Simulating the Effects of the Alternative Vote in the 2010 UK General Election[1]

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ABSTRACT

The Conservative/Liberal Democrat Coalition government has announced its intention to hold a referendum on the possible introduction of the Alternative Vote (AV) for future elections to the House of Commons. This paper uses survey data from the 2010 British Election Study to simulate what the effects on the seat distribution in the House of Commons would have been if AV had operated in May 2010. The results suggest an outcome for the three main parties of Conservatives 284, Labour 248 and Liberal Democrats 89. This outcome would have radically changed the arithmetic of post-election coalition building, with the Liberal Democrats being able to form a majority coalition with either Labour or the Conservatives.

THE Conservative/Liberal Democrat Coalition government that was formed after the 2010 UK general election is committed to holding a referendum on the possible introduction of the Alternative Vote (AV) for future elections to the House of Commons. The new method, if approved, would replace the long-standing first-past-the-post (FPTP) or single-member plurality system of balloting.[2] Holding a referendum on AV constitutes an important concession for the Conservative majority in the coalition and an equally important political opportunity for the Liberal Democrats. The Conservatives are generally regarded as having a vested interest in FPTP, which has consistently delivered them a greater share of Commons seats than they obtain in popular votes. For the Liberal Democrats, AV represents a move towards their longstanding goal of a more proportional electoral system.

In this paper, we use British Election Study (BES) data collected immediately after the May 2010 UK general election. Respondents comprising a large representative sample of the British electorate were asked how they voted in the election and, using a simulated ballot, how they would have voted in a comparable AV election. We use the survey responses to simulate what the effects on the seat distribution in the House of Commons would have been if AV had operated in May 2010. This simulation differs from earlier analyses such as Dunleavy

and Margetts' pioneering study of the 2005 UK general election[3] in
that we use individual-level data to derive estimates of the structure of
voters' second and third preferences before proceeding to aggregate-
level analysis.
   The simulation results indicate that the Conservatives would have
won 22 fewer seats than they actually obtained under FPTP and that
Labour would have won 10 fewer. The Liberal Democrats would have
been clear net gainers, increasing their representation from 57 seats to
89—still far below their share of the popular vote (23.0%), but a sub-
stantial improvement on their current position. Crucially, this AV
outcome would have dramatically changed the arithmetic of coalition
building immediately after the election, giving the Liberal Democrats a
possibility of partnering either with Labour or the Conservatives to
form a majority two-party coalition government.
   In the first section of the paper we outline principal variants of the
AV method of balloting. Next, we describe the method employed to
simulate the 'AV 2010' outcome. Then, we describe the simulation
results, including estimates of the constituencies that would have
changed hands had AV been operative in 2010. The conclusion reprises
principal findings and briefly discusses how voters might behave when
casting their ballots in an AV electoral system.

The AV

There is no single version of the AV ballot, although in practice there
are two main variants. Both versions start from the same assumption—
that voters will provide a rank ordering of candidates in a given consti-
tuency up to the point where they are indifferent between candidates.[4]
Thus, for example, if candidates A, B, C and D are standing for elec-
tion, voter X might rank them $D = 1$, $B = 2$, $A = 3$ and $C = 4$, while
voter Y might rank $B = 1$ and $A = 2$, making no judgement between C
and D because s/he is indifferent between them. Both versions of AV
then stipulate that if a given candidate is ranked first by more than
50% of the voters, then that candidate is elected. However, if no candi-
date receives more than 50% of the votes in this first round, the votes
of the bottom-placed candidate or candidates (i.e., the candidate(s)
with the fewest first preference votes) are redistributed according to the
second preferences of those voters who supported the bottom-placed
candidate(s). If there are only three candidates running, then the
second round redistribution is easy to effect. Where voters have indi-
cated a second preference, their votes are allocated to their second pre-
ference candidate—they are simply added to the first round votes for
the other two candidates. For example, suppose that there are 100
voters and that 40 of them rank A first, 35 rank B first and 25 rank C
first. A would win a FPTP election but s/he has not reached the 50%
threshold necessary to win under AV. Accordingly, the second prefer-
ences of those who first-ranked C would now be redistributed between

A and B. Suppose that among these 25 voters, 3 second-rank A, 20 second-rank B, and 2 are indifferent. The two 'indifferent' preferences are ignored and the others are redistributed to A and B. A receives an additional 3 votes giving A $40 + 3 = 43$ votes. B receives an additional 20 votes, yielding a total of $35 + 20 = 55$ votes. This produces more than 50% of the now $100 - 2 = 98$ votes, and B is elected.

As this example shows, with only three candidates AV is simple to understand and operate—and is not really distinguishable from the Supplementary Vote method, in which voters are allowed to express only two ranked preferences.[5] However, AV becomes rather more complicated when there are more than three candidates standing. Indeed, it is at this point that the two main variants of AV diverge.

In Variant One, if no candidate has achieved at least 50% of the vote in Round 1, then Round 2 begins by eliminating the candidate who secured the least votes in Round 1. That candidate's votes are then redistributed by allocating them to the second preferences of the voters who supported her/him in Round 1. Voters with no expressed second-preferences drop out of the calculation. If, as a result of the Round 2 allocations, one candidate now achieves the 50% threshold of valid votes, then s/he is elected. If no candidate achieves the 50% threshold in Round 2, then the Round 2 lowest scoring candidate is eliminated and her/his second preferences are allocated to the remaining candidates. This process continues until a candidate receives sufficient second preference votes to exceed the 50% threshold. If no candidate crosses this threshold on the basis of the allocation of second preferences, then the process continues using third preferences and, if necessary, lower ranked ones.

In Variant Two, if no candidate has achieved at least 50% of the vote in Round 1, then Round 2 begins by eliminating candidates who could not possibly achieve the 50% threshold even if they received all the second preference votes of candidates ranked lower than them. This means that prior to Round 2 candidates with very small vote shares are typically eliminated. For example, if there were seven candidates and the bottom four respectively secured 1, 3, 2 and 5% of the constituency vote, all four could be eliminated at the end of Round 1 and their supporters' second preferences allocated to the three remaining candidates. The process then continues, using this elimination decision rule until one candidate crosses the 50% threshold. Variant Two is clearly simpler to implement than Variant One. The two methods produce similar outcomes if the vote shares of the candidates eliminated in Round 1 are relatively small. However, differences can develop as the summed vote share of those eliminated in Round 1 increases.

The advantages and disadvantages of AV are fairly straightforward.[6] On the positive side, it allows all voters to express their sincere rank ordering of the candidates/parties on offer and reduces the need for voters to cast their ballots tactically.[7] It also ensures that every

candidate elected is supported at some level by at least half of a consti-
tuency's voters—a situation that often does not occur under FPTP.
Because of the important role played by second preferences, in national
elections AV tends to produce a slightly closer correspondence between
parties' popular vote shares and their shares of parliamentary seats
than would occur under FPTP.[8] AV does this while maintaining a clear
link between the elected candidate and her/his constituency electorate.

On the negative side, AV fails to recognise that, for some voters, the
subjective distance between any given pair of ranked candidates may
be relatively large whereas for others the distance between ranks may be
very small. In addition, AV's sheer complexity in constituencies where
many candidates are standing makes it difficult for voters to decide how
many of the candidates they should rank. AV also makes it more diffi-
cult for voters to understand the election outcome. It can delude them
into thinking that, in a long candidate list, account is taken of the fact
that they place their most detested candidate at the bottom of their rank-
ings. In fact, AV rarely needs to take account of more than second and
third preferences.[9] Finally, in practical terms, unlike other electoral
reforms AV fails to produce anything approaching genuine proportional
representation in national assembly elections.[10]

These various factors—and others—will presumably be weighed by
British voters when they are presented with the Coalition government's
referendum on electoral reform. Although the announced wording of
the referendum question[11] does not specify the precise form of AV that
would be introduced, in the analysis that follows we assume that the
system under consideration corresponds to what we have described as
AV Variant One. We consider this to be a purer form of AV, since it
allows a candidate who has almost 50% of the vote in the first round
to win in Round 2 on the basis of the second preferences solely of the
least popular candidate.[12] It is possible that a *different* candidate, who
would *not* win in these circumstances, *could* win if—as in Variant B—
s/he were to be allocated the second preference votes of *several* losing
candidates in Round 2.

A Survey-Based Method for Estimating the Consequences of AV

The BES has conducted internet-based surveys of political opinion in
Great Britain on a regular basis since 2005. Extensive checks on the
representativeness of these surveys have been conducted throughout
this period. We have shown elsewhere that in terms of the interconnec-
tions between voting-related variables, the BES internet data are stat-
istically indistinguishable from data gathered in probability surveys
using in-person interviews. Regarding marginal distributions on key
vote outcome variables, the BES internet surveys are as accurate as
probability methods.[13]

185   The 2010 BES conducted a three-wave national internet panel survey with nearly 17,000 (16,816) respondents. The survey was in the field immediately before, during and immediately after the official election campaign. In addition to being asked how they actually voted, respondents in the post-election wave were asked to complete an electronic

190   ballot form that mimicked an actual AV ballot. The ballot form for respondents living in England is depicted as Figure 1. Slightly different forms were used in Scotland and Wales to reflect the different party systems in those two countries.[14] In all three cases, respondents were invited to rank up to seven candidates, each of whom was associated

195   with a particular political party. In each country over three-quarters of all those surveyed completed the AV ballot form, reflecting the fact that not all respondents actually voted in the general election. As Table 1 shows, 77% of respondents in England expressed a first preference, with comparable figures of 75% in Scotland and 76% in Wales.

200   Most of those who expressed a first preference also indicated a second preference. As Table 2 indicates, second preferences were given by 72% in England, 70% in Scotland and 73% in Wales. Moving to the right-hand side of the table, it can be seen that 38% of those surveyed in England completed rankings for all seven candidates (to express a

205   seventh preference, the respondent must have expressed six prior preferences), with equivalent figures of 40% in Scotland and 43% in Wales.

    Table 2 reports the relationship between selecting a party as first preference on the AV ballot and actually voting for that party in the

210   general election. As shown, not all voters in any of the categories voted for their AV first preference. (For example, the top left cell of the table shows that 91% of English respondents who identified Labour as their first preference actually voted Labour.) This is to be expected in the sense that tactical voting for a party that is not a voter's first preference

215   is known to occur under FPTP.[15] The pattern illustrated in Table 2 is broadly similar across the three countries. Sincere voting—voting for one's first-preference party—tends to occur at higher rates for the larger parties in each country and at lower ones for smaller parties (which do not stand in every constituency). The overall level of sincere

220   voting averaged across all parties and across the three countries is 87%, implying that 13% of those who responded to the AV ballot voted tactically in the general election itself.[16]

    Tables 1 and 2 provide important descriptive information about the AV ballots administered in the 2010 BES. However, the crucial ques-

225   tion is how the information that the ballots reveal can be used to estimate what the effects of AV would have been in the actual general election. Although the 2010 BES internet survey is very large (post-election n = 13,356) by the standards of previous British national election studies, there are insufficient respondents in each constituency to

230   make direct projections about the operation of AV in each

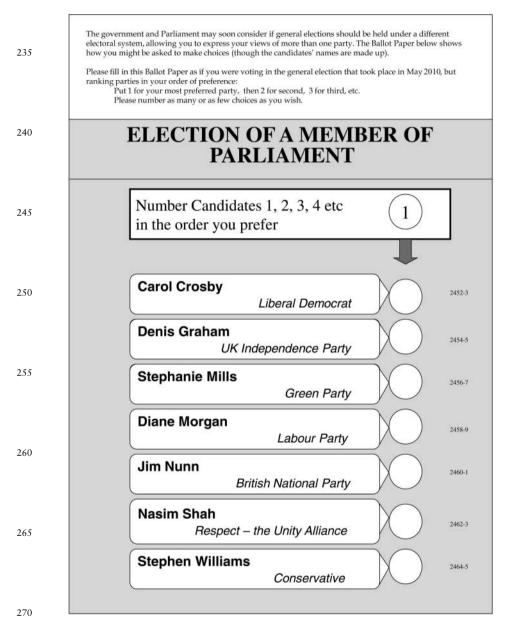**Figure 1. AV ballot paper for England.**

The government and Parliament may soon consider if general elections should be held under a different electoral system, allowing you to express your views of more than one party. The Ballot Paper below shows how you might be asked to make choices (though the candidates' names are made up).

Please fill in this Ballot Paper as if you were voting in the general election that took place in May 2010, but ranking parties in your order of preference:

Put 1 for your most preferred party, then 2 for second, 3 for third, etc.
Please number as many or as few choices as you wish.

ELECTION OF A MEMBER OF PARLIAMENT

Number Candidates 1, 2, 3, 4 etc in the order you prefer   (1)

Carol Crosby
Liberal Democrat   2452-3

Denis Graham
UK Independence Party   2454-5

Stephanie Mills
Green Party   2456-7

Diane Morgan
Labour Party   2458-9

Jim Nunn
British National Party   2460-1

Nasim Shah
Respect – the Unity Alliance   2462-3

Stephen Williams
Conservative   2464-5

constituency. Thus, an alternative procedure is required. The method we adopt proceeds in two stages. The first stage involves examining the distributions of second (and, where necessary, third) preferences across various parties in different types of constituency. This enables us to calculate distribution ratios for second (and third) preferences based

1. **Percentages of preferences expressed in response to the AV ballot question, by Country**

Per cent of respondents indicating

	First preference	Second preference	Third preference	Fourth preference	Fifth preference	Sixth preference	Seventh preference
England	77	72	65	56	42	40	38
Scotland	75	70	61	49	43	41	40
Wales	76	73	67	56	47	45	43

Unweighted n of respondents: England, 11461; Scotland, 1241; Wales, 654.
Source: BES 2010 Post-Election Internet Survey.

2. **Percentage of voters whose reported vote was the same as their first-preference party as indicated on the AV ballot**

	England	Scotland	Wales
Labour	91	90	88
Conservative	91	86	88
Liberal Democrat	76	73	74
Green	81	69	a
UKIP	81	58	78
BNP/SNP/Plaid Cymru	73 (BNP)	87 (SNP)	71 (Plaid Cymru)
Unweighted number of voters	11,053	831	579

Source: BES 2010 Post-Election Internet Survey. [a]Indicates number of cases too small to estimate the relevant percentage.

purely on individual-level data. In the second stage, we apply these distribution ratios to aggregate constituency-level data in order to make estimates of the impact of redistributed second (and third) preferences on the outcome of the election at the constituency level.

STAGE 1: ESTIMATING SECOND (AND THIRD) PREFERENCE DISTRIBUTION RATIOS. As observed above, the party systems in England, Scotland and Wales differ significantly. The nationalist parties, SNP and Plaid Cymru, are significant players in Scotland and Wales, respectively, whereas they are wholly absent in England. This means that second preference distributions must be differentiated initially at least by country. Second preference distribution ratios are calculated simply by grouping individuals according to their first preferences and allocating their second preferences to all other (relevant) parties. Table 3 shows the national average distribution ratios for England, Scotland and Wales.[17] In a real AV election, there would be different ratios for each constituency, but as discussed above, there are insufficient cases per constituency to permit such detailed calculations. Each row of the table indicates how the second preferences of a particular set of voters

3. Distribution ratios for allocating first party preferences to second-preference parties, by country

First-preference party	Second-preference party						
	Lab	Con	LibDem	UKIP	Green	BNP	N
England							
Labour	—	7	66	9	16	3	2755
Conservative	7	—	54	29	6	4	3653
Liberal Democrat	40	27	—	12	21	1	2551
UKIP	8	49	14	—	12	17	700
Green	25	11	52	11	—	1	347
BNP	10	29	7	45	9	—	195
Scotland							
Labour	—	3	50	4	12	31	339
Conservative	10	—	43	22	4	22	176
Liberal Democrat	32	16	—	7	24	20	214
UKIP	8	54	8	—	12	16	261
Green	14	3	52	31	—	0	31
SNP	32	7	27	8	26	—	40
Wales							
Labour	—	5	43	4	9	38	172
Conservative	7	—	47	27	3	17	157
Liberal Democrat	48	15	—	7	11	18	146
UKIP	32	45	9	—	4	9	24
Green	17	0	58	0	—	25	12
Plaid Cymru	43	11	35	9	2	—	46

Cell entries (weighted) represent the percentage of first preferences that are allocated to the second-preference party. Each row sums to 100 (allowing for rounding error). Unweighted Ns (numbers of cases) reported.

are distributed across other parties. For example, the first row of Table 3 shows that among respondents in England who rank Labour as their first preference, 7% specify the Conservatives as their second preference and 66% select the Liberal Democrats. The Greens, UKIP and the BNP receive 16, 9 and 3, respectively.

There are interesting patterns in the various ratios displayed in Table 3. For example, the transfer ratios for Labour to Conservative and for Conservative to Labour are identical (both 7%). This is in marked contrast to the Liberal Democrat/Conservative ratios: the Conservative to Liberal Democrat figure (54%) is twice the size of that for Liberal Democrat to Conservative (27%). An important caveat about the ratios in Table 3 concerns the number of cases available for these calculations. For the ratios in England and for the major parties in Scotland and Wales, there are typically sufficient cases for the ratio estimates to be reasonably reliable. However, for minor parties, particularly in the latter two countries, the Ns (numbers of cases) are small and the ratios need to be interpreted with caution. Indeed, the Ns in these particular cases are so small that we exclude these parties from our calculations in the second stage of the analysis.

Table 3 provides a national-level simplification of the distribution ratios in British constituencies. Is the simplification misleading? For example, could there be significant variations in ratios across the English regions or in different types of constituency? Table 4 reveals how the ratios vary across the English regions for those parties where are sufficient numbers of respondents to permit estimation. (There are insufficient cases in either Scotland or Wales to allow estimation of possible regional variations.) Although there are minor variations in the different English regions, the patterns are strikingly similar across all of them. This is especially the case for the larger parties where, by definition, there are greater numbers of cases involved in the estimation. This leads us to conclude that distribution ratios do not differ significantly across the English regions. Thus, it is possible to use the global English ratios in the second stage of our analysis.

Table 5 documents variations in ratios across England by incumbent type. Again, there are too few cases in Scotland and Wales to permit this analysis to be extended to those countries. The principal implication of the numbers presented in Table 5 is similar to that derived from the data in Table 4. The ratios are so similar across the different types of constituency that there is little point in differentiating among them in the next stage of the analysis; rather the conclusion that the global English ratios should be used is reinforced.

Table 6 provides one further set of distribution ratios—that for the distributions of third preferences in England. As discussed below, there are a small number of English constituencies where it is necessary to allocate third preferences in order for the winning party to pass the 50% threshold required for an AV win. Again, we report ratios only for those allocations where there is a sufficient number of cases to permit meaningful estimation.

STAGE 2: APPLYING THE DISTRIBUTION RATIOS TO 2010 CONSTITUENCY-LEVEL RESULTS. In principle, it is a relatively easy task to apply second (and third) preference ratios to constituency results. All that is required is an iterative process in which: (1) the worst-performing party in a constituency is eliminated; (2) the votes of that party are distributed among the remaining parties according to the relevant national distribution ratio as shown in Table 3; (3) the next worst-performing party is dropped and its votes distributed according to the relevant distribution ratio; and (4) this process (perhaps involving the distribution of third preferences) is repeated until one party has passed the 50% threshold. In practice, this process encounters three difficulties: (a) the relevant contesting parties vary across England, Scotland and Wales; (b) in each country, not every party stands in every constituency; and (c) the order in which the parties drop out in the AV calculation varies from constituency to constituency.

4. **Distribution ratios for allocating first party preferences to second-preference parties in England, by region**

	Lab	Con	LibDem	UKIP	Green	BNP	N
Lab							
All England	—	7	66	9	17	3	2755
East Midlands	—	8	64	9	16	4	216
East England	—	5	64	11	17	2	274
London	—	7	59	6	25	2	414
North-East	—	5	68	11	10	4	183
North-West	—	8	65	8	15	4	482
South-East	—	6	70	6	16	1	334
South-West	—	8	70	7	13	2	242
West Midlands	—	6	64	10	17	2	250
Yorks/Humberside	—	5	66	10	15	02	347
Con							
All England	07	—	54	32	06	04	3653
East Midlands	06	—	53	33	05	04	307
East England	05	—	55	32	04	03	481
London	06	—	50	32	08	04	529
North-East	05	—	59	30	02	05	111
North-West	07	—	55	28	04	05	274
South-East	05	—	51	32	09	03	776
South-West	06	—	53	35	04	02	330
West Midlands	08	—	55	29	02	05	324
Yorks/Humberside	09	—	53	30	05	03	298
LibDem							
All England	39	29	—	10	21	1	2551
East Midlands	38	26	—	12	22	1	193
East England	39	31	—	09	21	0	287
London	44	24	—	07	25	1	377
North-East	53	27	—	09	11	1	123
North-West	41	25	—	12	22	0	274
South-East	32	35	—	10	22	1	467
South-West	33	32	—	11	24	0	330
West Midlands	37	26	—	10	23	3	239
Yorks/Humberside	43	29	—	07	20	1	254
UKIP							
All England	8	51	14	—	10	17	700
East Midlands	10	51	10	—	8	21	61
East England	3	52	16	—	10	18	92
London	11	58	14	—	14	04	74
North-East	14	54	8	—	8	16	37
North-West	13	40	18	—	15	14	72
South-East	7	61	13	—	8	12	133
South-West	5	53	15	—	12	16	109
West Midlands	10	45	8	—	11	26	62
Yorks/Humberside	11	30	21	—	8	30	63

Numbers for other parties too small to permit estimation of the distribution ratios. Cell entries (weighted) represent the percentage of first preferences that are allocated to the second-preference party. Each row sums to 100 (allowing for rounding error). Unweighted Ns reported.

5. Distribution ratios for allocating first party preferences to second-preference parties in England, by incumbent type

	Lab	Con	LibDem	UKIP	Green	BNP	N
Lab							
All England	—	7	66	9	17	3	2755
Conservative incumbent	—	8	69	8	14	2	853
Labour incumbent	—	6	63	9	18	3	1667
Liberal Democrat incumbent	—	6	69	4	18	1	225
Con							
All England	7	—	54	32	6	4	3653
Conservative incumbent	4	—	53	34	6	3	1805
Labour incumbent	8	—	54	30	5	4	1484
Liberal Democrat incumbent	6	—	54	31	6	4	358
LibDem							
All England	40	29	—	7	21	1	2551
Conservative incumbent	35	33	—	10	21	1	998
Labour incumbent	43	35	—	10	21	1	1198
Liberal Democrat incumbent	33	30	—	9	27	1	353
UKIP							
All England	8	49	14	—	12	17	700
Conservative incumbent	4	60	13	—	11	12	323
Labour incumbent	13	42	15	—	10	21	315
Liberal Democrat incumbent	6	50	16	—	8	19	62

Numbers for other parties too small to permit estimation of the distribution ratios. Cell entries (weighted) represent the percentage of first preferences that are allocated to the second-preference party. Each row sums to 100 (allowing for rounding error). Unweighted Ns reported.

6. Distribution ratios for allocating second party preferences to third-preference parties, England

	Third-preference party					
Second-preference party	**Lab**	**Con**	**LibDem**	**UKIP**	**Green**	**N**
Labour	—	18	23	19	39	2359
Conservative	17	—	28	32	22	2854
Liberal Democrat	27	20	—	13	40	2207
UKIP	12	26	43	—	19	490
Green	42	9	41	08	—	302

Cell entries (weighted) represent the percentage of second preferences that are allocated to the third-preference party. Each row sums to 100 (allowing for rounding error). Unweighted Ns reported.

These three difficulties can be addressed by identifying various types of party orderings that actually occur across the different constituencies. For example, one ordering might be: Labour, Conservative, Liberal Democrat, UKIP, Green. Another might be Conservative, Liberal Democrat, Labour, BNP. Yet another could be SNP, Liberal Democrat, Labour, Conservative. Analysis of the constituency data revealed that there were in fact over 150 different types of constituency

outcome—in terms of the rank orderings of votes received by the competing parties—across England, Scotland and Wales. The application of the distribution ratios accordingly had to be tailored to these different types. Two constituencies were excluded from the analysis: Buckingham (the Speaker's constituency, where none of the other major parties stood) and Thirsk and Malton (where the election was postponed because of the death of one of the candidates). The AV calculation process for the remaining 531 English, Scots and Welsh constituencies proceeded as follows:

- *Round 1*: Constituencies where the winning party received more than 50% of the votes immediately revealed the AV constituency winner since that winner is identical to the FPTP winner. All remaining constituencies proceeded to Round 2.

- *Round 2*: Where there were sufficient cases to estimate the relevant distribution ratios, the votes of losing minor parties were iteratively added (using the relevant second preference distribution ratios) to the votes of the major parties. In England, major parties were defined as Labour, Conservative and Liberal Democrat. In Scotland, the SNP was added to this list and, in Wales, Plaid Cymru. In Scotland and Wales, there were insufficient cases available to estimate the distribution ratios of minor parties. Accordingly the Round 2 calculations were restricted solely to English constituencies.[18] For English constituencies, where the leading party exceeded the 50% threshold, it was identified as the AV winner. All remaining constituencies proceeded to Round 3.

- *Round 3*: The votes of losing major parties were added (iteratively in Scotland and Wales where there were four major parties per constituency) to those of the two leading parties from Round 2, according to the relevant second preference distribution ratios. Where the leading party exceeded the 50% threshold, it was identified as the AV winner. Any remaining constituencies (which, in the event, did not include any in Scotland or Wales) proceeded to Round 4.

- *Round 4*: In England only, the votes of the third-placed major party and, where relevant, of UKIP[19] were allocated to the two leading parties according to the third preference distribution ratios shown in Table 6.[20] This produced an AV winner in all remaining constituencies except for the 'special case' of Brighton Pavilion.[21]

Results of the Simulations

Detailed results of the simulations, broken down by country and by round, are reported in Table 7. As shown, in England the

7. **Number of seats won using the simulated AV method, by country and round**

	Labour	Conservative	Liberal Democrat	Green	Total
England					
Round 1	59	135	10	0	204
Round 2	9	42	2	0	53
Round 3	83	75	44	0	202
Round 4	33	24	13	1	70
Total	184	276	69	1	530
Scotland					
Round 1	21	0	2	0	23
Round 3	17	1	12	6	36
Total	38	1	14	6	59
Wales					
Round 1	6	0	1	0	7
Round 3	19	6	5	3	33
Total	25	6	6	3	40

8. **Simulated AV ballot constituency result by actual FPTP result, England only**

	AV ballot winner				
Winner of seat in 2010	Conservative	Labour	LibDem	Green	Total
Conservative	276	8	12	0	296
Labour	1	176	14	0	191
Liberal Democrat	0	0	43	0	43
Green	0	0	0	1	1
Total	277	184	69	1	531

Buckingham (Speaker) and Thirsk and Malton (by-election) excluded from the calculations.

Conservatives clearly had most success in Round 1, but they were over-taken in subsequent rounds by Labour. In Scotland, Labour dominated Round 1 but was challenged rather more seriously by the Liberal Democrats and the SNP in Round 3. In Wales, Labour dominated both Round 1 and Round 3.[22]

Important implications of the AV simulations can be seen in Tables 8 through 11. These tables document the relationship between the actual seat allocations that resulted from FPTP and those that are implied by our AV simulations. Table 8 reports results for England. The table shows that, although AV would leave the Conservatives as overwhelmingly the strongest party in England (277 seats compared with 184 for Labour and 69 for the Liberal Democrats), they would nonetheless be some 19 seats worse off than under FPTP. Labour would lose 7 seats and the Liberal Democrats would gain 26—12 from the Conservatives and 14 from Labour. Note that Table 8 reports the Greens as retaining their single seat of Brighton Pavilion, in spite of the indecisive result indicated by our simulations. This reflects our judge-ment (rather than any hard evidence) that the pattern of second prefer-ences in the unusual circumstances Brighton Pavilion seat would have

9. Simulated AV ballot constituency result by actual FPTP result, Scotland only

	AV ballot winner				
Winner of seat in 2010	Conservative	Labour	LibDem	SNP	Total
Conservative	1	0	0	0	1
Labour	0	38	3	0	41
Liberal Democrat	0	0	11	0	11
SNP	0	0	0	6	6
Total	1	38	14	6	59

10. Simulated AV ballot constituency result by actual FPTP result, Wales only

	AV ballot winner				
Winner of seat in 2010	Conservative	Labour	LibDem	PC	Total
Conservative	6	1	1	0	8
Labour	0	24	2	0	26
Liberal Democrat	0	0	3	0	3
PC	0	0	0	3	3
Total	6	25	6	3	40

been sufficient to secure a Green AV victory, regardless of the second preference vote allocations to the Greens that are implied by our national distribution ratios. Tables 9 and 10 report the equivalent AV/ FPTP comparisons for Scotland and Wales, respectively. In both cases, the simulated effects of AV are relatively modest, with the Liberal Democrats securing an additional three seats in Scotland and a further three in Wales—almost all at the expense of Labour.

The summary position for the 630 seats in the three countries is shown in Table 11. The Conservatives remain the largest party but their seat total is reduced from 305 to 283. Labour performs a little better overall, but it still incurs a net loss of 10 seats, falling from 258 seats under FPTP to 248 under AV. The Liberal Democrats are the biggest gainers, winning an additional 32 seats, 19 of them from Labour. However, the key result concerns the differential possibilities for coalition building that AV would have delivered if it had been in operation in May 2010. Under FPTP, the only realistic possibility for assembling a majority coalition lay in an alliance between the Conservatives and the Liberal Democrats. Even a coalition of Labour, the Liberal Democrats, SNP and Plaid Cymru would have fallen short of the 326 seats necessary for a majority coalition to be formed.[23] This meant that a Conservative–Liberal Democrat coalition was the only plausible way to form a majority coalition government. The arithmetic implied by our AV simulations suggests a different possibility. With 89 seats, the Liberal Democrats would have had the option of combining with either the Conservatives (283 seats) or with Labour (248) in order to surpass the 326 threshold. British politics after the 2010 election

11. **Simulated AV ballot constituency result by actual FPTP result, Great Britain**

Winner of seat 2010	AV ballot winner						
	Con	**Lab**	**LibDem**	**Green**	**SNP**	**PC**	**Total**
Con	282	10	13	0	0	0	305
Lab	1	238	19	0	0	0	258
LibDem	0	0	57	0	0	0	57
Green	0	0	0	1	0	0	1
SNP	0	0	0	0	6	0	6
PC	0	0	0	0	0	3	3
Total	283	248	89	1	6	3	630

Gallagher Least Squares Disproportionality Index, based on 630 constituencies analysed here:actual election outcome: 15.03; AV ballot simulation: 11.82. Buckingham (Speaker) and Thirsk and Malton (by-election) excluded from the calculations.

might have been very different if the Liberal Democrats had been in a position either to wrest greater policy concessions from their chosen coalition partner or if they had decided to throw in their lot with Labour.

The seats that our simulations suggest would have changed hands under AV are listed in Table 12. Although the Conservatives would have gained Dudley North from Labour, this would have been more than offset by their 10 losses to Labour (including Brentford and Isleworth and Hove—both won with relatively comfortable majorities under FPTP) and their 13 losses to the Liberal Democrats (including Montgomeryshire and Bristol North-West—also won with comfortable FPTP majorities). Labour, too, would have been a net loser—dropping 19 seats to the Liberal Democrats, including the relatively safe seats of Islington South and Finsbury and Newcastle on Tyne North. These results suggest that there may be some very nervous Conservative and Labour MPs in the House of Commons if the AV referendum scheduled for 2011 produces a 'yes' result. All MPs are aware that any putative AV reform is likely to be accompanied by a reduction in the total number of Commons seats to 600. Even if they are unaffected by the resultant redistricting, the sitting members in the seats identified in Table 12 will be especially vulnerable if AV is introduced in a future general election.

Conclusion: The Simulated and Future Politics of AV

The AV ballot exercise presented above is a simulation, not a forecast. It attempts to specify, given knowledge of voters' second and third preferences in 2010, what the effects of AV would have been on the allocations of Commons seats in England, Scotland and Wales. The overall results are clear. The Liberal Democrats certainly would have increased their share of Commons seats under AV, but that share would have fallen far short of anything approaching pure proportional

12. **Constituencies that would have changed hands as a result of AV ballot**

Labour to Conservative, 1 seat: Dudley North

Labour to Liberal Democrat, 19 seats
    Aberdeen South
    Edinburgh North and Leith
    Edinburgh South
    Newport East
    Swansea West
    Ashfield
    Birmingham Hall Green
    Bristol South
    Chesterfield
    Durham City
    Hull North
    Islington South and Finsbury
    Lewisham West and Penge
    Newcastle upon Tyne North
    Oldham East and Saddleworth
    Oxford East
    Rochdale
    Sheffield Central
    Streatham

Conservative to Labour, 10 seats
    Aberconwy
    Cardiff North
    Brentford and Isleworth
    Broxtowe
    Hendon
    Hove
    Lancaster and Fleetwood
    Sherwood
    Stockton South
    Warrington South

Conservative to Liberal Democrat, 13 seats
    Montgomeryshire
    Bristol North West
    Camborne and Redruth
    Colne Valley
    Harrogate and Knaresborough
    Newton Abbot
    Oxford West and Abingdon
    Reading East
    St Albans
    Truro and Falmouth
    Watford
    Weston-Super-Mare
    York Outer

representation. For example, if the parties' Commons seat shares had been directly proportional to their UK-wide vote shares in May 2010, the Liberal Democrats would have received 149 seats, fully 60 more seats that they would have received according to our AV simulations.

Nonetheless, the simulations presented indicate that AV would have provided the Liberal Democrats with a wider choice of post-election coalition partners than it actually experienced under FPTP.

740 It also bears emphasis that the second-preference distribution ratios were provided by survey respondents who had not been exposed to media commentary or campaigns by political parties that might have sought to inform and even instruct voters about how to cast their second and third preferences. Preference formation and articulation might prove

745 very different when everyone knows in advance that AV is the actual ballot method. A further complicating factor is that the experience of a Conservative–Liberal Democrat coalition government may produce important changes in the second (and third) preference distribution ratios of those voters whose first preferences in 2010 were for the

750 Conservatives, the Liberal Democrats or even for Labour. Should the Conservative–Liberal Democrat coalition endure for the normal four- or five-year term enjoyed by a single-party majority government, it is possible that supporters of the two parties will be more likely to nominate their respective coalition partners as their second preferences than was

755 the case in 2010. This is certainly something that will require close monitoring if the anticipated electoral system reform referendum results in the introduction of an AV scheme for elections to the House of Commons.

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2   There is a very extensive literature on electoral systems and their political consequences. Useful recent
780 contributions include, *inter alia*, A. Blais, *To Keep or To Change First Past the Post*, Oxford University Press, 2008; Gary Cox, *Making Votes Count*, Cambridge University Press, 1997; D. Farrell, *Electoral Systems: A Comparative Introduction*, Palgravem, 2001; M. Gallagher and P. Mitchell (eds), *The Politics of Electoral Systems*, Oxford University Press, 2008; P. Norris,

Electoral Engineering: Voting Rules and Political Behavior, Cambridge University Press, 2004; J. Colomer, 'It's Parties That Choose Electoral Systems (or Duverger's Law Upside Down)', *Political Studies*, 53, 2005, 1–21; K. Benoit, 'Electoral Laws As Political Consequences: Explaining the Origins and Change of Electoral Institutions', *Annual Review of Political Science*, 10, 2007, 363–90. Technically, the UK's electoral system for the House of Commons should be referred to as Single Member Plurality (SMP). We prefer to use the term FPTP here as this is the common parlance in UK political discourse.

3   P. Dunleavy and H. Margetts, 'The Impact of UK Electoral Systems', *Parliamentary Affairs*, 58, 2005, 854–70.

4   In some AV systems, statements of indifference are not permitted. In Australia, for example, ranking of all candidates is compulsory. If this is not done, the ballot is invalid.

5   This said, the ballot papers for AV and SV elections can differ. The SV ballot form is sometimes presented as two columns in which voters mark a cross in each column, rather than being required to provide a numerical rank ordering.

6   See Cox, above note 2, and B. Grofman and S. Feld, 'If You Like the Alternative Vote (a.k.a. the instant runoff), Then You Ought To Know About the Coombs Rule', *Electoral Studies*, 23, 2004, 641–59.

7   This is not to say that tactical voting ceases to be a possibility under AV. For a discussion of the issues and calculations involved, see Cox, above note 2.

8   Although there is a tendency for AV to be associated wth greater proportionality than FPTP, that tendency is by no means invariant. For example, in US House elections and in Indian Congressional elections—both based on FPTP—disproportionality is significantly lower than in Australian parliamentary elections, where AV is employed. In all 21st century general elections, the Gallagher index of disproportionality for the US averages 2.74 and for India 6.18. The corresponding figure for Australia is 9.41. The equivalent UK figure, under FPTP, is 16.53. We are indebted to one of this article's referees for pointing this out to us. See http://www.tcd.ie/Political_Science/staff/michael_gallagher/ElSystems/index.php.

9   The centrality of first preferences is not so marked for the Coombs variant of AV. Using this AV method, the candidate with the *most bottom-rankings* is eliminated in the first round—rather than the candidate with the *least first preferences*. For details, see Grofman and Feld, above note 6.

10   See Gallagher and Mitchell, above note 2.

11   The wording is: 'Do you want the United Kingdom to adopt the "alternative vote" system instead of the current "first past the post" system for electing Members of Parliament to the House of Commons?'

12   Most political observers assume this variant is the one most likely to be introduced in the UK.

13   D. Sanders, H. Clarke, M. Stewart and P. Whiteley, 'Does Mode Matter for Modeling Political Choice? Evidence from the 2005 British Election Study', *Political Analysis*, 15, 2007, 257–85.

14   Northern Ireland traditionally has been excluded from BES surveys. The practice was continued in 2010.

15   See, e.g. H. Clarke, D. Sanders, M. Stewart and P. Whiteley, *Performance Politics and the British Voter*, Cambridge University Press, 2009.

16   This is slightly less than the 17% tactical voting figure generated by a question asked in the BES post-election survey about people's 'reasons for voting'. The 17% figure is composed of 8% who claimed directly that they voted tactically and a further 9% who declared that they did not vote for their preferred party 'because it stood no chance of winning in my constituency'. The discrepancy between the two figures for overall tactical voting may reflect the fact that people are not always particularly good at explaining their own behaviour.

17   The individual-level analyses weight the data by demographics, media consumption patterns and party identification to ensure that the sample is representative of the British electorate. The Ns reported are all unweighted. In fact alternative weighting schemes make very little difference to the calculated distribution ratios. The table immediately below provides an illustration of the general pattern.

Implications of different weights using example of Labour first preferences in England

	Lab	Con	LibDem	UKIP	Green	BNP	n
Lab							
No weight	—	07	66	09	17	03	2755
Weight by post_w8p	—	07	66	09	16	03	3062
Weight by post_w8n	—	07	67	09	15	03	3061

For definitions of weight variables, see http://bes2009--10.org.

18 An adjustment was made for the reduction in the number of valid votes, reflecting the fact that not all respondents who expressed a first preference also expressed a second preference. This adjustment was based on the percentage difference between these two figures as reported in Table 1: a 5% reduction in England and Scotland and a 3% reduction in Wales.

19 UKIP was included because there were sufficient cases to calculate the requisite third preference distribution ratios; for other minor parties, there were not enough cases to do this.

20 Specific adjustments were made for each of the small number of English constituencies where one of the three major parties was placed fourth or lower in terms of vote share. Note that because the aggregate data file used in the computations reported here did not record votes for Independents and for Respect, the vote shares for these groupings are excluded from the calculations. This means that the simulated results for a small number of constituencies, such as Birmingham Hall Green where these groupings performed relatively well, need to be treated with caution.

21 In Brighton, where the Green candidate was the FPTP winner, Labour had a small AV lead over the Greens at the end of Round 4—athough it fell short of the 50% AV winning threshold. Unfortunately, there were too few cases of fourth preferences for the Greens to enable the iteration process to proceed further. We nonetheless reflect on the Brighton case when discussing the results.

22 Viewed differently, Table 7 shows that in 234 constituencies (204 in England, 23 in Scotland, 7 in Wales) AV was unnecessary because there was an outright Round 1 winner. The second preferences of major party suporters are relevant only at Round 3. These preferences were critical in 271 constituencies (202 in England, 36 in Scotland and 33 in Wales). Of the 202 English seats where major party second prefences produced the AV result, 47 were seats where Labour was third, 22 were seats where the Conservatives were third and 13 where the Liberal Democrats were third. A further breakdown of these 202 seats reveals that: (a) of the 83 English seats where Labour won at Round 3, 10 were constituencies where the Conservatives were third; 73 were from where the LibDems were third; (b) of the 75 English seats the Conservative won at Round 3, 15 were constituencies where Labour was third; 60 were from where the Liberal Democrats were third; (c) of the 44 English seats the Liberal Democrats won at Round 3, 32 were in seats where Labour was third; 12 were constituencies where the Conservatives were third.

23 A coalition of Labour, Liberal Democrats and Plaid Cymru would have produced 324 seats; even with Green support (1 further seat), such a coalition would still have been one short of an overall Commons' majority.