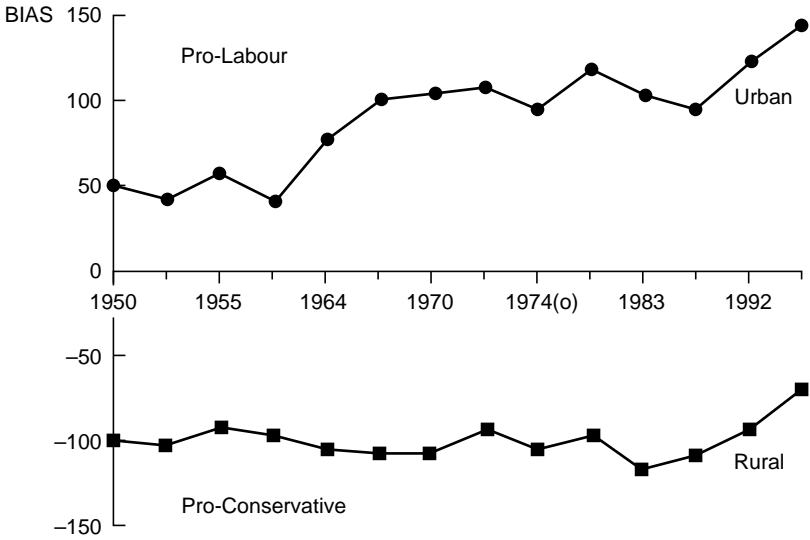


Figure 7. The urban-rural divide in total bias, 1950-97, if parties had equal vote share

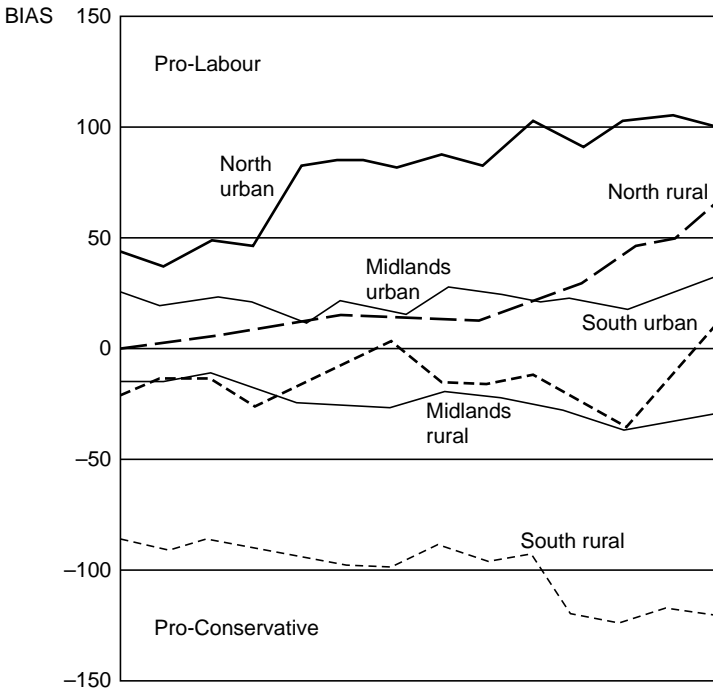


Figure 8. The north-south and urban-rural divides in total bias (if parties had equal vote share)

Table 3: 'North-south' and 'urban-rural' total biases, 1950-97

	UK		'SOUTH'		'MIDLANDS'		'NORTH'	
	B	C	B	C	B	C	B	C
1950	49	-99	-22	-85	27	-15	44	1
1951	43	-102	-14	-91	20	-15	37	4
1955	57	-91	-14	-85	22	-11	49	5
1959	43	-94	-24	-88	20	-17	47	11
1964	79	-103	-16	-92	12	-25	83	14
1966	102	-105	-6	-97	21	-25	87	17
1970	107	-105	4	-97	19	-26	84	18
1974(<i>February</i>)	111	-92	-10	-88	31	-20	90	16
1974(<i>October</i>)	98	-101	-14	-95	29	-20	83	14
1979	120	-94	-10	-92	25	-22	105	20
1983	106	-111	-16	-116	26	-25	96	30
1987	98	-104	-32	-120	24	-31	106	47
1992	126	-88	-10	-113	28	-26	108	51
1997	148	-66	12	-116	33	-21	103	71

Notes: UK—United Kingdom; 'South'—Southeast, East, Southwest and Greater London; 'Midlands'—West Midlands, East Midlands; 'North'—Yorkshire and Humberside, Northwest, Northeast, Scotland and Wales. B—borough (urban) constituencies; C—county (rural) constituencies.

The elections are arranged in blocks to represent the periods between constituency redistributions. Elections shown in italics were won by the Labour party.

Assuming that the Conservative and Labour parties had an equal share of their joint percentage of the votes cast. A positive bias is pro-Labour; a negative bias is pro-Conservative.

North) and each subdivided into its urban and rural groups of seats. The two polar types are 'North Urban' and 'South Rural': the former has provided Labour with a bias advantage of around 100 seats at elections since 1979 whereas the latter provided an advantage of more than 100 seats for the Conservatives. Labour's advantage in the 'North Urban' seats more than doubled over the full period, however, whereas the Conservatives' benefits from the 'South Rural' set were consistently large throughout, though they increased by over 40 per cent between the smallest (1950 and 1955) and largest (1987). The trends in the two Midlands groups were virtually parallel as well as consistent, with Labour's average advantage of 24 seats in the urban areas balanced by the Conservatives' average advantage of 21 in the rural areas.

The main changes, especially over recent elections, have been in two of the other types. The 'North Rural' constituencies have always produced pro-Labour biases, but these increased substantially, from only one seat in 1950 through 20 in 1979, to 51 and 71 at the last two contests. The Conservatives benefited in the 'South Urban' type until 1966, and then again from 1974 until 1992, with a maximum bias of 32 seats in 1987, but in 1997 Labour was the net beneficiary there, by 12 seats.

Overall, therefore, the changing pattern of bias in favour of the Labour party has come about because of its growing hegemony in the northern regions. In 1950, this was worth 45 seats (all but one of them in the 'boroughs'); in 1997 it was worth nearly four times that number, at 174, of which 40 per cent was obtained in the 'county' constituencies of the rural areas. Labour has strengthened its hold over the urban north and built a substantial advantage in the adjacent rural areas. Against this, the Conservatives have sustained their substantial advantage in the rural areas of both the South and the Midlands, but lost ground in the urban seats in both areas, especially the South in 1997.

Electoral system bias and Labour's 1997 victory

The previous discussion has identified significant changes in the pattern of bias in British election results since 1950, which has shifted from being strongly pro-Conservative in the early years to being very strongly pro-Labour by the end of the period, to an extent never attained by its opponent. That long-term secular trend can be accounted for by several factors:

1. The end of the 'pro-rural weighting' applied at the first two redistributions of constituencies, which had favoured the Conservatives;
2. the growing 'north-south divide' in support for the Conservative and Labour parties, which involved the collapse of the Tory vote in Scotland and Wales and Labour's growing erosion of Conservative strength in northern rural constituencies;
3. the growing number of seats won by 'minor parties,' notably the Liberal Democrats and their supporters, which eroded the Conservatives' advantage from the bias component associated with minor-party vote winning; and
4. a change in the geography of Labour's votes which reduced its proportion of surplus votes and thus the 'packed gerrymander' effect on its seat-winning ability.

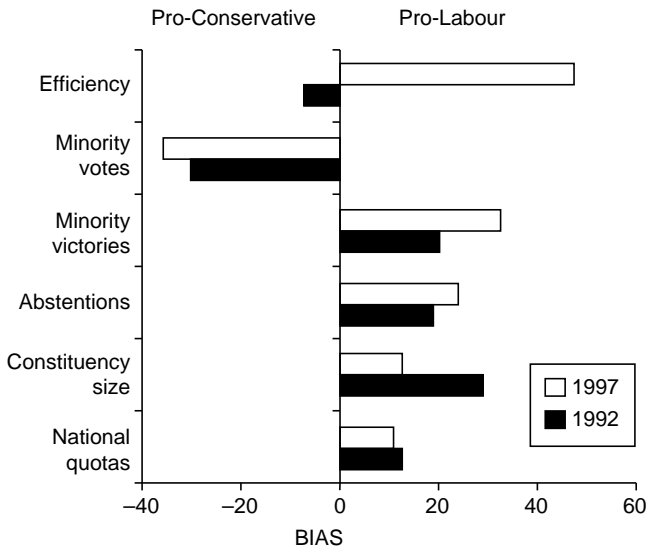


Figure 9. Changes in the sources of bias, 1992–97 (if parties had equal vote share)

By 1987, these four together were almost balanced and there was little overall bias between the Conservative and Labour parties,¹⁶ with the Tories’ advantages gained through the efficiency and minor party votes components countered by Labour’s benefits from the others (excluding Northern Ireland, which had no impact after 1970). But the last two elections, in 1992 and 1997, saw a further major change with Labour gaining very substantially from the efficiency component.

The importance of this shift is shown by Figures 2 and 9. The first shows the major changes in the seats:votes ratio in 1997, discussed above. Figure 9 shows that the changed outcomes for Conservative and Labour between 1992 and 1997 were very largely the result of one bias component. Labour’s greater advantage from abstentions at the latter date did not compensate for its losses on the constituency-size variation component following the Boundary Commissions’ redistributions of seats, and its gain from minority-party victories was needed to compensate for the Tories’ improved performance on the minor-party votes component. The shift in efficiency was crucial: Labour’s seats:votes ratio increased substantially, because its votes were more efficiently distributed.

How can we account for that last change? Was it, like Labour’s only previous benefit from the efficiency component in February 1974, a ‘one off’

or did it reflect a new, more efficient distribution of that party's votes, relative to the Conservatives? A large increase in the efficiency of a vote distribution can come about in a variety of ways, but two are likely to have been most significant.¹⁷

Targeted campaigning

As discussed above, a party can increase the efficiency of its vote distribution by reducing its proportion of wasted and surplus votes and increasing that of effective votes. Thus there is little point in a party campaigning hard for additional votes either in the seats that it already holds by substantial majorities, unless it expects a very large swing against it, or in those where it has little chance of winning: the focus should be on garnering additional votes where they will have most impact, in the marginal constituencies. In 1997, when all of the opinion polls indicated a major swing against the incumbents, for the Conservatives this meant campaigning hardest in the seats that they held by relatively small margins, whereas for Labour, and also the Liberal Democrats, the focus should have been on those seats where they had the best chance of winning what was previously held by their opponents.

British political parties have always run their most intensive constituency campaigns: (1) in the constituencies that they already held; and (2) in the marginal constituencies where they had the greatest chance of either losing a seat that they held or winning one formerly held by an opponent (Johnston 1987). Studies using the amount spent on the local campaign as an index of its intensity have consistently shown that the more intensive a party's campaign, the better the outcome for it, especially where the party does not already hold the seat (Pattie, Johnston, and Fieldhouse 1995; Johnston and Pattie 1996), and this occurred again in 1997 (Johnston et al. 1998).¹⁸ In addition, in 1997 Labour ran a centrally organised campaign, targeted for over a year before the election on what it identified as its 90 most winnable seats, identifying potential supporters by telephone polling and then canvassing them by mail before providing local workers with a rich database to be used in the final weeks of the campaign. The Liberal Democrats also ran a targeted, though less intensive, campaign, focused on a smaller number of seats.

Tactical voting and campaign intensity

One way in which both opposition parties in a three-party situation can increase the efficiency of their votes is by promoting, or at least condoning,

tactical voting: in Great Britain in 1997 this involved supporters of the third-placed party switching to the second-placed to try and ensure the defending candidate's defeat in Conservative-held seats. Tactical voting has been a feature of previous British general elections (Johnston and Pattie 1991; Fieldhouse, Pattie and Johnston 1996); it was pressed for in 1997 at the local level by the parties where it was to their local advantage, though more so by the Liberal Democrats than by Labour, as well as by other activists (such as a group known as GROTT—Get Rid Of The Tories). Did it succeed? Initial analyses of the results suggest so (Berrington and Hague 1997; McAllister 1997) and analyses of the differential inter-party vote flows which underpin tactical voting have shown that their volume was related to the amount spent in the constituencies by the two opposition parties: the more that either Labour or the Liberal Democrats spent in constituencies where they were second behind a Conservative candidate, the better their performance relative to that of the incumbent's other challenger (Johnston et al. 1997).

The election outcome

The geography of the election outcome provides very strong circumstantial evidence that these two strategies were effective, and indicates why Labour's vote distribution was so much more effective in 1997 than it had been previously. Across all constituencies, Labour's vote share increased on average by 9.6 percentage points. However, the first block in Table 4 shows that it was much less than this in both its 132 safe seats and the 259 where it was in third or fourth place before the election.¹⁹ Its share of the votes cast increased most in the marginal constituencies that it held and, even more, in those where it was in second place (notably those where it had most ground to make up over the incumbent). By avoiding 'piling up' too many more surplus votes in its safe seats and also by not winning many more wasted votes where they were unlikely to have any effect, Labour substantially increased the efficiency of its vote distribution. In addition, Labour was assisted by the increased proportion of abstentions in the seats which it held, generating the larger abstentions bias in its favour in 1997 compared to 1992 (Figure 9).

The same happened with the geography of Liberal Democrat support, as shown in the second block of Table 4. Its share of the vote fell overall, by 1.3 percentage points, but increased on average in the 18 seats that the party held, most by relatively small majorities. Its share also increased in the seats where it was lying in second place behind the Conservatives, and the

Table 4: Average constituency change in vote (percentage points) by party and in abstentions, 1992–97, by seat type

	Conservative	Labour	LibDem	Abstentions	Number
All Seats	-11.4	9.6	-1.3	5.8	639
<i>a. Situation for Labour</i>					
Seats held					
Safe	-8.9	7.1	-1.3	6.2	132
Close	-10.4	9.2	-1.2	6.4	68
Marginal	-12.7	11.0	-1.1	6.7	67
Seats where Labour was second					
Marginal	-12.3	12.3	-2.3	5.4	68
Close	-12.2	13.3	-3.5	5.1	45
Others (Labour third or fourth)					
	-12.2	7.3	-0.8	5.3	259
<i>b. Situation for Liberal Democrats</i>					
Seats held					
	-9.4	6.1	3.9	0.1	18
Seats held by Conservative, Liberal Democrats second					
Safe	-12.6	9.0	-0.4	5.4	109
Close	-12.2	6.1	2.9	5.0	31
Marginal	-9.9	3.4	4.6	3.1	17
Seats held by Conservative, Liberal Democrats not second					
	-12.6	13.0	-3.2	5.6	190

Notes: Seats are classified as: Marginal—margin between the first and second-placed parties in 1992, less than 10 percentage points; Close—margin between the first and second-placed parties in 1992, 10–19 percentage points; Safe—margin between the first and second-placed parties in 1992, 20 or more percentage points. The seats analysed exclude Tatton and West Bromwich West.

margin was less than 20 per cent, and where Labour's increase was much less than average, suggesting substantial tactical voting favouring the Liberal Democrat candidate. Where the Liberal Democrats were not in second place behind a Tory, however, their vote share fell by more than twice the national average (Liberal Democrats were lying in second place to a Labour candidate in very few seats).

Conclusions

As in all countries which use the first-past-the-post electoral system, election results in the United Kingdom have been very biased over the last 50 years, where bias is interpreted either as deviations from proportional

representation, or as outcomes which favour one party over others, and are reflected in differential seats:votes ratios. Conventional wisdom has it that the Conservatives are generally advantaged by such biases, whereas Labour and the Liberal Democrats are disadvantaged. Measurement of the bias in general election results since 1950 shows this to be an oversimplification, however: although the Conservatives were major beneficiaries for the first two decades, by the 1990s the biases favoured Labour, very substantially so in 1997. We have shown that this shift came about gradually through the 1970s and 1980s as the result of three factors, but was much exaggerated in 1997 because Labour's vote was much more efficiently distributed then. This greater efficiency was almost certainly not a 'one off' chance occurrence. It resulted from the combination of a long secular trend, whereby Labour gained ground in areas where it was formerly weak, such as the 'rural north', a 1997 campaign that was very carefully focused on the marginal constituencies and a substantial volume of tactical voting. The Liberal Democrats similarly achieved a much more efficient vote distribution in 1997, by the same means.

In producing such an efficient outcome, Labour has created a major problem for the Conservatives. Their strategy for the next general election will have to be just as targeted then as Labour's was in 1997: it will not be sufficient to win back at least 6.4 per cent of the votes from Labour across-the-board, but they must be won in a substantially larger proportion in the marginal and close seats where they can destroy Labour's efficiency gains. Such a targeted campaign, if the Conservatives are capable of mounting it (and Denver and Hands' (1997) data suggest that they may not be),²⁰ would undoubtedly be countered by similar Labour, and Liberal Democrat, defensive campaigns: having learned the benefits that come from spatial targeting, they are unlikely to become complacent and fail to sustain their position.

One possible threat to this lies on the horizon, however. In its 1997 General Election Manifesto, the Labour Party pledged to establish an Independent Commission on the Electoral System to consider alternative, more proportional, systems to that currently used. It was committed to put the Commission's recommendation to the electorate at a referendum, though not necessarily to support it in that referendum. The Commission was established in December 1997, chaired by Lord Jenkins of Hillhead, and reported in 1998 (Jenkins Commission 1998). It recommended a hybrid system—known as AV-Top Up—in which a majority of seats (80–85 per cent) in the House of Commons would be contested in single-member constituencies, using the Alternative Vote to ensure that each MP had majority

support among his/her constituents. The remainder would be allocated from party lists for each of approximately 65 'regions'; a second ballot would indicate regional support for each party, with the top-seats (no more than two per region) allocated so that the total representation from the 'region' (constituency plus regional MPs) was broadly proportional to the outcome of that ballot. This system would not produce a proportional outcome—each party's percentage of seats allocated would not be very similar to its percentage of the votes cast—but it would be more proportional than the current first-past-the-post system produces, while retaining the constituency link for the majority of MPs which may consider to be a salient, positive feature of the British electoral system.

If such a system is introduced, almost certainly not until after the next general election, due by June 2002, the nature of campaigning strategies will undoubtedly change, although in what ways is far from clear. In most regions, for example, it is likely that the majority party will win no 'top-up' seats: they should concentrate their campaigns on the constituencies, therefore, whereas minor parties would focus on the 'region' as a whole, as was the case in New Zealand during its first election using a similar system (see Boston et al. 1998). Given that each party is likely to be in a majority in some parts of the country and in a minority in others, this will call for even more sophisticated campaigning than currently employed. The parties will have opportunities to 'practice' for such situations, although not with the alternative vote, because a hybrid system, though using first-past-the-post in the constituencies, is to be employed in the elections to the Scottish Parliament and the Welsh Assembly in May 1999, and there is the possibility of PR systems being introduced for Scottish local government. But whether electoral reform will be introduced for the House of Commons is far from certain, and by March 1999 the government had given no clear indication of its position. After all, it has taken the Labour Party nearly 50 years to learn how to exploit the current system for its own gain: is it likely to throw away such a hard-won advantage?

Acknowledgements

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Notes

1. The data set starts in 1950 since that was the first general election to be fought after the current method of determining Parliamentary constituencies was introduced.
2. Note that the Liberal Democrat party and its predecessors did not contest every seat prior to 1983.
3. In 1983 the Liberals formed an electoral alliance with the Social Democratic party; these merged after the 1987 general election, and adopted the name 'Liberal Democrat' prior to the 1992 election.
4. As a result of the switch, some seats might be won by another party (for example, in a seat won by Labour, the switch of 6.3 percentage points of its votes to the Conservative candidate might result in a Liberal Democrat victory).
5. Although this is very likely to be the case, special cases can be envisioned where it would not. For example in two-party contests, party *A* may win 45 per cent of the votes in the smaller constituencies and 35 per cent in the larger ones. If it wins 45 per cent in every one of the smaller constituencies, however, it would win none of them, whereas if its votes in the larger constituencies were concentrated into a small number of them only, it may win several of them.
6. We use Brookes' term minor parties throughout this paper to cover the three British parties which invariably win small numbers of seats (the Liberal Democrats, the Scottish Nationalists, and Plaid Cymru) plus the others (including independents) which almost invariably win no seats at all.
7. The minor-party vote could be spread across several parties.
8. On inter-party variations in wasted, surplus and effective votes see Johnston, Pattie and Rossiter (1998).
9. The Scotland Bill placed before Parliament in December 1997 to establish the Scottish Parliament with tax-varying powers (approved at a referendum in September 1997) proposes to eliminate Scottish over-representation by removing the guaranteed minimum number of seats and requiring the Boundary Commission for Scotland to use the same electoral quota (i.e. the same average constituency size) as England when it conducts its next review of all constituencies (to be completed by 2007). There are no similar amendments to the Parliamentary Constituencies Act 1986 proposed in the Government of Wales Bill, introduced to establish the less powerful Welsh Assembly (also approved at a referendum in September 1997), so Welsh over-representation (and smaller average constituency size) will remain.
10. In 1997, the largest English constituency was 46.9 per cent above the quota (69,581 electors) and the smallest was 21.4 per cent below (the largest was the Isle of Wight with 102,687 electors, and the smallest was Birmingham, Yardley, with 53,502).
11. Which is why bad weather on polling day is often considered to be to the party's disadvantage. Over the period 1918–97 the correlation between turnout and Labour vote has been 0.58: the higher the turnout the better Labour's performance—although not in 1997 when Labour did well although the turnout was the lowest since 1945.
12. The reported interaction bias is net of all the various two-, three- and so on component interactions, which have not been separately identified here.
13. The 1953 electoral roll was compiled in late 1952, so the data were eighteen years out of date by the time of the 1970 general election.
14. Accurately, according to the data in the constituency size variations column of Table 1.

15. The efficiency of a party's vote distribution is a function not only of its scatter across all constituencies but also its mean and median. For parties with less than about 30 per cent of the votes cast, a relatively even distribution of those votes across all constituencies, will be inefficient, with large numbers of wasted votes, whereas above that threshold it becomes much more efficient.
16. There was, of course, a substantial bias against the Liberal party and its successors, which consistently obtained less than one-quarter of the seats it could have expected to be allocated under a proportional representation system.
17. A third almost certainly had a small effect. It is generally accepted that the Labour party performed much better at the public consultation stage of the Boundary Commissions' Fourth Periodic Reviews at influencing the detailed definition of constituency boundaries to its own electoral advantage, but calculations suggest that the overall impact of this was probably marginal (Rossiter, Johnston and Pattie 1999).
18. Other studies have shown that constituency spending is closely correlated with other indices of campaign intensity (Pattie, Whiteley, Johnston and Seyd 1994).
19. The parties' positions in each constituency prior to the election were estimated using a regression model, necessary because the Boundary Commissions' Fourth Periodic Review changed most constituencies' boundaries between the 1992 and 1997 election (Rossiter, Johnston and Pattie 1997).
20. Denver and Hands' book was based on a study of the 1992 general election, but their as-yet-unpublished data from a similar study of 1997 show that the Conservatives were relatively weak in all but their safe seats.

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David Rossiter, Ron Johnston,
and Helena Tunstall
School of Geographical Sciences
University of Bristol
Bristol BS8 1SS

Charles Pattie
Department of Geography
University of Sheffield
Sheffield S10 2TN

Iain MacAllister
Department of Politics
University of Lancaster
Lancaster LA1 4YT

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