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A New Approach for Modelling Strategic Voting in Multiparty Elections

R. MICHAEL ALVAREZ AND JONATHAN NAGLER*

Whether citizens vote strategically, using their votes to defeat their least-preferred candidate, or vote sincerely, voting for their first choice among the alternatives, is a question of longstanding interest. We offer two innovations in searching for the answer to this question. First, we begin with a more consistent model of sincere voting in multiparty democratic systems than has been presented in the literature to date. Secondly, we incorporate a new operationalization of the objective potential for strategic behaviour. We offer a test of strategic voting in the 1987 British general election based on the variance in strategic setting across constituencies in Britain. We allow voters to use available information about the relative standings of parties in their constituency in deciding whether or not to cast a strategic vote. We estimate a lower level of strategic voting than many other methods have estimated. We also demonstrate that the use of self-reported vote motivation causes errors in estimating the amount of strategic voting, and that this problem is exacerbated the further from the election the self-report is obtained.

Whether voters in democratic systems are ‘rational’ has long been under debate. One of the central points of contention has been whether the Riker and Ordeshook ‘calculus of voting’ is sound empirically.¹ There, the voter is assumed to calculate the costs and benefits of voting and to vote for the candidate

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¹ W. H. Riker and P. C. Ordeshook, ‘A Theory of the Calculus of Voting’, *American Political Science Review*, 62 (1968), 25–42. For additional and more recent discussion of empirical testing of the ‘calculus of voting’, see D. P. Green and I. Shapiro, *Pathologies of Rational Choice Theory* (New Haven, Conn.: Yale University Press, 1994); J. H. Aldrich, ‘Rational Choice and Turnout’, *American Journal of Political Science*, 37 (1993), 246–78; R. W. Jackman, ‘Rationality and Political Participation’, *American Journal of Political Science*, 37 (1993), 279–90.

producing the highest utility, if the utility of doing so outweighs the cost of voting.

When the 'calculus of voting' model was extended to multiparty elections by McKelvey and Ordeshook, though, the theoretical rationale for another form of rational behaviour became quite clear.² For the McKelvey and Ordeshook model demonstrated that, in a multiparty election, a voter might be willing to vote for her second most preferred party if the more preferred party is unlikely to win and if there is a close contest between the second and third ranked parties. This rational behaviour goes by many labels, called strategic, tactical or sophisticated voting behaviour (in this article we use the term strategic voting for this type of voting behaviour).

Subsequently, there have been a number of theoretical models of strategic voting behaviour in single-member district plurality systems as well as in many other types of electoral systems.³ But because of the obsession of much of the political behaviour literature on modelling two-party or two-candidate elections in the United States, strategic behaviour was largely ignored by most researchers until the late 1970s and early 1980s. Two political developments fuelled the rising interest in strategic voting research. One was the rise of multicandidate presidential primary contests in the United States following the post-1968 reforms in the nomination processes in both of the major political parties. In some of these primary struggles, there were at least half a dozen candidates in each party primary; the fact that there were many viable candidates opened the door for strategic behaviour by primary voters.⁴

The second development was the rise of third-party or third-candidate

² R. D. McKelvey and P. C. Ordeshook, 'A General Theory of the Calculus of Voting', in J. F. Herdon and J. L. Bernd, eds, *Mathematical Applications in Political Science VI* (Charlottesville: The University of Virginia Press, 1972), pp. 32–78.

³ For single-member district plurality systems models, see G. W. Cox, 'Strategic Voting Equilibria Under the Single Non-Transferable Vote', *American Political Science Review*, 88 (1994), 608–21; G. W. Cox, *Making Votes Count* (New York: Cambridge University Press, 1997); R. Myerson and R. Weber, 'A Theory of Voting Equilibria', *American Political Science Review*, 87 (1993), 856–69; T. Palfrey, 'Spatial Equilibrium with Entry', *Review of Economic Studies*, 51 (1984), 139–56. For other models in other types of electoral systems, see G. W. Cox, 'Strategic Electoral Choice in Multi-Member Districts: Approval Voting in Practice?', *American Journal of Political Science*, 28 (1984), 722–38; M. Dummett, *Voting Procedures* (Oxford: Clarendon Press, 1984); W. E. Gutowski and J. P. Georges, 'Optimal Sophisticated Voting Strategies in Single Ballot Elections Involving Three Candidates', *Public Choice*, 77 (1993), 225–47; D. T. Hoffman, 'A Model for Strategic Voting', *SIAM Journal of Applied Mathematics*, 42 (1982), 751–61; W. G. Ludwin, 'Strategic Voting and the Borda Method', *Public Choice*, 33 (1978), 85–90.

⁴ P. R. Abramson, J. H. Aldrich, P. Paolino and D. Rohde, 'Sophisticated Voting in the 1988 Presidential Primaries', *American Political Science Review*, 86 (1992), 55–69; L. M. Bartels, 'Expectations and Preferences in Presidential Nominating Campaigns', *American Political Science Review*, 79 (1988), 804–15. The recent adoption by California of the blanket primary will no doubt spur additional interest in strategic behaviour by primary voters: see E. R. Gerber and R. B. Morton, 'Primary Election Systems and Representation', *Journal of Law, Economics, and Organization* (1998); and R. M. Alvarez and J. Nagler, 'Analysis of Crossover and Strategic Voting' (California Institute of Technology, Social Science Working Paper 1019, 1997).

challengers in the United States and in the United Kingdom.⁵ In the United Kingdom, importantly, the sustained revival of the Liberal party since 1970, the rise of nationalist parties in Wales and Scotland, and the new Social Democratic Party, posed significant challenges to the established two-party system. The rising importance of these new or resurgent parties in British politics actually seemed to work to the advantage of the Conservatives in the early 1980s as Conservative opposition was split among several parties; this also increased the potential for strategic voting due to the presence of these viable third parties. This led to explicit attempts by political leaders, by the popular press, and by political pundits to persuade voters to cast strategic votes in order to defeat the Conservative party in the 1987 general election.⁶ Thus, the 1987 British general election has become an important case study for scholars interested in the problem of strategic voting in multiparty elections.

TABLE 1 *Published Estimates of Strategic Voting*

Study	Election	Estimate of strategic voting
Johnston and Pattie (1991)	1983 UK	5.1%
Lanoue and Bowler (1992)	1983 UK	5.8%
Blais and Nadeau (1996)	1988 Canada	6.0%
Evans and Heath (1993)	1987 UK	6.3%
Heath <i>et al.</i> (1991)	1987 UK	6.5%
Lanoue and Bowler (1992)	1987 UK	6.6%
Johnston and Pattie (1991)	1987 UK	7.7%
Heath and Evans (1994)	1992 UK	9.0%
Galbraith and Rae (1989)	1987 UK	10–12%
Abramson <i>et al.</i> (1992)	1988 US S.T. Dem.	13%
Abramson <i>et al.</i> (1992)	1988 US S.T. Rep.	12.7–13.9%
Cain (1978)	1970 UK	14.6%
Niemi <i>et al.</i> (1993)	1987 UK	17.0%

In these two types of political settings – multiparty elections in Britain and presidential primaries in the United States – many scholars have tried to determine the extent of strategic behaviour by voters. As we report in Table 1, there is a great deal of variation in the estimates of strategic behaviour reported in the literature, ranging from a low of 5.1 per cent reported by Johnston and

⁵ B. E. Cain, 'Strategic Voting in Britain', *American Journal of Political Science*, 22 (1978), 639–55; J. Galbraith and N. Rae, 'A Test of the Importance of Tactical Voting: Great Britain, 1987', *British Journal of Political Science*, 19 (1989), 126–36; A. Heath, J. Curtice, R. Jowell *et al.*, *Understanding Political Change: The British Voter 1964–1987* (Oxford: Pergamon Press, 1991); R. J. Johnston and C. J. Pattie, 'Tactical Voting in Great Britain in 1983 and 1987: An Alternative Approach', *British Journal of Political Science*, 21 (1991), 95–128; R. G. Niemi, G. Whitten and M. N. Franklin, 'Constituency Characteristics, Individual Characteristics and Tactical Voting in the 1987 British General Election', *British Journal of Political Science*, 22 (1992), 229–54.

⁶ Galbraith and Rae, 'A Test of the Importance of Tactical Voting'.

Pattie for the 1983 British elections to a high of 17 per cent reported by Niemi *et al.* for the 1987 British election. The estimates in the literature for the 1988 US presidential primary are in the vicinity of 14 per cent.

In this article we develop a new approach for modelling strategic voting: we incorporate the variance in the likelihood of strategic voting across constituencies in a model of voter choice. This builds upon recent empirical work on modelling voter choice in multiparty democratic systems.⁷ As we argue below, our approach avoids many of the problems bedevilling past empirical work on strategic voting. In the end, using our new approach we estimate that 7.2 per cent of the electorate cast strategic ballots in the 1987 British election; this estimate is less than half of some of the methodologically-troubled estimates which have been published in the literature. The structure of our article is simple. We begin by examining the previous attempts to measure strategic voting. Next, we outline our model of strategic voting and carefully distinguish between our approach and those in the existing literature. We then discuss our results and conclude with a brief discussion focusing on the relevance of our work.

STRATEGIC VOTING AND PAST STUDIES

While there now seem to be political conditions in both the United States and in the United Kingdom which give voters an incentive to behave strategically, the empirical literature has come up with very different estimates of the extent of strategic voting, even from researchers examining the same election in the same country. We believe that the reason for these divergent results lies in the different methodologies used in these studies to measure or to estimate the extent of strategic voting.

There have been three different approaches to measuring the extent of strategic voting used in the literature. The first is the *aggregated inference methodology*. Essentially this researcher uses aggregate election returns, in different ways, to discern the extent of strategic voting. Some researchers use aggregate electoral data to attempt a direct constituency-by-constituency estimate of strategic voting, while others look at shifts in vote shares between pairs of elections in different types of constituencies.⁸ Others have simply examined the support for minority parties in different political systems (plurality versus proportional representation systems) to infer the extent of strategic voting.

⁷ R. M. Alvarez and J. Nagler, 'Voter Choice in 1992: Economics, Issues, and Anger', *American Journal of Political Science*, 39 (1995), 714–44; R. M. Alvarez and J. Nagler, 'When Politics and Models Collide: Estimating Models of Multicandidate Elections', *American Journal of Political Science*, 42 (1998), 55–96.

⁸ An example of the former is Cain, 'Strategic Voting in Britain'; examples of the latter are D. Spafford, 'Electoral Systems and Voter's Behavior', *Comparative Politics*, 5 (1972), 129–34; J. Curtice and M. Steed, 'Appendix 2', in D. Butler and D. Kavanagh, eds, *The British General Election of 1987* (New York: St Martin's Press, 1988); Galbraith and Rae, 'A Test of the Importance of Tactical Voting'; Johnston and Pattie, 'Tactical Voting in Great Britain'.

These studies all suffer from an obvious and problematic flaw. They are all using aggregated electoral data to infer individual-level preferences and expectations about the probabilities of various parties winning elections. In broader terms, these researchers are testing individual-level political theories with macro-level electoral data – producing exactly the ‘ecological inference’ problem which has received so much attention in the writings of prominent political methodologists in recent years.⁹ It is commonly known that estimates about individual behaviour produced from aggregated data are often wildly incorrect.¹⁰ Thus, we must be very suspicious of estimates of an individual-level behaviour such as strategic voting produced from aggregate electoral data.¹¹

The second approach to measuring the extent of strategic voting is what we call the *self-reporting intentions methodology*. In this widely-used approach, researchers rely upon the reports of survey respondents about the motivations for their voting behaviour.¹² For example, in the 1987 British general election survey, respondents were asked to provide the main reason for supporting a particular party at the polls – one of the three response options often used to indicate strategic behaviour was: ‘I really preferred another party but it had no chance of winning in this constituency.’

These types of survey questions, in particular those in the 1987 British survey data, have been used quite widely in the literature on strategic voting. In fact, Niemi *et al.* use the survey question quoted above, and a subsequent open-ended question asking for the reasons a respondent cast the ballot they reported, to develop three different measures of strategic voting. Unfortunately, researchers using these survey questions do not appear to have seriously considered the quality of the survey responses obtained for questions asking for justifications of reported political behaviour. Yet there has been a serious debate in the American electoral behaviour literature recently about the quality of post-election questions probing the respondent’s vote; this work has found that there is a strong bias towards reporting a vote for winning candidates the further the interview is from the election.¹³

⁹ See, for example, C. Achen and P. Shively, *Cross-level Inference* (Chicago: University of Chicago Press, 1995); G. King, *A Solution to the Ecological Inference Problem* (Princeton, NJ: Princeton University Press, 1997).

¹⁰ King, *A Solution to the Ecological Inference Problem*.

¹¹ A promising technique for analysing aggregate multiparty electoral data which avoids ecological inference problems has recently been advanced in J. N. Katz and G. King, ‘A Statistical Model for Multiparty Data’ (California Institute of Technology, Social Science Working Paper 1005, 1998). While their work to date only allows for strategic entry by candidates, it is clear that their statistical model could be used to study strategic behaviour by voters using aggregated multiparty data.

¹² Heath *et al.*, *Understanding Political Change*; Niemi *et al.*, ‘Constituency Characteristics’; G. Evans and A. Heath, ‘A Tactical Error in the Analysis of Tactical Voting: A Response to Niemi, Whitten and Franklin’, *British Journal of Political Science*, 23 (1993), 131–7.

¹³ G. C. Wright, ‘Misreports of Vote Choice in the 1988 NES Senate Election Study’, *Legislative Studies Quarterly*, 15 (1990), 543–63; G. C. Wright, ‘Reported Versus Actual Vote – There Is a Difference and It Matters’, *Legislative Studies Quarterly*, 17 (1992), 131–42.

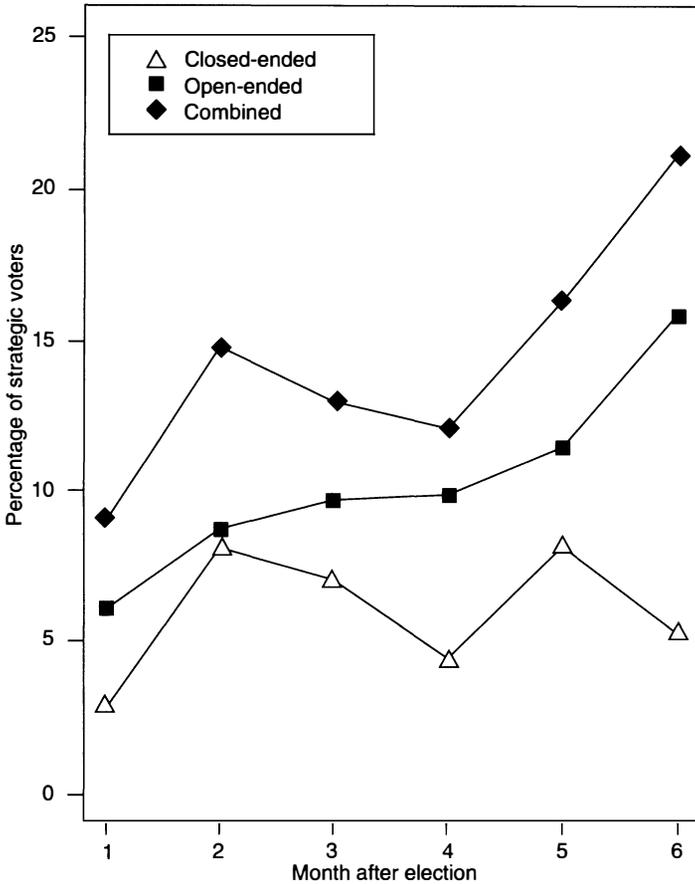


Fig. 1. Increases in reported strategic voting following the 1987 general election

In Figure 1 we present percentages of self-reported strategic voters in each month following the election in which the interview was conducted in 1987 for the three Neimi *et al.* measures of self-reported strategic voting. The bottom line in the figure gives the percentages of reported strategic voters in each of the post-election interview months as estimated by the closed-ended survey responses (indicated in the figure by triangles), the next line gives the same percentages, but estimated from the open-ended responses (indicated in the figure by squares), while the top line gives the combined percentages from both sets of survey responses (indicated in the figure by diamonds).

It is quite clear that there is a postelection bias *in favour of finding increased levels of strategic voting* the further the interview is conducted from election day. This effect is particularly strong in the open-ended method of measurement, since we see clear increases in each successive post-election month in the reported percentage of strategic voting. Of those respondents who were interviewed six months after the 1987 election, the open-ended approach of

survey-based measurement of strategic voting would assert that they were over twice as likely as respondents interviewed one month after the election to report strategic voting. This strong positive bias in the extent of reported strategic voting using the open-ended survey measurement approach also clearly biases the 'combined' measures (which use information from both the open- and closed-ended measures of strategic voting). We even find that there is a small positive bias in estimated strategic behaviour the further the interview was conducted from the election when we look at the closed-ended measure.¹⁴

The positive slopes of the three lines in Figure 1 demonstrate that relying on the self-reports of respondents to measure the incidence of strategic voting is problematic, and is likely to produce overstated estimates of the proportions of the electorate who are voting strategically. For many of these self-reports are not really reports of strategic voting, but misreporting of votes biased towards the winner – which is observationally equivalent to reporting a strategic vote. Thus we believe that these artefacts of the survey design (that the survey was conducted for such a long period after election day and that the quality of the answers to these questions about strategic behaviour deteriorate following the election) provide strong evidence against the use of these survey questions for the measurement of strategic behaviour.

The third approach to measuring the extent of strategic voting in the literature is the closest to the theoretical models of strategic behaviour in multiparty democracy. This approach tries to model strategic voting directly as the objective differences between the stated vote and the preference rankings of individuals or the subjective differences between the vote cast and a rank-ordering of parties or candidates.¹⁵ This approach involves obtaining measures of the expected vote shares of each party or candidate and the true rank-orderings of parties or candidates for each voter, so we call this the *direct measurement methodology*.

¹⁴ To verify our analysis of Figure 1 we estimated a probit model that specified the probability of a respondent's strategic misreporting as a function of the number of months since the election when the interview was conducted. We expected to see a positive coefficient on the number of months variable, which we found in two of the three cases. In the case of the closed-ended measure, the probit coefficient was -0.01 (standard error 0.18); for the open-ended measure, the coefficient on the months past the election variable was 0.24 (standard error 0.16); and for the combined measure, the coefficient on the months past the election variable was 0.16 (standard error 0.15). Thus, the open-ended trend we observe in Figure 1 is clearly statistically significant (the t -statistic 1.5), while the combined trend we observe there is not significant at traditional levels, but it does have the expected sign.

¹⁵ The former approach is used in J. H. Black, 'The Multicandidate Calculus of Voting: Applications to Canadian Federal Elections', *American Journal of Political Science*, 22 (1978), 609–38; and Cain, 'Strategic Voting in Britain'. The latter approach is used in Abramson *et al.*, 'Sophisticated Voting in the 1988 President Primaries'; L. M. Bartels, *Presidential Primaries and the Dynamics of Public Choice* (Princeton, NJ.: Princeton University Press, 1988); A. Blais and R. Nadeau, 'Measuring Strategic Voting: A Two-Step Procedure', *Electoral Studies*, 15 (1996), 39–52; H. E. Brady and R. Johnston, 'What's the Primary Message: Horse Race or Issue Journalism?', in G. R. Orren and N. W. Polsby, eds, *Media and Momentum* (Chatham: Chatham House, 1987), pp. 127–86.

We believe that this approach is the one most likely to produce unbiased estimates of the extent of strategic voting in multiparty democracies. However, we are not convinced that the literature has yet advanced an appropriate way to measure the true rank-orderings for parties or candidates for voters. The usual approach in the literature is to rely upon feeling thermometer rankings to produce rank-orderings of parties or candidates for voters. The implicit assumption here is that responses to feeling thermometer questions elicit sincere preferences, an assumption which seems dubious at best.¹⁶ We find that there is no reason to believe that feeling thermometer questions are adequate measures of sincere preferences; no strong justification for this assumption has appeared in the literature. So we advance a different approach for studying the extent of strategic voting in the next section of this article.

A NEW APPROACH FOR MODELLING STRATEGIC VOTING

Our new approach for modelling strategic voting follows the general approach of the third aspect of the literature we have just discussed, but with two important innovations. First, we begin with a more consistent model of sincere voting in multiparty democratic systems than has been presented in the literature to date. We use a methodological technique (multinomial probit) which allows us to examine the full choice set available to voters while explicitly allowing voters to see some parties as close substitutes (thus avoiding imposing the restrictive ‘independence of irrelevant alternatives’ assumption, as we discuss below). Secondly, we use a new operationalization of the objective strategic setting. We take advantage of the electoral structure of British politics that allows for cross-constituency variance in the incentive for voters to engage in strategic voting. In this section of the article we discuss both these innovations and then conclude by discussing the specific expectations we have for our model’s predictions.

Our model of sincere voting is based heavily upon recent work on modelling multiparty elections using individual-level survey data.¹⁷ There are two

¹⁶ This assumption seems to run counter to one of the most common uses for feeling thermometers in the electoral studies literature – a measure of party or candidate preferences, and ultimately, voting behaviour (for example, see S. Kelley and T. W. Mirer, ‘The Simple Act of Voting’, *American Political Science Review*, 68 (1974), 572–91). Feeling thermometers, especially those for political parties, have also been used to measure partisan affiliation, which also seems quite at odds with the use of these survey questions as measures of sincere voting preferences if partisanship is conceptually distinct from voting behaviour (for example, see R. M. Alvarez, ‘The Puzzle of Party Identification – Dimensionality of an Important Concept’, *American Politics Quarterly*, 18 (1990), 476–91; H. F. Weisberg, ‘A Multidimensional Conceptualization of Party Identification’, *Political Behavior*, 2 (1980), 33–66). Given that researchers use these survey questions to measure such diverse concepts clearly calls into question what feeling thermometer questions really measure. This is obviously beyond the scope of this article, but it does lead us to be wary of analyses of strategic voting based on feeling thermometers.

¹⁷ See Alvarez and Nagler, ‘Voter Choice in 1992’; Alvarez and Nagler, ‘When Politics and Models Collide’; R. M. Alvarez, S. Bowler and J. Nagler, ‘Issues, Economics, and the Dynamics

important aspects of this work which are relevant for our study of strategic voting. The first aspect is that this approach utilizes a well-specified model of voter decision making. The data we analyse comes from the 1987 British general election and we offer a model of voter decision making which allows for retrospective economic, issue-based prospective, and class-based voting behaviour.¹⁸ Thus our model of sincere voting provides a vehicle for us to control for all of the important perspectives on British electoral behaviour simultaneously; this allows us to test for strategic voting without worrying about competing effects.

We view the voters' utility for each party as a function of the voter's position on the issues *relative to the party* and of characteristics of the voter which we describe below. The inclusion of issue variables in our models stems from the growing realization that 'issues matter' in British elections, just as they 'matter' in the electoral politics of many industrial democracies.¹⁹ This stems also from the realization that the effect of class in British elections has slipped considerably.²⁰ Working from the framework of the spatial model of elections, we include variables for the distance between the voter and each party on defence, government emphasis on inflation versus unemployment, taxes, redistribution of income, nationalization of industry, crime and social welfare programmes. The parties' position on each issue is taken to be the mean of the party placement on the eleven-point issue scale by all respondents. We use the absolute value of the difference between respondents' position and the party's position as a measure of issue distance on each item.²¹

Hand in hand with the realization that issues are replacing class in framing voter decisions in British elections is a growing realization of the important role played in recent elections by voter perceptions of the economy. This has

(*F**note continued)

of Multiparty Elections: The British 1987 General Election' (Unpublished, California Institute of Technology, 1997).

¹⁸ Alvarez, Bowler and Nagler, 'Issues, Economics, and the Dynamics of Multiparty Elections'.

¹⁹ R. Inglehart, *The Silent Revolution: Changing Values and Political Styles Among Western Publics* (Princeton, NJ: Princeton University Press, 1977).

²⁰ I. Crewe, 'Do Butler and Stokes Really Explain Political Change in Britain?' *European Journal of Political Research*, 2 (1974), 183–215; I. Crewe, B. Särilvik and J. Alt, 'Partisan Dealignment in Britain, 1964–1974', *British Journal of Political Science*, 7 (1977), 129–90; B. Särilvik and I. Crewe, *Decade of Dealignment* (Cambridge: Cambridge University Press, 1983).

²¹ By using the distance from the respondents' self-placement to the mean placement of each party – rather than the distance from the respondents' self-placement to the respondents' placement of the party – we avoid contaminating our measure with the tendency of respondents to project their favoured candidates closer to their own ideal issue position. We have also estimated a multinomial probit model using the distance between each respondent's self-placement on each issue and their placement of each party on the issue, with an identical specification of the systematic component of our model discussed in the text. These results are equivalent in all respects to those we present in Table 2: in particular, the estimated values of the coefficients of the strategic terms are -0.76 , 0.05 , and -0.47 , compared to those reported in Table 2 of -0.8 , 0.05 , and -0.4 . Thus our result is not sensitive to the choice of measures of party placement. The full set of parameter estimates of the alternative specification are available from the authors upon request.

occupied much of the empirical work on British elections.²² Accordingly, we include in our models variables for the respondent's perceptions of recent changes in inflation, unemployment and taxation levels.²³ This allows a test of the retrospective voting model in a three-party setting.

We also include demographic measures of the respondents. To allow for the possibility that class did matter in the 1987 election, we also include a number of control variables. First, we have an indicator of the voters' class affiliation: whether the voter occupied a blue-collar occupation or not.²⁴ Union membership has long been considered a staple of Labour support, but it is possible that this source of support has diminished considerably with the dismantling of the trade-union movement during the first two Thatcher administrations. We include a dummy variable for trade-union membership to examine the effect of union membership on voter choice. As a third control for the effects of class, we have a dummy variable which measures whether or not the voter was a public-sector employee.²⁵

Demographic variables other than class have loomed large in research on British elections. The regional divisions in recent British elections have spurred a flurry of works on regional influences on voting, even though the growing North–South political cleavage in British voting may be more of an artefact of economic divisions than anything specific to certain regions.²⁶ We include regional dummy variables in our models to control for these influences on voting. With the massive sales of council houses during the Thatcher years, no doubt motivated by its appeal to the moderately well-off working classes, it is asserted that home ownership played some role in Thatcher's success in 1987.²⁷ Accordingly, we have a dummy variable in the model for home owner-

²² J. E. Alt, *The Politics of Economic Decline* (New York: Cambridge University Press, 1979); M. S. Lewis-Beck, *Economics and Elections* (Ann Arbor: University of Michigan Press, 1988); D. T. Studlar, I. McAllister and A. Ascui, 'Privatization and the British Electorate: Microeconomic Policies, Macroeconomic Evaluations, and Party Support', *American Journal of Political Science*, 34 (1990), 1077–101.

²³ I. McAllister and D. T. Studlar, 'Region and Voting in Britain, 1979–87; Territorial Polarization or Artifact?' *American Journal of Political Science*, 36 (1992), 168–99.

²⁴ Categories 1 through 6 of the occupation variable (as well as military) were coded as blue-collar; for a full listing of the occupation codes, see A. Heath, *British General Election Study, 1987: A Computer File* (Colchester: ESRC Data Archive, 1989).

²⁵ We have examined alternative operationalizations for the role of class in this election. In particular, we used the Heath–Goldthorpe categorization of individuals into occupation groups (Salaried, Routine nonmanual, Petty bourgeoisie, Foremen and technicians, and Working class; see A. Heath, R. Jowell and J. Curtice, *How Britain Votes* (New York: Pergamon, 1985). This alternative specification of class did not add explanatory power to our model, and we do not present those results here. They are available from the authors.

²⁶ See I. Crewe, 'The 1987 General Election', in D. Denver and G. Hands, eds, *Issues and Controversies in British Electoral Behaviour* (London: Harvester Wheatsheaf, 1992), pp. 129–90; McAllister and Studlar, 'Region and Voting in Britain, 1979–87'.

²⁷ See Crewe, 'The 1987 General Election'.

ship. We also include measures of the respondent's age, sex, income and education.²⁸

The second way that our approach to studying multiparty electoral behaviour is fundamentally different from previous studies is that we begin with a random utility framework for studying voter behaviour in multiparty elections which allows us to examine the full choice set of parties available to voters in any particular election. Any model of voter choice should allow voters to consider all three parties simultaneously. It should allow voters to weigh the parties' positions on the issues, to consider the parties' performance on the economy, and it should allow voters of different demographic traits to have different preferences for different parties. So, our framework does not impose the restrictive *independence of irrelevant alternatives* assumption. We estimate the model using multinomial probit.²⁹

We follow the Alvarez–Nagler implementation of multinomial probit which assumes that the respondent's utility is a function of choice-specific and individual-specific characteristics:³⁰

$$U_{ij} = A_i\psi_j + X_{ij}\beta + \varepsilon_{ij}, \tag{1}$$

where U_{ij} = utility of the i th voter for the j th party; A_i = characteristics of the i th voter; X_{ij} = characteristics of the j th party relative to the i th voter; ψ_j = a vector of parameters relating the characteristics of a voter to the voter's utility for the j th party; β = a vector of parameters relating the relationship between the voter and the party (X_{ij}) to the voter's utility for the party; ε_{ij} = random disturbance for the i th voter for the j th party.

So we estimate one set of β s (one for each prospective issue), and two sets of ψ s. One set of ψ s examines the relative effect of each voter attribute on the

²⁸ The use of such a well-specified model of voter choice does mean that we do have some attrition of survey respondents due to the fact that some respondents did not answer a number of the questions necessary to operationalize all of these variables. We had demographic and vote choice data, but not necessarily data on issue preferences, for over 3,000 survey respondents; we used 2,080 of those in our empirical analysis. However, our sample of 2,080 appears very similar to the larger sample from which our data was drawn: the mean education level in our sample was 16.22 (standard deviation of 2.41), while the full-sample education level was 16.09 (standard deviation of 2.42, sample size of 3,641); the average age in our sample was 45.71 (standard deviation of 16.08) while the full-sample average age level was 46.49 (standard deviation of 17.82; sample size of 3,668); lastly, the average income in our sample was 5.89 on a 1 to 12 scale (standard deviation of 3.04) while the full-sample average family income level was 5.46 (standard deviation of 3.18, sample size of 3,255). We also compared the vote choices of the 2,080 respondents whom we employ in our analysis with the larger sample of 3,695; our sample had 45.2 per cent Conservative voters, 29.6 per cent Labour voters, and 24.2 per cent Alliance voters; the full sample had 37.4 per cent Conservative voters, 25.3 per cent Labour voters and 20 per cent Alliance voters. Our set of 2,080 voters is quite close to the actual breakdown of votes case in this election, since 42.3 per cent of the votes were Conservative, 30.8 per cent were for Labour, and 22.6 per cent were for the Alliance parties. Thus, we are quite confident that our sample of British voters is representative of the population from which they were drawn.

²⁹ See Alvarez and Nagler, 'Voter Choice in 1992' and 'When Politics and Models Collide' for a systematic discussion of the multinomial probit model.

³⁰ See Alvarez and Nagler, 'Voter Choice in 1992' and 'When Politics and Models Collide'.

likelihood of the voter choosing Conservative over the Alliance, the second set of ψ s examines the relative effect of each voter attribute on the likelihood of the voter choosing Labour over Alliance.³¹

In particular, the multinomial probit technique is well-suited for the study of recent British elections. Since 1945, there have been three viable national parties in British politics, but it was not until the dual elections of 1974 that the Liberal party, in this period the electorally weakest party, began obtaining roughly 20 per cent of the national vote. And in 1983, with the Liberal/Social Democratic Alliance (Alliance) obtaining 25.4 per cent of the national vote, just 2 per cent lower than the Labour party, it looked as if British voters may have finally had a 'real' third alternative. Thus, the emergence of the Alliance as an option in addition to the Conservatives and Labour, offered three choices to British voters in the 1983 and 1987 elections.

Yet British voters presumably did not view these three choices as truly distinct alternatives. Common wisdom holds that the Alliance was a substitute for Labour, or at least closer to Labour than to the Conservative party. However, even with this common wisdom, few empirical papers consider the possibility of the grouping of choices nor the possible violation of the independence of irrelevant alternatives assumption.³² The multinomial probit model we use is important precisely because it allows us to test for the violation of the independence of irrelevant alternatives assumption. If we find that the independence of irrelevant alternatives was violated, the multinomial probit model can also provide insight into the structure of the choice process. Was the Alliance considered by voters as a substitute for Labour? Was the Alliance seen by voters as a choice more similar to Labour than to the Conservative party? What would have happened had the Alliance dissolved before the election? The multinomial probit model allows us to answer precisely these questions.³³

The multinomial probit model we use, then, provides the best model of strategic voting which we can operationalize, specify and estimate. The next step in our analysis of strategic voting in the 1987 British general election involves operationalization of the strategic situation facing individual voters in their own constituencies. The operative hypothesis is that people vote strategically: that they cast a vote for candidates or parties they think 'can win', rather than 'waste' their vote. Fortunately, British elections provide a fertile ground to test the theory; since voters participate in single-member

³¹ We also estimate two error correlations. In this analysis the disturbances are assumed to be multivariate normal, with mean zero and covariance matrix Σ . The off-diagonal elements of Σ give the correlations between pairs of disturbances, assuming that variance of each disturbance is one.

³² For examples of work which makes this strong assumption, see McAllister and Studlar, 'Region and Voting in Britain 1979–87' or M. C. Stewart and H. D. Clarke, 'The (Un) Importance of Party Leaders – Leader Images and Party Choice in the 1987 British Election', *Journal of Politics*, 54 (1992), 447–70.

³³ These models can also give insight into the dynamics of the possible groupings of choices by British voters. It is quite possible that as party fortunes change, as their positions and general ideologies change, or as they go in and out of control of Parliament, that the similarities voters see between the parties may change as well.

constituencies, we have significant variance across constituencies as to the likelihood of a vote for a given party being wasted. We are able to examine the behaviour of voters who ought to have similar preferences for a given party being elected (assuming those preferences are based on the attributes of individuals we measure), but we are able to observe those voters in two different sorts of constituencies. Consider constituencies where Labour has a chance of winning the constituencies, and constituencies where Labour has no chance of winning. In these latter sorts of constituencies voters preferring Labour might want to consider voting strategically. This structure of the electoral system allows for a test of the strategic voting hypothesis.

We want to allow voters to cast their vote in a way likely to maximize the utility of their vote; which may *not* necessarily mean voting for the candidate they would most like to see win. Consider a voter whose first choice is Labour (L) and whose complete preference ordering is: $L > A > C$. If this voter were to behave strategically, then the voter would be unlikely to vote for his/her first choice (L) if: Labour were sure to lose the constituency, *and* the voter's vote could help A to defeat C . In such a constituency, a vote for Labour would be 'wasted.'

We could write the i th voter's utility of casting a vote for Labour as:

$$U_{iL} = \psi_L A_i + \beta X_{iL} + \Gamma W_{iL}, \quad (2)$$

where W_{iL} is a measure of the characteristics of the i th voter's constituency associated with a vote for Labour being 'wasted', and ψ , β , A and X are defined as in Equation (1) above. So we want W_{iL} to encompass measures relating the probability of the vote for Labour being wasted. What are the characteristics of a constituency where it would be pointless to vote for Labour?

First, Labour would have to be too far behind in the race to have any reasonable chance of winning. Second, the race between the Conservatives and the Alliance would have to be close. If both Labour and the Alliance were going to be trounced by the Conservatives, and provided the voter was going to vote at all, then there would be no benefit to casting a strategic vote for the Alliance rather than a sincere vote for Labour.

We can measure both of these concepts. The first is given by:

$$W1_{iL} = |\text{Max}(\text{CON}, \text{ALL}) - \text{LABOUR}|, \quad (3)$$

where CON, ALL and LABOUR denote the expected vote shares of the Conservative, Alliance and Labour parties, respectively; and Max(CON, ALL) denotes the maximum of CON and ALL (i.e., the party running first).³⁴ This gives the amount that Labour is 'out of it'. We expect that the larger the value of $W1_{iL}$, the more likely that a vote for Labour would be wasted, and the less likely a voter is to cast such a vote.

³⁴ We use each party's vote share from the 1983 election in each constituency as the expected vote share. This has the benefit of being widely available to voters before election day in 1987; the previous vote share in each constituency should be the basis from which voters form their expectations about each party's chances in 1987.

The second concept is given by:

$$W2_{iL} = 1/|(\text{CON} - \text{ALL})|. \quad (4)$$

The closer the race between Conservative and the Alliance, the larger the value of $W2_{iL}$. And the larger the value of $W2_{iL}$, the more costly it would be to waste a vote by voting for Labour, and the more likely that the voter should act strategically and vote either Conservative or Alliance. However, note that the impact of this variable ought to be contingent upon the value of $W1_{iL}$. For instance, in a three-way tie the value of $W2_{iL}$ would approach infinity; yet there would be zero reason to vote strategically because a vote for Labour is called for. Hence $W2_{iL}$ should enter the model multiplied by $W1_{iL}$. We include $W2_{iL}$ by itself, as well as multiplied by $W1_{iL}$, so that we can correctly interpret the coefficients. We construct similar measures for the Alliance and the Conservative parties.

Thus, our approach to modelling strategic voting in the 1987 British general election is relatively simple. We add to the model our two measures of the potential for strategic behaviour for each party, in each constituency, and estimate these parameters for each party controlling for all of the other potential influences on voter decision making. Thus, for each party, our estimate is based on the following equations:

$$U_{iL} = \beta X_{iL} + \psi_{iL} A_i + \gamma_1 * W1_{iL} + \gamma_2 * W2_{iL} + \gamma_3 * (W1_{iL} * W2_{iL}) \quad (5)$$

$$U_{iC} = \beta X_{iC} + \psi_{iC} A_i + \gamma_1 * W1_{iC} + \gamma_2 * W2_{iC} + \gamma_3 * (W1_{iC} * W2_{iC}) \quad (6)$$

$$U_{iA} = \beta X_{iA} + \psi_{iA} A_i + \gamma_1 * W1_{iA} + \gamma_2 * W2_{iA} + \gamma_3 * (W1_{iA} * W2_{iA}) \quad (7)$$

where L, C, A index Labour, Conservative and the Alliance, respectively. X_{ij} measures issue distances between the i th party and j th voter, A_i measure attitudes and characteristics specific to the i th voter. Of critical interest for the purposes of this article, though, are the coefficients on the strategic voting terms. By the logic of the operationalization of these measures we expect that if strategic voting occurs, then: $\gamma_1 < 0$, $\gamma_2 < 0$ and $\gamma_3 < 0$.³⁵

EMPIRICAL EVIDENCE FOR STRATEGIC VOTING IN THE 1987 BRITISH ELECTION

In Table 2 we present the full multinomial probit results from the estimation of

³⁵ If our measures of strategic voting happened to be correlated with the time from the election when the interview was conducted, then they might have the same post-election biases as did the self-reported measures. We verified that our measures of strategic voting were not contaminated as follows. We regressed our $W1_{ij} * W2_{ij}$ measure for each respondent (where j indexes the party the person voted for) on the same months past the election variable we used to verify the trends in Figure 1 (as we discuss in fn. 1). If our contextual measure of strategic voting had the same type of temporal pattern as the self-reported measures, then we would expect that the value of $W1_{ij} * W2_{ij}$ would be larger for voters interviewed further and further after the date of the election. Instead, we find the opposite: the regression coefficient is -0.0272 (standard error of 0.0274). So our contextual measure of strategic voting appears to be free of the bias that we found for the self-reported measures.

this model. The results we obtain here for the effects of issues, economic perceptions and demographic factors are very similar to those presented in previous work on this same election, so we will refer interested readers to that research.³⁶ All we wish to note here is that most of the variables are signed in theoretically-expected manners, many are statistically significant, and this model correctly classifies 71 per cent of the reported votes cast by the 2,080 voters in our sample.

The important coefficients to focus on for our purposes are those on the three strategic voting variables. In the previous section we argued that we expected each of these three coefficients to be negatively signed. We find that two of the three coefficients (those on $W1$ and the $W1 * W2$ interaction) are negative and statistically significant, although the interaction term is significant at the looser $p = 0.1$ level. The $W2$ coefficient, though, is positive and is also significant at the $p = 0.1$ level.

What we need to consider are the marginal effects of changes in each variable on the utility of voting for each choice. The marginal effects of each of the objective strategic voting variables are:

$$\partial U_j / \partial W1_{ij} = - 0.80 - 0.40 * W2_{ij} \tag{8}$$

$$\partial U_j / \partial W2_{ij} = + 0.05 - 0.40 * W1_{ij} \tag{9}$$

Thus, the partial effects of $W1$, the gap between the voter's preferred choice and the likely winner, are always negative, as predicted by our earlier discussion (this is true since $W2$ is always positive). The further behind a voter's preferred choice was expected to run in a constituency, the less likely a voter was to cast a vote for his or her preferred choice. This is strategic voting. However, the partial effects of $W2$, the closeness of the race between the leading two parties in the constituency, are negative only when $W1 > 0.125$ (i.e., only when the third party is sufficiently far behind). This applies to 46 per cent of constituencies for the Labour party, 46 per cent of constituencies for the Alliance, and 7 per cent of constituencies for the Conservative party. In our sample of respondents, how close the top two parties were expected to be in the constituency influenced the respondents' probability of voting for Labour and the Alliance in the predicted manner in 46 per cent and 43 per cent of cases, respectively. In the other cases, Labour and the Alliance were competitive enough in the constituencies in which they ran third so that the closeness of the top two parties in the constituency did not persuade the respondent to abandon Labour or the Alliance and vote strategically for one of the other two parties. For only 7 per cent of our respondents was the Conservative party expected to be so far behind the other two parties that the closeness of the other two parties prompted a strategic vote by a Conservative supporter.

³⁶ Alvarez, Bowler and Nagler, 'Issues, Economics, and the Dynamics of Multiparty Elections'.

TABLE 2 *Multinomial Probit Estimates, 1987 Election*

Independent variables	Conservatives/Alliance		Labour/Alliance
Defence		- 0.14*	
		(0.01)	
Unemployment/Inflation		- 0.09*	
		(0.02)	
Taxation		- 0.13*	
		(0.02)	
Nationalization		- 0.14*	
		(0.01)	
Redistribution		- 0.07*	
		(0.01)	
Crime		- 0.08*	
		(0.04)	
Welfare		- 0.10*	
		(0.01)	
W1 (First Choice Hopeless)		- 0.80*	
		(0.19)	
W2 (1, 2 Close)		0.05**	
		(0.03)	
W1*W2 (Interaction)		- 0.40**	
		(0.24)	
Constant	0.10		1.49*
	(0.54)		(0.52)
South	- 0.03*		- 0.07
	(0.11)		(0.13)
Midlands	- 0.20*		- 0.05
	(0.09)		(0.13)
North	- 0.09		0.35*
	(0.11)		(0.13)
Wales	- 0.29		0.98*
	(0.30)		(0.20)
Scotland	- 0.28**		0.52*
	(0.15)		(0.16)
Union Member	- 0.45*		0.22*
	(0.08)		(0.07)
Public Sector Employee	0.10**		0.01
	(0.06)		(0.09)
Blue Collar	0.05		0.52*
	(0.10)		(0.10)
Female	0.26*		- 0.03
	(0.10)		(0.09)
Age	0.04		- 0.14*
	(0.04)		(0.03)
Home Ownership	0.39*		- 0.32*
	(0.10)		(0.09)
Family Income	0.06*		- 0.04*
	(0.02)		(0.02)
Education	- 0.60**		- 0.34
	(0.22)		(0.23)
Inflation	0.24*		- 0.02
	(0.08)		(0.07)
Unemployment	0.23*		0.01
	(0.04)		(0.05)
Taxes	0.02		- 0.08**
	(0.05)		(0.04)
δ LA		0.32*	
		(0.09)	
δ CL		- 0.30*	
		(0.10)	
Number of observations		2,080	
LL		- 1,418.0	

Standard Errors in parenthesis. *Indicates significance at 95 % level. **Indicates significance at 90% level.

However, what of the important substantive question – what was the estimated extent of strategic voting in this particular election? Was it as high as the 17 per cent reported by Niemi and associates or as low as the 6 per cent reported by others?³⁷ Obviously, dramatic differences like these in estimates of the extent of strategic voting lead to different interpretations of British politics, of this specific model of strategic voter behaviour and even of the general rational choice approach for studying politics.

We report our estimates of the extent of strategic voting in Table 3. There we have classified each of the voters in our survey sample in two different ways. The first classification scheme is given by the rows of the table. To compute the row entries we used the model reported in Table 2, but hypothesized that all voters were in constituencies where the three parties had equal chances of winning (i.e., each party had a vote share of 33.3 per cent in the 1983 election in the constituency). We set variables *W1* and *W2* to 0, and used the estimated coefficients from Table 2 to compute the utility of each party for each voter. We then assign the voter's choice to the party for which they have the highest utility; this gives us each voter's *sincere vote*. Then, using the full model presented above, including the strategic voting variables, we predict each voter's *strategic vote* for this set of parties; these are presented in the columns of Table 3.

TABLE 3 Predicted Strategic and Sincere Votes

		Predicted Sincere Votes			Strategic totals
		Conservative	Strategic Labour	Alliance	
Predicted Strategic Votes	Conservative	986 (99.1)	3 (0.4)	41 (10.5)	1,030 (49.5)
	Labour	2 (0.2)	639 (91.8)	42 (10.8)	683 (32.8)
	Alliance	7 (0.7)	54 (7.8)	306 (78.7)	367 (17.6)
Sincere totals		995 (47.8)	696 (33.5)	389 (18.7)	2,080 (100.0)

Note: Entries are numbers of respondents, with column percentages in parentheses below. Each off-diagonal cell represents strategic voting. Marginals at the end of each row give predicted votes with strategic voting. Marginals at the bottom of each column give predicted votes with only sincere voting.

The entries along the main diagonal of the table give the numbers and percentages of voters in our sample whose predicted sincere and strategic votes are the same. The off-diagonal entries are strategic voters, since we predict that these voters change from their sincere vote due to the objective probabilities of

³⁷ Niemi *et al.* 'Constituency Characteristics'; Evans and Heath, 'A Tactical Error'; Johnston and Pattie, 'Tactical Voting in Great Britain'.

each party's victory in the constituency. Adding the off-diagonal elements in Table 3, we see that there were 149 strategic voters in our sample, or 7.2 per cent of the electorate. This number is in line with some of the estimates offered in the literature.³⁸ But our estimate suggests that those who have used subjective recall questions to estimate strategic voting appear to have dramatically over-estimated the proportions of strategic voters, possibly due to the over-reporting problem we discussed earlier.³⁹

Table 3 reveals how those 149 strategic votes were distributed. Under sincere voting, we predict a 33.5 per cent vote-share for Labour. However, we estimate that fifty-four (7.8 per cent) of them voted strategically for Alliance, and three of them voted strategically for the Conservative party. But the Alliance was the biggest victim of strategic voting. We predict the Alliance would have got an 18.7 per cent share of the vote under sincere voting. However, with strategic voting we estimate a 17.6 per cent share. Of those we expect to have defected strategically from the Alliance, we estimate that they split almost evenly between the Conservative and Labour parties (10.5 per cent and 10.8 per cent, respectively). The Conservative party was the overall beneficiary of strategic voting: their estimated sincere vote share is 47.8 per cent while their estimated strategic share is 49.5 per cent.

These results match the intuition of the 'wasted vote'. If voters do not want to waste their vote on a party with a poor chance of winning the contested seat, then the parties with the lowest expectations of winning a seat will be hurt. Also, the 'wasted vote' phenomenon in the 1987 British election harmed the party the least likely to win a significant share of constituencies – the Alliance. Therefore the net impact of strategic behaviour in this election was for the Conservatives to pick up almost 2 full percentage points of national vote share; both Labour and the Alliance lost vote share as a result of strategic behaviour, with the Alliance losing the most.

DISCUSSION AND CONCLUSIONS

We have made three important arguments in this article. First, we have argued that past approaches for the measurement of strategic voting have largely been flawed. From analyses that use ecological inference to those using self-reporting of strategic behaviour, we have argued that these approaches are likely to produce incorrect measures of the likelihood of strategic behaviour. In particular, using reported strategic voting to measure strategic voting is a dangerous proposition because such self-reports are contaminated by a tendency to overreport voting for the winner, a tendency exacerbated by self-reports collected further away from the election. Since self-reports for the winner when the voter's preference may have been for another candidate are observationally equivalent to strategic voting, measurement using such self-reports will overstate the degree of strategic voting. We think Figure 1 demonstrates the problem quite clearly.

³⁸ Evans and Heath, 'A Tactical Error'; Johnston and Pattie, 'Tactical Voting in Great Britain'.

³⁹ For example, Niemi *et al.*, 'Constituency Characteristics'.

Secondly, it is possible to take advantage of the electoral structure of British politics to test for strategic voting. The British case offers variance across constituencies in how likely it is for a voter to behave strategically. By utilizing this information, a well-specified model of voter preferences and a flexible estimation technique (multinomial probit), we can better measure the extent of strategic voting. We believe that the combination of an objective measure of the likelihood of strategic voting and our multinomial probit model of voter choice is the best approach for modelling strategic voting behaviour in multiparty democracies.

Last, using our new approach, we find the amount of strategic voting in the 1987 British general election is on the low end of the range of previously reported estimates; with some previous estimates being inflated by at least a factor of two. There has been considerable variation in the estimated extent of strategic voting in this particular election, with estimates ranging from roughly 6–7 per cent to a slightly higher range of 10–12 per cent, to as high as 17 per cent.⁴⁰ Our estimate is an important substantive finding, since it verifies that some strategic behaviour occurred in this particular British election – but only a slight amount of strategic behaviour.

This leaves open the question of whether voters generally do or do not behave as strategic models of politics predict. Our results here indicate that a small subset of the electorate did behave strategically in this one election. The truth is out there; but to determine if such strategic behaviour is a general phenomenon, we will have to examine other British elections and elections in other democratic multiparty nations. Only then will we be in a position to know how much strategic behaviour occurs in multiparty elections, and what institutional features of different political systems play a role in either mitigating or enhancing the likelihood that voters behave strategically.

⁴⁰ For estimates in the low range, see Evans and Heath 'A Tactical Error'; Heath *et al.*, *Understanding Political Change*; Johnston and Pattie, 'Tactical Voting in Great Britain'; in the moderate range, see Galbraith and Rae, 'A Test of the Importance of Tactical Voting'; and for those in the high range, see Niemi *et al.*, 'Constituency Characteristics'.