

Simulating the Effects of the Alternative Vote in the 2010 UK General Election: Comment¹

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Abstract

Sanders, Clarke, Stewart and Whiteley (2011) simulate the 2010 election under the Alternative Vote. Their results show large gains for the Liberal Democrats. I alter their methodology to make the estimation of voters' first preferences under AV more accurate. With this change, the gains for the Liberal Democrats are considerably smaller, on the order of 10 seats or less.

On May 5th 2011, the UK will vote on a change to the electoral system from first past the post (FPTP) to the Alternative Vote (AV). Sanders, Clarke, Stewart and Whiteley (2011), henceforward SCSW, estimate the electoral results of a switch to AV on data from the 2010 election. This is a highly relevant topic, and SCSW's rigorous analysis is good news for those who want an informed debate. The paper's simulations show the Liberal Democrats gaining about 30 seats – still not enough to make their seat share proportional to their vote share, but enough to give them a wider choice of coalition partners than they had after the actual FPTP election.

In this comment I suggest a change in SCSW's methodology. Simulations with the changed method give less encouraging results for the Liberal Democrats: they gain only 10 seats, or even less.

Estimating AV election results is difficult, because the AV system uses information on voters' second, third and further preferences over candidates, and these are not recorded by the current FPTP electoral system. SCSW overcome this by using a novel data source – a simulated AV ballot paper included in the 2010 British Election Study. They put this data to work as follows. In each constituency, they start with the actual vote shares recorded in the 2010 election. If one party gained 50% of the vote or more,

this is immediately the winner of the AV election. Otherwise, the smallest party is eliminated and its votes are redistributed to the estimated “second preference” parties. These second preferences are calculated by tabulating first against second preferences, from the simulated AV vote in the BES data, for each of England, Scotland and Wales. If one party has 50% of the vote share, it is the winner. If not, the next smallest party is eliminated; its preferences are redistributed and so on until a winner is found.²

This process could be redescribed as follows. SCSW run a virtual AV election where, within each constituency:

The distribution of first preferences is given by the FPTP vote shares.

The distribution of second preferences, among each possible first preference, is estimated by tabulating first against second choices from the BES AV ballot, for each nation (England, Scotland and Wales).

The distribution of third preferences, among each possible first preference, is estimated by tabulating second against third choices from the BES AV ballot, for each nation.

Thus, while second and further preferences come from the BES data, the “first preferences” used within the simulated election do not: they are assumed to be the same as in the FPTP election.³ Call this the SCSW method.

A potential problem with this approach is that (as SCSW Table 1 shows) only about 75% of Liberal Democrat voters put the Lib Dems as their first choice in the AV election, compared to over 90% of Labour and Conservative voters. But the SCSW method does not take account of this fact, because it starts from FPTP vote shares.

An alternative approach would be to use the BES data to estimate not only second and further preferences, but also first preferences, within each constituency. That is, one could run an election where, within a constituency:

The distribution of AV first preferences, among supporters of each party in the FPTP election, is estimated from the BES data, by tabulating self-reported election votes against first choices in the AV ballot.

Second and further preferences are the same as in the SCSW method.

Here is an example. In the constituency of Hornchurch and Upminster, in 2010, 51% voted Conservative; 21% voted Labour; 14% voted Liberal Democrat. This would thus be counted as a Conservative win under AV by the SCSW method. With the alternative approach, we instead look at the BES data and find that 91% of English Conservative voters in the general election also put Conservatives first in the AV ballot; 4% put UKIP first; 3% put Lib Dem first, and so on. We multiply the 51% of voters who are Conservative by these proportions. Then we add in the 21% Labour voters, of whom 90% put Labour first, 5% put the Lib Dems first and so on. Continuing in this way gives a grand total of 48% first preferences for the Conservatives, 21% for Labour, 13% for the Lib Dems, and so forth. We can then simulate the AV election using this data. The full tabulation of FPTP votes against AV first preferences, for each nation, is shown in Table 1.

Simulations and Results

Before running this method, I first replicate the SCSW method for comparison. Results are shown in Table 2 (compare SCSW Tables 8-11). The replication is not perfect but is reasonably close.⁴ In particular, with results like these the Liberal Democrats would be able to form a majority government in coalition with Labour.

Next, I rerun the simulation using the alternative method. Results are shown in Table 3. While the seats for Wales and Scotland are not much changed, there is a sharp drop in the number of Liberal Democrat seats in England. As a result, Labour and the Lib Dems would no longer be capable of forming a majority coalition on their own.

England

	AV first choice (%)							N
Voted for	Lib Dem	UKIP	Greens	Labour	BNP	Respect	Conservative	
Lib Dem	75	2	5	13	0	0	5	2821
UKIP	3	81	1	3	4	1	8	513
Greens	10	2	82	3	1	1	2	125
Labour	5	1	2	90	0	0	1	2539
BNP	4	7	0	4	73	0	12	127
Conservative	3	4	1	1	1	0	91	3916

Scotland

	AV first choice (%)							N
Voted for	Lib Dem	UKIP	Greens	Labour	SNP	Socialist	Conservative	
Lib Dem	72	2	5	8	8	1	5	250
Conservative	4	7	0	0	3	0	86	178
SNP	2	2	3	2	87	1	4	261
Labour	3	0	1	89	4	0	2	387

Wales

	AV first choice (%)							N
Voted for	Lib Dem	UKIP	PC	Greens	Labour	BNP	Conservative	
Lib Dem	76	1	3	1	10	1	8	147
Conservative	3	3	2	0	0	0	92	148
PC	8	0	72	8	5	0	7	60
Labour	6	0	3	3	87	0	2	185

Cells show rounded row percentages. Smaller parties in Scotland and Wales have too few cases to calculate percentages.

Table 1: Self-reported 2010 election votes against first choices in the AV ballot.

	Seats				
	Lab	Con	Lib Dem	Green/SNP/PC	Total
England	179	283	66	1	529
Scotland	39	1	13	6	59
Wales	25	6	6	3	40
Great Britain	244	289	85	1/6/3	628

Table 2: replication of the original SCSW method.

	Seats				
	Lab	Con	Lib Dem	Green/SNP/PC	Total
England	191	288	50	0	529
Scotland	40	1	12	6	59
Wales	27	7	5	1	40
Great Britain	258	296	67	0/6/1	628

Table 3: Simulated results, alternative method

I next make a further change. So far the simulations have assumed that everybody who expresses a first preference will also express a second and subsequent preference, and have calculated the relevant proportions from those of the BES respondents who did express both first and subsequent preferences.⁵ In the BES data, however, many people express only a first preference, or only their top two. This could reflect genuine unwillingness to rank lower candidates. If so, then that should be taken account of in the calculations, because when a party is eliminated, those of its ballot papers which do not express a second preference are discarded. On the other hand, maybe BES respondents were simply short of time or misunderstood the ballot form – survey-specific factors, that would presumably not occur in a real election. If so, the original procedure might be more accurate. To test the sensitivity of results to this assumption, I rerun the simulations, discarding the proportion of ballots whose second and third preferences were unexpressed. Table 4 shows the results. With this change, Liberal Democrat seats are further reduced to 61, just four more than in the actual FPTP results.

	Seats				
	Lab	Con	Lib Dem	Green/SNP/PC	Total
England	193	290	46	0	529
Scotland	41	1	11	6	59
Wales	27	7	5	1	40
Great Britain	261	298	61	0/6/1	628

Table 4: Simulated results, alternative method, discarding unused lower preferences.

Lastly, it would be useful to have a sense of the uncertainty of the figures above (which, after all, are just estimates). There are many possible sources of uncertainty which we cannot control – for example, how parties' campaign strategies would have differed under AV, or whether AV would encourage a different set of people to vote. One source of uncertainty that *can* be analysed is the inaccuracy of the estimates of AV choices. To do this, I bootstrap a set of 1000 elections.⁶ Before each election, I sample English, Scottish and Welsh BES respondents, without replacement, with N equal to the original number of these respondents. These are then used to tabulate the AV first preference distribution against actual voting behaviour in the FPTP election, and to tabulate AV second (and third) preferences against first (and second) preferences. The AV election is then simulated as before, using these tabulations. 1000 repetitions give a set of 1000 results, from which confidence intervals can be calculated. These are shown in Table 5.

	Seats				
	Labour	Conservative	LibDem	PC	SNP
95% CI ⁷	251-265	291-302	60-71	1-3	6-6

Table 5: Bootstrap confidence intervals, Great Britain seats

Conclusion

SCSW simulate the 2010 election under the Alternative Vote. I repeat their simulations, making one change: first preference shares in each constituency are estimated from the BES AV data rather than directly from FPTP vote shares.

SCSW's results show a fairly substantial gain for the Liberal Democrats, though their seat share still remains far below their vote share. By contrast, my results suggest that electoral changes from AV may be marginal: compared to the FPTP result, about 10 seats are gained by the Liberal Democrats, and about 10 seats are lost by the Conservatives. Under a different assumption about second and third preferences, the changes are even smaller. These results may disappoint those expecting AV to bring

change in the British political landscape; on the other hand, they also do not support the argument that AV will lead to endless coalitions. It seems that, if AV has large effects, they will be due to “non-mechanical” factors such as changes in the way parties campaign, higher turnout among supporters of small parties, or radical shifts in party allegiance among the electorate. All of these are quite possible, and very hard to predict using the techniques of quantitative political science.

References

Sanders, D., H. D Clarke, M. C Stewart, and P. Whiteley. 2011. “Simulating the Effects of the Alternative Vote in the 2010 UK General Election.” *Parliamentary Affairs* 64 (1): 5.

- 1 Thanks to David Sanders for help and information. I am acutely aware that, in doing this work, I am standing on his and his co-authors' shoulders.
- 2 A fuller description of the method can be found in the original paper.
- 3 First preferences *are* estimated and used in SCSW, but only as a “bridge” from party vote shares to second preferences. For example, if some voters in an English constituency voted Lib Dem, and this party is eliminated, then the distribution of second preferences among these voters is estimated to be: 40% Labour, 27% Conservative, 12% UKIP, 21% Green, 1% BNP. This is because, in the BES data, 40% of English respondents whose first AV choice was Lib Dem recorded a second choice for Labour, 27% had a second preference for the Conservatives, and so on.
- 4 Discrepancies are probably down to two factors: first, I do not use weights; second, some unexplained anomalies in the BES data, which I may handle differently from SCSW. (This data is still only a beta release.)
- 5 It seems SCSW also make this assumption. In any case, simulations (not shown here) reveal that their results are not very sensitive to whether it is made.
- 6 In the bootstraps I use the original assumption that all voters express second and subsequent preferences.
- 7 Calculated as the interval from the 2.5th percentile of results to the 97.5th percentile.