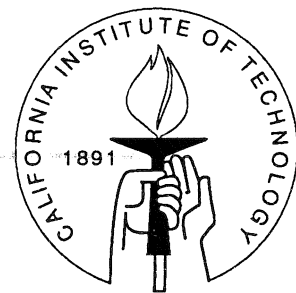


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VOTER CHOICE IN 1992:  
ECONOMICS, ISSUES, AND ANGER

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# VOTER CHOICE IN 1992: ECONOMICS, ISSUES, AND ANGER

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## **Abstract**

This paper examines the voting behavior of individuals in the 1992 presidential election. Employing a multinomial probit model we disprove several commonly held beliefs regarding the uniqueness of the election and the mood of the voters. We show emphatically the dominance of the economy as an issue, and that Clinton, not Perot, was the beneficiary of economic discontent. We show the limited influence of the candidates' efforts at choosing the optimal ideological position. We also demonstrate, via simulations of the outcome under hypothetical distributions of preferences, that the effect of the economy, while large, cannot by itself explain the magnitude of Bush's defeat. We also prove the surprisingly powerful impact of the candidates' positions on abortion on voters' choices. And we disprove the stylized fact that the 1992 election was characterized by "angry voters." Finally, we show that Perot took more votes from Bush than he did from Clinton.

# VOTER CHOICE IN 1992: ECONOMICS, ISSUES, AND ANGER \*

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## 1 Introduction

The influence of different factors on presidential elections has been a research topic in political science for the greater part of this century, and fascinates the media and the public every four years. The leading candidates for determining election outcomes are the state of the economy, the positions of the candidates and voters on the issues, and the effectiveness of the candidates' campaigns. The widespread economic distress in the early 1990s led many to believe that the national economy was of prime importance in accounting for George Bush's defeat in 1992. Alternatively, some argue that this transition of power occurred only because the Democrats were able to present a "New Democrat" ticket which was moderate enough to appeal to Democrats who had previously supported Reagan and Bush. In addition to these two interpretations concentrating on major party candidates, the strong showing of Ross Perot has been interpreted as evidence that many voters were angry at Washington and eager to break from the status quo.

In this paper we explore three primary explanations of the 1992 election. First, we consider the effect of the economy. Second, we consider the impact of issues and ideology. We examine both the general liberal-conservative issue dimension and several specific issues expected to be important to voters. Third, we examine whether or not Perot's strong showing was due largely to the level of "anger" in the electorate, and hence a phenomenon not necessarily likely to repeat itself. And we introduce a methodological technique new to analyses of elections – multinomial probit – to handle the complexity of a three-candidate race in a way that is consistent with the substantive questions being examined.

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## 1.1 The Economy

The first and most popular of the three prevailing wisdoms about the 1992 election is the “it’s the economy, stupid” school of thought. The electoral significance of the recent state of the economy has been well documented in political science research on elections, which has shown that voters evaluate the prior performance of the economy under the opposing parties and choose the party which has the best economic record (albeit weighing the recent past more heavily than the distant past) [Fiorina 1981; Kiewiet 1983; Markus 1988; Rosenstone 1984; Tufte 1978].

This retrospective economic voting model suggests that this election was a referendum on the lackluster performance of the economy under George Bush. The 1992 election occurred at the end of the worst four-year stretch of economic performance in most voters’ memories, with disposable per capita income growing a net total of only 1% during Bush’s term. In contrast, the two previous Reagan terms had generated net increases of 8.5% and 6.6%, and Carter’s term had seen an increase of 7.3% (U.S. Census Bureau 1993). But the retrospective voting model is inadequate as a simple decision rule for voters in the 1992 election. First, voters had two choices if they were to vote “no” on Bush: Clinton *or* Perot. And second, retrospective voters had virtually no way to tell how the economy would have performed had Perot been the incumbent, since he had no prior record of macro-economic performance to campaign upon. Thus, the retrospective model of voting offers no guidance as to how voters dissatisfied with the economy would choose between Clinton and Perot. Our analysis enables us to examine how voters who based their decision on a negative evaluation of the economy chose between the remaining two non-incumbent candidates.

## 1.2 Ideology and Issues

A second popular account of the election is that Bush was unable to smear Clinton with the “L” word (liberal) as he did to Dukakis in 1988, and that this contributed to Bush’s loss. Proponents of this account interpret the election as vindication of Clinton’s acumen in taking correct positions on key issues, and of his campaign’s skill in avoiding being characterized by Bush as something the electorate did not want. This account implies that ideology and issues played a substantial role in the 1992 election. That ideology and issues have important roles in presidential elections is not in dispute (Carmines and Stimson 1980; Jackson 1975; Key 1966; Page and Brody 1972; Page and Jones 1979; Pomper 1972). Rather, the contemporary issue-voting literature has focused on how much issues matter, and on which issues matter in different elections (Abramson, Aldrich and Rohde 1983, 1987, 1990, 1994).

The usual formulation of issue voting follows the spatial model of voting, in which voters choose the candidate closest to themselves on the issues (Downs 1956; Enelow and Hinich 1984). This requires that voters are presented with candidates clearly distinguishable on their positions on several major issues (Shepsle 1972; Page 1978). Yet, to the

extent that voters are not certain of these issue positions of the three candidates, they may not be able to employ these issues in their decisions (Alvarez 1992). Clearly, application of this model is problematic with the presence of Ross Perot. For it requires that voters determine the issue placement of a third candidate who promised severe and identifiable changes in fiscal policy, but was unclear and unknown on many other issues. There were of course other factors — such as the media exposure of the candidates and their attempts to disseminate information about themselves to the voters — which worked to make such a voting rule *more* plausible. The 1992 election is one of the few in recent history in which two of the candidates had their campaign platforms and pledges published and for sale at bookstores. In the analysis below we show which issues influenced the voters' choices of candidates, and measure the impact of several issues.

### 1.3 Anger

The third piece of folk-wisdom regarding the 1992 presidential election is that it was influenced by a horde of alienated voters turned off by Washington, fed-up with politics as usual, disgusted with partisan “gridlock”, and seeking to overturn the status quo. The “angry voter” hypothesis seems to be a favored one among anecdotal coverage of the election. For example, Germond and Witcover titled their 1993 account of the election *Mad As Hell: Revolt at the Ballot Box, 1992*. This account has also been fueled by increased turnout in 1992. Allegedly these angry voters were inspired to vote by the availability of an anti-status quo choice, and may have provided the basis for Perot's support. We believe it is important to distinguish “angry voters” from issue voters who prefer alternative policy choices. We think that a more precise way to characterize these “angry voters” is as anti-status quo voters, or anti-incumbent voters.

The presence of a seemingly viable third candidate presents both methodological and theoretical challenges for political scientists. A three-candidate race is much more difficult to understand theoretically and empirically than a two-candidate race, since the assumptions of the usual models we apply — from the standard two-candidate spatial model of elections, to probit and logit econometric models — may be incorrect, and inferences drawn from them may be erroneous. Spatial models of elections in one dimension usually depend on *two* candidates reaching equilibrium; with three candidates the situation is much less tractable. And economic voting models are based upon comparisons between *two* candidates. Finally, the usual logit and probit estimation techniques are based on a *binary* choice facing the voter. There have been several important works in political science that deal with three-candidate elections (Converse et al. 1969, Rosenstone 1984). However, we think we break new ground with the econometric approach we use here.

In this paper we simultaneously examine each of the above hypotheses with a multinomial probit model of the election. We demonstrate several interesting findings. First, it *was* the economy. Voters' opinions about the state of the national economy in 1992 were dramatically different than they were in 1988, and our estimates show that this had a large effect on their vote-choice. Second, we demonstrate that while the ideological

positions of the candidates were important to the voters, voters' perceptions of the two major party candidates on the liberal-conservative dimension were virtually unchanged from 1988. And we demonstrate that no matter which plausible ideological placement of the candidates we examine the result of the election would not have changed. However, we show that issues did matter. Perot voters were influenced by the issue Perot emphasized the most: the deficit. And we show that Bush's posturing on abortion had a surprisingly large impact. Finally, we demonstrate that while Perot *may* have been especially appealing to angry voters, it remains for someone to demonstrate what these voters were angry about. For we show that voters interested in "anti-government" reform (term-limits) were no more supportive of Perot than other voters, and that voters who were upset about the economy were no more likely to support Perot than other voters, since such voters went overwhelmingly in Clinton's direction.

## 2 A First Look at the 1992 Election

Before proceeding to analyze a multivariate model we first examine the choices made by voters, broken down by several factors: their evaluation of the change in the past year of their personal finances and of the national economy, their partisan identification, their gender, their vote-choice in 1988, and their positions on term-limits, the deficit, and abortion. The data we use are from the National Election Study (Miller, Kinder, and Rosenstone 1993).

It is the relationship between respondents' economic evaluations and their vote-choice that is most striking in Table 1. The more likely respondents were to negatively evaluate the change in their own personal finances, the less likely they were to vote for Bush; while the opposite was true for Clinton. This same relationship is even more pronounced when examining respondents' evaluations of the national economy and their likelihood of voting for Bush. Here we also see hints of one robust finding about this election: those most dissatisfied with the national economy did *not* turn to Perot. Clinton and Perot split almost equally the non-Bush voters who felt the national economy had gotten better (15.8% for Clinton and 13.2% for Perot). But among non-Bush voters who felt the national economy had gotten *worse*, Clinton was the overwhelming choice relative to Perot (55.4% for Clinton and 18.6% for Perot).

Not surprisingly, party identification has the expected implications for the two major party candidates: both were the choice of significantly more than 50% of their own partisans, though Bush had a significantly higher defection rate than Clinton (29.5% versus 21.1%). The Perot results are also as expected: he drew more strongly from independents than from partisans; and we see – in line with Bush's weak hold on voters – that Perot did better in an absolute sense among Republicans than Democrats. But for both sets of partisans Perot picked up approximately the same share of defectors: 68% of Republican defectors (135 out of 198) and 64% of Democratic defectors (114 out of 178).

A significant factor in recent presidential voting has been the gender gap. Yet, the gender results from 1992 are somewhat surprising. The Democratic-Republican gender-gap is clearly visible; with Clinton running 19 points ahead of Bush among women compared to only 8 points ahead among men. Yet Bush's share of the vote is constant across men and women: it is the Clinton-Perot split that changes across genders. Clinton runs significantly better among women than men; and Perot runs significantly better among men than among women. Since one would expect Bush to be running better among men than among women, this suggests that the relatively strong performance of Perot among men came at Bush's expense.

Examining the change in behavior of voters from 1988 to 1992 reveals two rather striking facts about where Perot's support originated. First, 45% of the voters who supported Bush in 1988 deserted him in 1992. And second, of the voters who supported Bush in 1988 but defected to another of the candidates in 1992, almost half voted for Perot. This finding can be interpreted in two – mutually exclusive – ways: Perot was taking voters from Bush; or, voters who would have defected from Bush anyway were going to Perot *rather than to Clinton*. Our multivariate analysis below gives us the means to determine which of these is closer to the truth.

Next, the question of term limits offers a test of the “angry-voter” hypothesis. Presumably, if voters are angry they will favor the forced retirements of the targets of their anger. However, we find no noticeable difference in Perot's support between those favoring term limits and those opposed to term limits. Thus amongst a group of voters we can identify as angry, Perot does no better among the angry than among the satisfied.

The deficit is another issue that strikes the “angry voter” chords, but it also resonates more generally under typical notions of issue voting. One view is that the size of the federal deficit – in the face of both major parties' promise to shrink it – is a symbol of government's lack of responsibility. Another view is that the size of the deficit is simply an issue for which different people have different preferences. Respondents were not asked their opinions of the size of the deficit directly. However, when asked in an open-ended question to name the most important problems facing the country, 28.7% of respondents offered the deficit as one of their top three problems. We cannot infer from respondents claiming the deficit is an important problem that they think a particular candidate would best solve it. But Perot was the candidate who took the strongest stance on the importance of deficit reduction, and was willing to promise the most – even new taxes – to solve it. And 22.9% of respondents who listed the size of the deficit as one of the three most important issues facing the country voted for Perot, while only 15.9% of those not listing the deficit voted for Perot. Thus the issue that Perot emphasized the most appeared to resonate with the voters.

Another issue where one candidate stood apart from the other two was abortion. Bush differed strongly from his two opponents: he was opposed to abortion, a stance underscored during the Republican convention and throughout the campaign. Pro-choice forces were unequivocal in their opposition to Bush. The NES gave respondents four

choices to identify their positions on abortion, ranging from “abortion should never be permitted” to “by law, a woman should always be able to obtain an abortion as a matter of personal choice.” As Table 1 shows, respondents choosing the three more anti-abortion alternatives were almost twice as likely to vote for Bush as respondents declaring themselves pro-choice. The fact that a respondent’s position on abortion is so discriminating a factor in determining whom he or she would vote for suggests that abortion was a major issue in the 1992 election.

## 2.1 New Democrat?

Last, we offer evidence bearing on the “Clinton as ‘New Democrat’” hypothesis. A central tenet of this hypothesis is that voters perceived Clinton differently than they perceived Dukakis. Table 2 shows respondents’ self-placement, and placement of Bush and Dukakis on the NES 7-point liberal-conservative scale in 1988, placement of Bush, Clinton, and Perot on the liberal-conservative scale in 1992, and the mean ideological distance between respondents and each of the candidates for both elections. Ideological distance between the respondent and the candidate was computed as the absolute value of the difference between the respondent’s self-placement and the mean of all respondents’ placement of the candidate. Using the mean placement for the candidate, rather than the respondent’s own placement of the candidate, reduces problems of projection.<sup>1</sup>

Table 2 reveals something very startling: the electorate did not perceive Clinton to be a moderate Democrat. The mean placement of Clinton in 1992 (3.19) was actually .05 *to the left* of the mean placement of Dukakis in 1988 (3.24) on the NES 7-point liberal-conservative scale. Alternatively, Clinton’s placement was 1.02 to the left of the overall respondent mean in 1992 (3.19 versus 4.21), whereas Dukakis’ placement was 1.13 to the left of the overall respondent mean in 1988 (3.24 versus 4.37). Hence, to the extent that Clinton moved closer to the center of the ideological spectrum than Dukakis was, he did so by barely 10% of the distance Dukakis needed to move to reach the center. And finally, comparing the mean distance between Clinton and each voter, and Dukakis and each voter, we see respective scores of 1.46 and 1.50. Again, any way we examine the data, Clinton simply did *not* convince the electorate he was different from Dukakis on the broad liberal-conservative ideological continuum. It is possible that distinctions between Clinton and Dukakis led respondents to weigh different issues in evaluating relative placements on the liberal-conservative dimension. Clinton did not share Dukakis’ aversion to the death-penalty, nor did Clinton carry an ACLU card. And Clinton advocated a brand of welfare reform that was not perceived as very liberal.<sup>2</sup> But respondents’ evaluations on the liberal-conservative dimension suggest that Clinton’s status as a “new Democrat” could not have accounted for much towards his victory, because voters saw him as an old Democrat – they perceived Clinton to be as liberal as Dukakis.

These simple analyses provide some insight into the 1992 election. The data in Tables 1 and 2 suggest that the “angry voter” hypothesis may not be supported, that Clinton’s



claim to be a new Democrat could not have affected the election, that abortion was a major issue in 1992, and that the economy was dominant and Clinton – not Perot – won the battle for the economic discontents. However, to take into consideration the three-candidate choice process, and to further develop the above findings and show that they are not the spurious artifacts of two-by-two tables, we use multivariate analysis to disentangle and to estimate the effects of different factors on individuals' vote-choices; as well as to determine the impact of Perot on the election.

### 3 Multivariate Analysis of the 1992 Election

In order to answer the questions posed above and distinguish between the relative “correctness” of the different folk-wisdoms and theories about the election, a methodology is required that allows us to evaluate the effects of individual characteristics and candidate characteristics in a three-candidate setting. The multinomial probit model we employ allows us to do these things (Bolduc 1992; Bunch 1991; Daganzo 1979; Dansie 1985; Hausman and Wise 1978). We estimate separate coefficients relating individual characteristics of the respondents to their preference for *each* candidate, as well as a single coefficient for a candidate-specific trait: ideological-distance from the respondent.

To estimate a model of the 1992 election using traditional techniques we could proceed in three ways: 1) ignore the Perot candidacy and estimate models of binomial choices between Clinton and Bush; 2) estimate an ordered probit model; or 3) estimate multinomial logit models including Perot as a choice.

We think the first two of these techniques are badly flawed, and that multinomial logit has potential problems in this application. The first technique ignores the preferences of almost 20% of the electorate. More importantly, throwing out the third candidate and estimating binary-choice models on the remaining candidates is a clear case of selecting on the dependent variable, which will generate inconsistent estimates (Manski and Lerman 1977). The problem is probably easiest to see in a case where one choice is clearly distinct from the others. For instance, to treat Wallace voters in 1968 as missing data and then assume that they would have behaved as others of similar socio-economic status and issue-preferences behaved – on the few issue-preferences we have measures of – is to ignore a rather important fact about these voters: they did not behave as the Nixon/Humphrey voters behaved since they voted for Wallace. And the fact that they voted for Wallace should suggest to us that they were different from the voters who chose not to vote for Wallace. The same logic applies to the Perot voters: they may be different than the Bush and Clinton voters.

The second approach, using ordered probit (McKelvey and Zavoina 1975) is also problematic. The ordered probit model assumes that the choices can be ordered on a uni-dimensional continuum. Since we are explicitly considering that voters may perceive multiple dimensions – issues and the economy – this model would be inappropriate.

The third technique, multinomial logit, assumes that the random disturbance terms associated with each candidate for each voter are independent. This is equivalent to making the strong behavioral assumption of “Independence of Irrelevant Alternatives” (IIA) with regard to the random disturbances in the model. This assumption implies that the ratio of the probability of choosing the first candidate to the probability of choosing the second candidate is unchanged by the availability of the third candidate. Since we do not have strong prior beliefs about the relationship between the disturbances for the candidates we prefer to avoid using a model making such a strong assumption about those disturbances. The multinomial probit model we use allows us to avoid this assumption.<sup>3</sup>

### 3.1 Model Specification

Models of binary choices generally deal with characteristics that vary by individual, not that vary by choice. The choices in such models can simply be described as “box number 1” and “box number 2.” In polychotomous choice models it may be more desirable to measure characteristics of the alternatives. An advantage of measuring characteristics of the alternatives is that we can determine the effect of adding a choice with given characteristics. It also allows us to make use of observable distinguishing features among the alternatives.

Following Hausman and Wise (1978) we begin by defining the random utility of each voter over each of the three candidates in the 1992 election:

$$U_{ij} = a_i\psi_j + X_{ij}\beta + \varepsilon_{ij} \quad (1)$$

where  $a_i$  is a vector of characteristics unique to the voter  $i$ ,  $X_{ij}$  is a vector of characteristics unique to candidate  $j$  ( $j = 1,2,3$ ) with respect to voter  $i$ ,  $\psi_j$  and  $\beta$  are vectors of parameters to be estimated, and  $\varepsilon$  is a disturbance term. We assume that the three error terms ( $\varepsilon_1, \varepsilon_2, \varepsilon_3$ ) have a multivariate normal distribution, and we allow the errors to be correlated across the candidates. We also assume the error variances are homoskedastic. So, with the multinomial probit model we can account for the error correlations across the three utility functions without assuming a specific structure for the choice process. As usual, we assume the individual votes for the candidate offering the highest utility.

Using the multinomial probit model only one coefficient is estimated per characteristic of the alternatives. For characteristics that vary by individuals we must estimate (M-1) coefficients per characteristic, where M is the number of choices. Thus in the present case we estimate two coefficients per individual characteristic. One coefficient gives the effect of a change in the variable on the respondent’s utility of voting for Bush relative to Perot, the other coefficient gives the effect of a change in the variable on the respondent’s utility of voting for Clinton relative to Perot. The estimation of this model is discussed in Appendix I.

The data we use to estimate the model come from the 1992 American National Election Study (Miller, Kinder, and Rosenstone 1993). Because very little data was available regarding voters' impressions of Perot we have only one choice-specific variable in the model: the ideological distance between the voter and each candidate. As discussed above, we estimate a single coefficient for the effects of ideological distance across the three candidates.<sup>4</sup> As described earlier, the distance between the voter's position and the candidate's position was constructed as the squared difference between the respondent's self-placement on the NES seven-point ideology scale and the candidate's mean placement on the same scale by all respondents.

We used the respondents' assessments of the change in their personal finances over the past year, and the respondents' assessments of the change in the national economy over the past year to measure the influences of economic evaluations on the respondents' vote choices. For both variables pessimistic responses were coded higher.

To measure the impact of policy issues we included respondents' opinions of whether it is the government's role to provide: jobs for citizens; health care; and assistance to minorities. Each of these responses was coded on a seven-point scale, with conservative responses coded higher. Furthermore, we measured respondents' opinions on abortion with a question offering four choices to describe their views of appropriate government involvement in the issue, with pro-choice responses coded higher.

We included respondents' approval or disapproval of term limits for politicians to test the angry-voter hypothesis (approval coded higher). We have two other measures which, to varying degrees, may shed light on the angry voter hypothesis. First, we have the respondents' reporting of whether they voted in 1988. If the respondent did not vote in 1988, but did vote in 1992, then the "angry voter" hypothesis would suggest that this was a voter coming out in 1992 solely to demonstrate anger, and hence should vote for the anti-status-quo choice: Perot. Second, we included the respondent's assessment of whether the deficit was one of the three most important issues facing the country to determine whether Perot's primary issue was effective for him. As noted earlier, to the extent that attaching importance to the deficit defines an angry voter, then voters who viewed the deficit as important should have gone to Perot as "angry-voters."

We also included several measures of respondents' characteristics expected to influence vote-choice. We included the respondents' education, age, gender, and party-affiliation. Education was measured by respondent's years of schooling. We expected, *ceteris paribus*, for more educated voters to prefer Bush to Clinton or Perot. It was difficult to have a priori expectations regarding Perot versus Clinton. Rather than assume a linear relationship between age and candidate-preference we included three dummy variables for age: 18-29, 30-44, and 45-59; with persons 60 or over being the excluded group. If voters develop party loyalty over time, then younger voters should have been more perceptive to Perot's appeal. We included dummy variables for Democratic and Republican partisans (we included those leaning towards one of the parties as partisans), leaving Independents

as the omitted category. To allow for regional effects, we specified the model with three dummy variables, with the Midwest being the excluded category.

With this specification, we can determine the validity of the three major accounts of the 1992 election we discussed earlier. To examine the economic voting account, we look to the coefficients on the economic assessments variables. For the issues and ideology explanations, the estimated effects of both candidate ideology and respondent attitudes on the four policy issues will be important. Last, for the angry voter hypothesis, we are interested in the effects of respondents' evaluations of term limits and the deficit on voter choice, as well as the behavior of those voters who did not vote in 1988, but did vote in 1992.

### 3.2 The Multinomial Probit Results

The estimates of the multinomial probit model are presented in Table 3.<sup>5</sup> The column on the far left gives the independent variables, and the other columns give the coefficients for Bush relative to Perot, and Clinton relative to Perot, respectively. The coefficients can be used to generate predicted probabilities for each individual voting for any of the three candidates. Using the mean probability as the predicted vote-share for each candidate, our model predicts the proportions of voters for each candidate quite well. In the sample used to generate these estimates, 34.1% of respondents voted for Bush, 45.8% for Clinton, and 20.0% for Perot.<sup>6</sup> Our model predicts a three-candidate vote outcome of 34.0% for Bush, 46.0% for Clinton, and 20.1% for Perot.<sup>7</sup> We generated predicted vote-choices for each individual using the algorithm that a person's vote is assigned to the candidate which that person has the highest estimated probability of voting for. Using this method the overall correct prediction rate for the multinomial probit model across the three candidates is 74.0%.

Before turning to individual coefficients, note that, as with any non-linear model, determining the relative effect of each variable on the probability of supporting one of the three candidates is contingent upon the values of all other variables. Therefore, our initial discussion of our estimates is brief, describing only which coefficients reach statistical significance. Following our initial discussion of the estimates we present analyses of the effects of the important independent variables based on first-differences which we report below in Table 4.

#### 3.2.1 The Economy

In line with recent work on economic voting (e.g., Kinder and Kiewiet 1981), we find that a voter's assessment of his or her personal financial condition did not have a statistically significant influence on which candidate he or she supported in 1992. However, we see a very strong effect of the voter's assessment of the state of the *national* economy over the past year. Respondents who perceived that the national economy had deteriorated over

the past year were significantly less likely to support Bush relative to Perot. And such respondents were significantly more likely to support Clinton than Perot. This suggests that Perot was unable to convert his reputation as a businessperson into a perception among voters that he would be able to fix the economy. Thus, while it is no surprise that Bush was hurt by the economy, it was crucial for Clinton that he, not Perot, was the big winner from the negative perceptions on the economy.

### 3.2.2 Ideology and Issues

We estimated only one coefficient for the effect of ideological distance between the respondent and the candidate. The estimated effect is negative and statistically significant, as expected. The closer a voter was to one of the three candidates, the more likely he or she was to support that candidate, *ceteris paribus*.

Of the five specific issues we examine in this model, we see that only two had significant influences on the choice between Bush and Perot: government-sponsored health care and abortion rights. These results show that those who supported a government-run health care system were more likely to support Perot relative to Bush. This is not too surprising, since most voters must have perceived that Bush was against a state-run health care system, while Perot's position may have been unclear. Additionally, those who were "pro-life" supported Bush and those who were "pro-choice" supported Perot, which is consistent with the clear stands taken by both Bush and Perot on this issue. The impact of respondents' opinions on abortion on their willingness to vote for Bush was quite large.

For the Clinton versus Perot comparison, we see one significant issue effect: government assistance for minorities. Here we see that those who supported continuation of such assistance by the national government were much more likely to support Clinton than Perot. Note that this issue matters in addition to general liberal-conservative positions. Given that this was the only significant coefficient for issue variables distinguishing Clinton and Perot, and given that this effect is neither large nor compelling, issues were probably *not* what separated Clinton from Perot in the minds of the voters.

In an election year with a slumping economy, the issue of government provision of jobs appeared to have had no effect on voter choice. Despite all of Clinton's campaign rhetoric about the importance of a government role in the economy, the question of government provision of jobs did not seem to matter as much as assessments of the state of the national economy.

### 3.2.3 Angry Voters

One of the common interpretations of the 1992 election is that Perot was able to mobilize hordes of disaffected or normally uninterested voters. However, we find that people who reported voting in 1992 but did *not* participate in the 1988 election were more likely to vote for Bush than Perot, though more likely to vote for Perot than Clinton, when

compared to people who did not report voting in 1988. In other words, of those who did not vote in 1988, the voters who were mobilized to participate in the 1992 election were more likely to prefer Bush, the incumbent, than the two alternatives. Hence, again we find no support for the “angry voter” scenario.

Further, the coefficients for voters’ opinion of term limits for politicians were not significant. And if anything, those who supported term limits were marginally less likely to support Perot relative to either of the two candidates. This leads us to believe that term limits was not the critical focus of the “angry voters”, nor that it led them to support Perot. Thus the “angry-voter” issue was overblown by the media.

### 3.2.4 Respondents’ Characteristics

Partisanship produced results as anticipated. Self-styled Republicans were overwhelmingly more likely to support Bush than Perot, while professed Democrats supported Clinton relative to Perot. Republicans appeared more likely to support Perot relative to Clinton, and Democrats appeared more likely to support Perot relative to Bush; though neither of these latter two effects reached statistical significance. Thus Perot’s edge amongst Republican and Democratic defectors exhibited in Table 1 receives some support here, though it is not conclusive.

The demographic results produced some surprises. While women were significantly less likely than men to vote for Perot, controlling for all of the other variables in the model, the coefficient for the gender variable is twice the magnitude for Bush as for Clinton. Thus, all other things being equal, female voters were more likely to support Bush than were male voters. This is an unexpected yet important result given the “gender-gap” between the parties, and given that even in 1992 the bivariate split among respondents showed Clinton doing ten points better among women than among men. In a fully specified model, there is no Clinton-Bush gender gap. Or, the observed bivariate gender-gap can be explained by characteristics of the respondents other than their gender. It may partly be explained because Perot took male supporters from Bush, making Bush appear weaker relative to Clinton among men than he otherwise would have.

The age dummy variables were coded with the oldest respondents (60 and older) being the excluded category. The age coefficients demonstrate that both Bush and Clinton did better among older voters, while Perot appealed more to younger voters. Younger voters may have had less firm partisan allegiances and hence been more susceptible to Perot’s appeal. Both Bush and Clinton did better than Perot among educated voters, but the effect reaches statistical significance only for Bush. The clearest regional effect observed is Perot’s poorer showing in the South, *ceteris paribus*, relative to the rest of the country when compared to both Bush and Clinton.<sup>8</sup>

### 3.2.5 Choice Process

Last, notice that we do not estimate sizeable correlations between the error terms in the multinomial probit model. The largest correlation involves Bush and Perot (.27). This suggests that on some unobserved attributes voters perceived Perot to be similar to Bush. But none of the estimated correlations are statistically significant at traditional levels. Note that this does not mean that the IIA condition is not violated in the election; this simply means that the *non-systematic* component of voters' utility does not account for a violation. We show below in our ideology simulations that the presence of a third choice, Perot, had an impact on the relative vote shares of the other two candidates..

## 3.3 The Magnitude of Effects of the Independent Variables

Since the coefficients in Table 3 are translated into probabilities in a complex way we present "first-differences" in Table 4 (King 1989). This shows the change in estimated probability of choosing each of the three candidates based on changes in specific independent variables. For instance, the first row shows the estimated probabilities of an individual choosing Bush, Clinton, or Perot if she felt her personal finances had improved in the past year. The second row indicates the predicted probabilities for the same respondent had she felt her personal finances had gotten worse in the past year. The difference between the predicted probabilities in the two rows represents the effect of the respondent changing her view of her personal finances from better to worse. Since the changes in probabilities from changing one independent variable depend upon the values of the other independent variables, we performed all these calculations on a hypothetical individual who would have had virtually identical probabilities of supporting each candidate. This hypothetical voter was female, was of average education, believed the economy and her personal finances were unchanged over the past year, was an independent from the south, had voted in 1988, was middle-aged (30-44), approved of term limits for politicians, was at modal positions on the issues, and was at sample average ideological distances from each candidate.

The first difference reveals very clearly how much more respondents' opinions of the national economy mattered than did respondents' opinions of their personal finances. If the hypothetical respondent felt her personal finances had gotten worse as opposed to better, she was 7% less likely to vote for Bush. However, if this hypothetical respondent felt the national economy had gotten worse as opposed to better, she was then 29% less likely to vote for Bush. The first differences also reveal how much Clinton was the beneficiary of the economic discontent. The hypothetical voter believing the economy got worse rather than better was 30% more likely to vote for Clinton but was no more likely to vote for Perot. Thus Perot was unable to capitalize on the voters' dissatisfaction with the economy.

The effects of changes in ideology are measured as follows. The "near" row gives the probability of the model voter choosing each candidate if she were one unit away from that

candidate on the ideological scale. The “far” row gives the probability of the hypothetical voter choosing the indicated candidate if she were 2.4 units from the candidate on the ideological scale. Thus for each of the candidates, movement away from a voter would reduce the voter’s probability of voting for that candidate by approximately .12. We return to a more detailed analysis of this below.

Among issues, abortion had a very large impact. If our hypothetical voter were pro-life, she would have had over a 62% likelihood of voting for Bush. However, if the same voter were pro-choice instead of pro-life then, according to our estimates, her probability of voting for Bush would have dropped from .62 to .28 and her probability of voting for Clinton would have risen from .22 to .38. Hence a 40% advantage for Bush over Clinton would swing to a 10% deficit. Thus voters were affected strongly by the candidates’ positions on abortion.

The estimated impact of respondents’ views on government provision of minority assistance shows that it was a very important issue. If our hypothetical voter believed the government should support minorities, she had a .48 estimated probability of supporting Clinton, which drops to .20 if she believed that the government should not provide assistance to minorities. The opposite effects are observed in Table 4 for the probability of voting for Bush and Perot, since the probability that the same voter supported either of them was greater if the voter believed in no government assistance instead of government help for minorities. Note that this effect is estimated *controlling* for general liberal-conservative ideology. Thus while Clinton was not Dukakis, he was more appealing than either Perot or Bush to people who believed in additional government assistance for minorities; and he was less appealing than Perot or Bush to people who did not believe in additional government assistance for minorities.

Lastly, just as seen in Table 3, the voter’s opinion on term limits, which should characterize “angry voting,” had little effect upon the probabilities of voting for any of the three candidates. Whether our hypothetical voter supported or opposed term limits results in less than a 2% change in the likelihood of supporting any of the candidates. The deficit potentially had a large impact. If our hypothetical voter shifted her position on the importance of the deficit it caused a 10% increase in the likelihood of voting for Perot, and a 17% decrease in the likelihood of voting for Bush. Thus Bush was held accountable for the deficit, and Perot did well on the issue he emphasized.

## 4 Effects of Candidate Ideological Movement

While the effect of ideology presented in Table 4 looks large, the apparent impact of candidate ideology may be misleading. It is true that a shift in one voter’s ideological position causes a large swing in probabilities of that voter choosing different candidates. But it would be a mistake to think that by choosing a different ideological position (or by forcing his opponents to appear to represent a different ideological position) a candidate could have significantly raised his vote-share. For, by improving his ideological proximity



relative to some voters, a candidate must simultaneously worsen his ideological proximity to other voters. To test the effect of strategic behavior on the part of the candidates with regard to positioning themselves on the liberal-conservative dimension we simulated the effect of each candidate moving across the ideological space, holding the position of the other two candidates unchanged. We performed this simulation by computing the probability of each respondent voting for each of the three candidates. The probabilities were recomputed as we held everything fixed except the ideological position of a single candidate, whose ideological position was adjusted from 0.1 to 7.0 in increments of .02.

Figures 1(a) - 1(c) show the predicted vote-share of each candidate (the vertical axis) as Bush, Clinton, and Perot, respectively, were moved along the liberal-conservative dimension (the horizontal axis). The most striking observation is that Bush did *not* move too far to the right in the election. According to our estimates, he would have received his maximum vote-share (34.6%) had he been positioned at 4.60. Since the electorate thought he was at 5.05, he was very close to his optimal position; and his predicted vote-share at his perceived position was 34.3%. Thus at best Bush could have improved his vote-share by 0.3% by moving slightly towards the ideological center. Had Bush moved too far to the left he would have lost votes, most of which would have gone to Perot. Clinton's vote-share would have remained almost constant no matter where Bush was perceived to be.

Similarly, Clinton was also close to his optimal ideological position. His vote-share would have been maximized (47.3%) had he been perceived to be at 4.0 on the ideological scale. His perceived position was 3.19, which gave him a predicted vote-share of 46.4%. The interesting thing to note here is that Bush would have had to push the public's perception of Clinton *way* over to one extreme or the other in order for Clinton's vote-share to have dropped below Bush's vote share. In fact, since the likely place for Bush to try to push the perception of Clinton was to the left, Clinton would not have dropped below Bush until he hit the very edge of the scale. This is a position on the scale at which candidates are simply not likely to be perceived.

Perot's vote share would have been maximized had he been perceived to be at 4.24 on the ideological scale, where his predicted vote share would have been 20.2%. This is virtually indistinguishable from his actual mean perceived position of 4.31. Thus any movement from Perot's perceived middle-of-the-road position would have cost him votes. And the overall findings from this simulation are clear: perceived ideological movement by the candidates would not have affected the election in a significant way.

## 5 Effects of Changes in the Distribution of Economic Views

Table 4 indicated the effects of a single voter changing his or her preferences or opinions on the issues. And Figures 1(a)-1(c) showed the effects of the candidates moving their

ideological position. The other interesting counterfactual effect to examine is what would have happened under different economic circumstances. What we would really like to know is: Was it the economy, stupid? To see this, we want to know what would have happened if voters had the same opinions about the economy in 1992 that they did in 1988. To simulate this outcome we examined the distribution of voter preferences on the two questions relating to the economy – their personal finances and their view of the national economy – for 1988 and 1992. Then we randomly re-assigned opinions about the economy to the 1992 respondents so that the aggregate distribution of opinions matched the 1988 aggregate distribution of opinion.<sup>9</sup> This allowed us to compute the probability of voting for each candidate using these hypothetical values for the economic perception variables, and the respondents' actual values for all of the other variables.

Table 5A shows the distributions of opinion about the economy in 1988 and 1992. The table demonstrates the huge shift in respondent opinions on the state of the national economy from 1988 to 1992. In 1988 only 31.2% of respondents felt the economy had gotten worse in the past 12 months. In 1992 this percentage had more than doubled to over 72% of respondents. The shift in opinion regarding respondents' personal finances is not nearly as severe; but is still significant. Thus, if voters chose to base their decisions on the economy, this shift would have been devastating for Bush.

Table 5B presents the results of the simulation described above. The first row of Table 5B shows the predicted vote-share for each candidate given the actual values for 1992. The second row gives the predicted vote share when respondents' opinions about their personal finances are adjusted to match the 1988 distribution. The third row shows the predicted vote share when respondents' opinions about the national economy are adjusted to match the 1988 distribution. And finally the fourth row gives the predicted vote-shares when respondents' opinions about both their personal finances and the national economy are adjusted to match the 1988 distributions. The table offers a striking result : *if voters' beliefs about the economy in 1992 were identical to their beliefs in 1988, then it would have changed the margin between Clinton and Bush by 8.5%. Under the counter-factual scenario the gap in the sample between Bush and Clinton is cut by more than two-thirds: moving from an 11.9% rout to a 3.4% contestable race. But since the sample we used to make these predictions is biased approximately 3% towards Clinton and 3% against Bush, an 8.5% change in the actual electorate would have given Bush a 2.9% victory over Clinton. Thus, simply put, it was the economy.*

Finally, Perot's share of the vote-total turns out to be essentially independent of voters' perceptions of economic circumstances: he goes from a 20.1% share to a 20.6% vote-share. This is generally consistent with observations we made earlier in our discussions of Tables 3 and 4. There we saw that our results indicate that, across the electorate, we find little which systematically drove people to support the candidacy of Perot. From disaffection with the economy, to ideology and issues, and even to general disaffection with the national government, we have shown that none of these factors accounts much for the reasons people voted for Perot. The only exception to this appears to be respondent views on the importance of the deficit.

## 6 Effect of Ross Perot

Even so, an important question to ask about the 1992 election is where would the Perot voters have gone in his absence? We are able to answer that in a straightforward manner. The multinomial probit technique gives us an expected utility to each voter for each of the three candidates; as well as an estimate of the relationship between the disturbance terms for the three candidates. Thus, for each Perot voter, we can compare his or her expected utility for Bush to his or her expected utility for Clinton, and utilize our estimate of the distribution of the disturbance terms to predict whom they would vote for.<sup>10</sup> The results are that 49.5% of the Perot voters would have voted for Bush; 50.5% would have voted for Clinton.<sup>11</sup> Thus the Perot voters would have been split almost evenly among the two candidates. This means that the Perot voters were *not* voters who would have deserted Bush with or without Perot's presence; in fact they were *more* likely to be Bush voters than was the rest of the voting population. Among the set of Clinton and Bush voters the two-way split was 46% versus 34%; which translates to a 57.5 and 42.5% share of the two-party vote, respectively. Thus the Perot voters were more pro-Bush than other voters. In the absence of Perot we would predict a 55.5% Clinton victory in our sample, rather than the above-mentioned 57.5% Clinton victory. Thus Perot's presence inflated Clinton's margin over Bush by 4%

## 7 Conclusion and Discussion

Between Perot's candidacy, the state of the economy, and the overwhelming Democratic victory, there were many unusual characteristics of the 1992 election. Our results disprove some interpretations of this election. The first common interpretation of the 1992 election we have rebuked is the "angry voter" hypothesis. Voters were angry, but they were angry about the state of the economy — not the state of the government. The second interpretation we discount is that the outcome occurred because the Democrats succeeded in nominating a more moderate candidate. On one hand, our model shows that candidate ideology did matter to voters in 1992, controlling for many other political issues. However, the electorate perceived Clinton to be just as liberal as they had perceived Dukakis to be in 1988, and so it cannot be that Clinton won the election by appearing more moderate than had Dukakis. In fact, we have shown that the election outcome would have been the same no matter how Clinton was perceived on the ideological spectrum. However, we should not lose sight of the trees for the forest. Some issues raised during the campaign *did* matter, since Bush's pandering to the right cost him dearly among pro-choice voters.

This leaves standing the common interpretation that the economy played a key role in Clinton's success. Our analysis demonstrates that the national economy was the dominant factor in the 1992 election. Voters in 1992 were overwhelmingly convinced that the national economy was in bad shape. The effect of voters' perceptions of the national economy was staggering. A respondent who felt the national economy had improved was 35% more likely to vote for Bush than Clinton; but if that same respondent felt the

economy had deteriorated he or she was 25% more likely to vote for Clinton than Bush! Nowhere else do we see such a large shift in voting probabilities, and it suggests the magnitude of the impact of economic evaluations. Our aggregate estimates indicate that economic change from 1988 to 1992 cost Bush 8.5% relative to Clinton. And we have been able to demonstrate that it was Clinton, not Perot, who obtained a great deal of his support from voters dissatisfied with the economy. This is one of our most important findings: that Clinton won the battle for the economically dissatisfied.

But even if voters had perceived the national economy to be in good shape, Bush still would have had a much tougher election than he did in 1988. Note that we predicted a 38.0%-41.4% split between Bush and Clinton under 1988 economic conditions. When we correct this for the slight Clinton bias in our sample, and translate it into a percentage of the two-party vote, we get a projected two-party split of 51.8%-48.2% for Bush over Clinton in 1992 *under 1988 economic conditions*. This is much closer than the 53.8%-46.2% Bush-Dukakis race. Thus, there were obviously other factors at work in Bush's loss. Apparently voters were not happy with Bush in 1992, beyond the effect of the economy.

Thus we think a coherent story of the 1992 election is as follows. First, the overwhelming dissatisfaction with the economy was a large nail in Bush's coffin. But it wasn't necessarily fatal. Perceptions of the economy had Bush starting the race 8.5% behind where he would have been under 1988 economic circumstances. This is not in and of itself enough to have eliminated him from the race. If one considers that Bush won the 1988 election by 6.4% then the 8.5% handicap does not seem impossible to overcome, particularly if Bush had been able to retain some electoral benefit from Desert Storm and if one considers Clinton's considerable personal baggage. And despite a challenge from the right in the primary, Bush's movement on the ideological liberal-conservative dimension did not cause him significant harm. However, given the powerful influence of abortion in determining respondents' vote choices it appears that Bush's pro-life stance was quite costly. The family values night at the Republican convention may have imposed substantial political costs on Bush.

There are three systematic conclusions we can draw about Perot's candidacy. First, the issue that worked for him was the deficit. Second, he took more voters from Bush than from Clinton. Third, those voters he took were from a group expected to favor Bush heavily over Clinton: men. Beyond this, Perot's appeal seemed to have little systematic component. He did *not* grab the votes of people most dissatisfied with economic performance or most desiring change in Washington. Again we have found little support for the "angry voter" hypothesis, especially as an explanation for the votes Perot received in 1992. We think another point to make about Ross Perot is what has been long known about American elections: money buys votes, and money even buys votes in Presidential elections amidst the din and storm of the campaign (Jacobson 1978, Nagler and Leighley 1992).

Last, this election has led us to employ a new methodology to analyze presidential election voting: multinomial probit. Most elections in the United States involve only two candidates, and political science has well-known theoretical and methodological tools to study those elections. As we have argued in this paper, elections involving more than two candidates present particular problems for these models. These problems are not intractable, but require the use of appropriate methodological tools to insure that the results we obtain are not influenced by improper assumptions.

## 8 Appendix I

### 8.1 Derivation of the Multinomial Probit Model

#### 8.1.1 The Basics of the model

The multinomial probit model allows us to estimate the coefficients of the model while assuming the errors are correlated, and to estimate these error correlations. Here, we present the details of the multinomial probit model, which follows a framework originally proposed by Hausman and Wise (1978); though we deviate from those authors in the specification of the covariance matrix of the error terms. First, we develop the basics of a multinomial probit model for a three-candidate election. We then describe our modeling of the error variances.

We define a random utility function for voter  $i$  over each candidate  $j$ , where  $j = 1, 2, 3$ :

$$U_{ij} = \bar{U}(X_{ij}, a_i) + \varepsilon(X_{ij}, a_i) = X_{ij}\beta + a_i\psi_j + \varepsilon_{ij}, \quad (2)$$

where  $X_{ij}$  is a vector of characteristics unique to the candidate choice  $j$  relative to voter  $i$ ,  $a_i$  is a vector of characteristics unique to the individual decision maker  $i$ ,  $\varepsilon$  is a random variable, and  $\bar{U}$  defines the systematic component of the utility function of a voter.  $\bar{U}$  is assumed to have the following functional form:

$$\bar{U} = \bar{U}(X_{ij}, a_i) = X_{ij}\beta + a_i\psi_j \quad (3)$$

Note that we are assuming that  $\bar{U}$  is a linear function of both the characteristics specific to the choice ( $X_{ij}$ ) and the individual ( $a_i$ ), with respective parameters  $\beta$  for the choice-specific characteristics and  $\psi_j$  for the individual-specific characteristics. The latter coefficient is subscripted by  $j$  to indicate that the effects of the individual-specific characteristics vary across choices.

We assume that the random elements of the utility functions,  $\varepsilon_{ij}$ , have a multivariate normal distribution with mean zero and covariance matrix:

$$\Sigma_i = \begin{bmatrix} \sigma_{i,1}^2 & & \\ \sigma_{i,12} & \sigma_{i,2}^2 & \\ \sigma_{i,13} & \sigma_{i,23} & \sigma_{i,3}^2 \end{bmatrix} \quad (4)$$

Now we assume that the voter chooses the candidate who will bring them the greatest utility. This gives the following expression for the probability that the individual would choose the first of the three alternatives:

$$\begin{aligned} P_{i1} &= Pr[(U_{i1} > U_{i2}) \quad \& \quad (U_{i1} > U_{i3})] \\ P_{i1} &= Pr[(\bar{U}_{i1} + \varepsilon_{i1} > \bar{U}_{i2} + \varepsilon_{i2}) \quad \& \quad (\bar{U}_{i1} + \varepsilon_{i1} > \bar{U}_{i3} + \varepsilon_{i3})] \\ P_{i1} &= Pr[(\varepsilon_{i2} - \varepsilon_{i1} < \bar{U}_{i1} - \bar{U}_{i2}) \quad \& \quad (\varepsilon_{i3} - \varepsilon_{i1} < \bar{U}_{i1} - \bar{U}_{i3})] \end{aligned} \quad (5)$$

Following Hausman and Wise (1978), we let

$$\eta_{i,21} = \varepsilon_{i2} - \varepsilon_{i1}, \quad (6)$$

$$\eta_{i,31} = \varepsilon_{i3} - \varepsilon_{i1}. \quad (7)$$

The joint distribution for the  $\eta_{i,j1}$  will be bivariate normal, with covariance matrix:

$$\Omega_{i1} = \begin{bmatrix} \sigma_{i,1}^2 + \sigma_{i,2}^2 - 2\sigma_{i,12} & \\ \sigma_{i,1}^2 - \sigma_{i,13} - \sigma_{i,12} + \sigma_{i,23} & \sigma_{i,1}^2 + \sigma_{i,3}^2 - 2\sigma_{i,13} \end{bmatrix} \quad (8)$$

This allows us to write the probability that voter  $i$  will choose candidate 1 as:

$$P_{i1} = \int_{-\infty}^{\frac{\bar{u}_{i1} - \bar{u}_{i2}}{\sqrt{\sigma_{i,1}^2 + \sigma_{i,2}^2 - 2\sigma_{i,12}}}} \int_{-\infty}^{\frac{\bar{u}_{i1} - \bar{u}_{i3}}{\sqrt{\sigma_{i,1}^2 + \sigma_{i,3}^2 - 2\sigma_{i,13}}}} b_1(\eta_{i,21}, \eta_{i,31}; r_1) d\eta_{i,21} d\eta_{i,31} \quad (9)$$

with  $b_1$  being the standardized bivariate normal distribution and  $r_1$  being the correlation between  $\eta_{i,21}$  and  $\eta_{i,31}$ :

$$r_1 = \frac{\sigma_{i,1}^2 - \sigma_{i,13} - \sigma_{i,12} + \sigma_{i,23}}{\sqrt{(\sigma_{i,1}^2 + \sigma_{i,2}^2 - 2\sigma_{i,12})(\sigma_{i,1}^2 + \sigma_{i,3}^2 - 2\sigma_{i,13})}} \quad (10)$$

Similar expressions for  $P_{i2}$  and  $P_{i3}$  can be easily obtained.

To simplify exposition, we define:

$$\bar{U}_{12} = \bar{U}_{i1} - \bar{U}_{i2} = (X_{i1}\beta + a_i\psi_1) - (X_{i2}\beta + a_i\psi_2) \quad (11)$$

with similar expressions for the remaining  $\bar{U}_{jk}$ . We then define:

$$\tilde{U}_{12} = \frac{\bar{U}_{i1} - \bar{U}_{i2}}{\sqrt{\sigma_{i,1}^2 + \sigma_{i,2}^2 - 2\sigma_{i,12}}} \quad (12)$$

which again produce similar definitions for  $\tilde{U}_{jk}$ . This allows us to facilitate writing our earlier expressions for:  $P_{i1}$ ,  $P_{i2}$ , and  $P_{i3}$  as follows:

$$P_{i1} = \int_{-\infty}^{\tilde{U}_{12}} \int_{-\infty}^{\tilde{U}_{13}} b_1(\eta_{i,21}, \eta_{i,31}; r_1) d\eta_{i,21} d\eta_{i,31} \quad (13)$$

### 8.1.2 Parameterization of the Error Variances and Estimation

We can now estimate the model, once we have determined how to parameterize the error variances.<sup>12</sup> Using the covariance matrices defined above, we can identify and estimate selected elements of the utility function errors,  $\Sigma_i$  (Bolduc 1992; Bunch 1991; Daganzo 1979; Keane 1992). In our empirical work, we assume homoskedasticity; i.e., we assume that  $\sigma_1^2 = \sigma_2^2 = \sigma_3^2 = 1$ .<sup>13</sup> Whereas in their seminal work Hausman and Wise posited the error variances to be linear functions of independent variables, we estimate directly values for the error covariances,  $\sigma_{12}$ ,  $\sigma_{13}$ ,  $\sigma_{23}$  (referred to in the text as:  $\sigma_{BC}$ ,  $\sigma_{BP}$ , and  $\sigma_{CP}$ ). These estimates can be considered error correlations, due to our normalization of the error variances.

## 9 Appendix II

### 9.1 Calculation of Alternative Choice for Perot Voters

Recall that voter  $i$ 's utility for voting for candidate  $j$  is given as

$$U_{ij} = X_{ij}\beta + a_i\psi_j + \varepsilon_{ij}, \quad (14)$$

where we can define  $\bar{U}_{ij}$  as the systemic component:

$$\bar{U} = X_{ij}\beta + a_i\psi_j \quad (15)$$

Now if Perot were not in the race, the probability of the  $i^{th}$  voter choosing Bush would be:

$$\begin{aligned} P_{i,Bush} &= Pr[(\bar{U}_{i,Bush} + \varepsilon_{i,Bush} > \bar{U}_{i,Clinton} + \varepsilon_{i,Clinton})] \\ &= Pr[(\varepsilon_{i,Clinton} - \varepsilon_{i,Bush} < \bar{U}_{i,Bush} - \bar{U}_{i,Clinton})] \end{aligned} \quad (16)$$

Now we make use of the fact that:

$$\eta_{i,CB} = \varepsilon_{i,Clinton} - \varepsilon_{i,Bush} \quad (17)$$

Since  $\eta_{i,CB}$  is a bivariate normal random variable, its marginal distribution is normal. And given our expression for the variance of  $\eta_{i,CB}$  we can express the probability of choosing Bush out of the set (Bush, Clinton) as:

$$P_{i,Bush} = \Phi\left(\frac{\bar{U}_{i,Bush} - \bar{U}_{i,Clinton}}{\sqrt{\sigma_{i,Bush}^2 + \sigma_{i,Clinton}^2 - 2\sigma_{i,Bush-Clinton}}}\right) \quad (18)$$

Now given our normalization of variances  $\sigma_{i,Bush} = \sigma_{i,Clinton} = 1$ ; and our estimate of  $\sigma_{i,Bush-Clinton} = -.08$  we have everything we need to compute  $P_{i,Bush}$ .



**Table 1**  
**Vote-Choice By Economics, Ideology and Anger in the 1992 Election**

		Bush		Clinton		Perot	
		%	N	%	N	%	N
<i>Personal Finances</i>	Better	42.7	217	38.2	194	19.1	97
	Same	38.6	225	46.3	270	15.1	88
	Worse	21.5	121	58.1	327	20.4	115
<i>National Economy</i>	Better	71.1	54	15.8	12	13.2	10
	Same	51.3	196	30.9	118	17.8	68
	Worse	26.0	309	55.4	659	18.6	221
<i>Party Identification</i>	Republican	70.2	466	9.5	63	20.3	135
	Independent	22.9	33	41.0	59	36.1	52
	Democrat	7.6	64	78.9	667	13.5	114
<i>Vote Choice in 1988</i>	Bush	55.0	410	23.6	176	21.4	160
	Dukakis	5.2	25	83.1	403	11.8	57
	Did Not Vote	29.5	80	50.6	137	19.9	54
<i>Gender</i>	Men	34.8	271	42.5	331	22.6	176
	Women	33.3	293	52.5	462	14.2	125
<i>Term Limits</i>	Favor	35.5	435	45.6	559	18.9	232
	Oppose	24.2	64	59.2	157	16.6	44
<i>Deficit</i>	Not Imp	32.9	342	51.3	534	15.9	165
	Important	36.9	176	40.3	192	22.9	109
<i>Abortion</i>	Pro-Life	47.5	66	40.3	56	12.2	17
	Only-Rape	46.3	202	37.8	165	15.8	69
	When-Needed	42.2	100	39.2	93	18.6	44
	Pro-Choice	22.3	180	57.4	464	20.3	164
<i>Entire Sample</i>		34.2	564	47.8	793	18.2	301

Note: Percentages listed are row percentages.

**Table 2:**  
**Distribution of Respondent Placements of Self and Candidates on Ideology**

	1988	1992
Respondent Self-Placement	4.37	4.21
Bush Ideology <sup>a</sup>	5.11	5.05
Bush: Ideological-Distance <sup>b</sup>	1.24	1.31
Dukakis Ideology <sup>a</sup>	3.24	–
Dukakis: Ideological-Distance <sup>b</sup>	1.50	–
Clinton Ideology <sup>a</sup>	–	3.19
Clinton: Ideological-Distance <sup>b</sup>	–	1.46
Perot Ideology <sup>a</sup>	–	4.31
Perot: Ideological-Distance <sup>b</sup>	–	1.15

<sup>a</sup> Mean placement of candidate by respondents.

<sup>b</sup> Mean ideological distance between candidate and respondent.

**Table 3**  
**Multinomial Probit Estimates For a Three-Candidate Model**  
**(Perot Coefficients Normalized to Zero)**

Independent Variables	Coefficients for:	
	Bush	Clinton
Ideological Dist.		-.09*
		.02
Constant	.50	-.44
	.44	.58
Felt Personal Finances Were Worse	-.04	.02
	.05	.05
Felt National Economy Was Worse	-.14**	.21*
	.08	.10
Oppose Gov't Jobs	.07	-.01
	.05	.05
Oppose Gov't Health Care	.10*	.06
	.05	.04
Oppose Gov't Minority Assistance	.01	-.17*
	.05	.05
Abortion	-.35*	.01
	.14	.11
Region (East)	-.15	.32
	.17	.21
Region (South)	.25	.50*
	.18	.19
Region (West)	-.11	-.03
	.18	.21
New or Returning Voter	.28**	-.23*
	.15	.17
Term Limits	.06	.08
	.13	.11
Felt Deficit Was a Major Problem	-.58*	-.003
	.22	.18
Democrat	-.19	1.34*
	.17	.28
Republican	1.00*	-.74
	.43	.46
Gender (Female)	.38*	.21
	.19	.14
Respondent's Education	.14*	.004
	.07	.06
Age: 18-29	-.86*	-.57*
	.41	.26
Age: 30-44	-.64*	-.54*
	.30	.19
Age: 45-59	-.51*	-.10
	.24	.21
$\sigma_{BC}$		-.08
		.28
$\sigma_{BP}$		.27
		.54
$\sigma_{CP}$		-.07
		.26

LL = -568.18; Percent-Correct = 70.6; Number of Observations = 909

Note: Maximum-likelihood estimates with their estimated standard errors below. \* indicates an estimate significant at the p=.05 level. \*\* indicates an estimate significant at the p=.10 level.

**Table 4**  
**Effects of Economics, Issues, and Anger in the 1992 Election**

		Probability of Voting For:		
		Bush	Clinton	Perot
<i>Personal Finances</i>	Better	0.42	0.31	0.27
	Worse	0.35	0.35	0.29
	<b>Difference</b>	0.07	-0.05	-0.02
<i>National Economy</i>	Better	0.54	0.19	0.27
	Worse	0.24	0.49	0.27
	<b>Difference</b>	0.29	-0.30	0.00
<i>Voter Ideology<sup>a</sup></i>	Near	0.46	0.39	0.31
	Far	0.32	0.28	0.20
	<b>Difference</b>	0.14	0.11	0.12
<i>Minorities</i>	Assist.	0.30	0.48	0.22
	No Assist.	0.46	0.20	0.33
	<b>Difference</b>	-0.17	0.27	-0.11
<i>Abortion</i>	Pro-Life	0.62	0.22	0.16
	Pro-Choice	0.28	0.38	0.34
	<b>Difference</b>	0.34	-0.16	-0.18
<i>Term Limits</i>	For	0.39	0.33	0.28
	Against	0.38	0.32	0.30
	<b>Difference</b>	0.01	0.01	-0.02
<i>Deficit</i>	Not Important	0.39	0.33	0.28
	Important	0.22	0.40	0.38
	<b>Difference</b>	0.17	-0.07	-0.09

Note: Table entries are the predicted probabilities of a hypothetical individual voting for Clinton, Bush or Perot based on different values of the row-variable. The profiles of this hypothetical voter are discussed in the text.

<sup>a</sup> Probabilities for each of the candidates in the voter-ideology row are based on the ideological distance between the voter and the particular candidate.

**Table 5A**  
**Distribution of Respondent Preferences on the Economy<sup>a</sup>**

Respondent Views of:	1988			1992		
	Better	Same	Worse	Better	Same	Worse
National Economy	18.8	50.0	31.2	4.6	23.1	72.3
Personal Finances	42.4	32.8	24.8	30.3	35.0	34.7

Note: Table entries indicate percentage of respondents in the appropriate category.

**Table 5B**  
**Effects of Changes in Distribution of**  
**Respondent Preferences: 1988 Economy Simulation**

		Predicted Vote Share for:		
		Bush	Clinton	Perot
<i>Sample (N=909)</i>	<i>1992</i>	34.0	46.0	20.1
<i>Respondent Finances - 1988</i>		34.2	45.7	20.0
<i>National Economy - 1988</i>		37.6	41.5	20.9
<i>Respondent Finances and National Economy - 1988</i>		38.0	41.4	20.6

Figure 1a

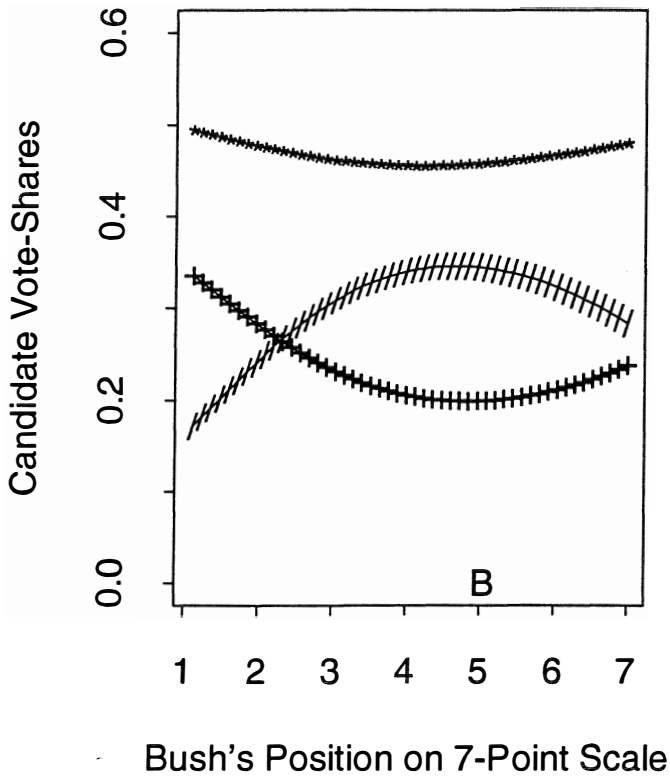


Figure 1b

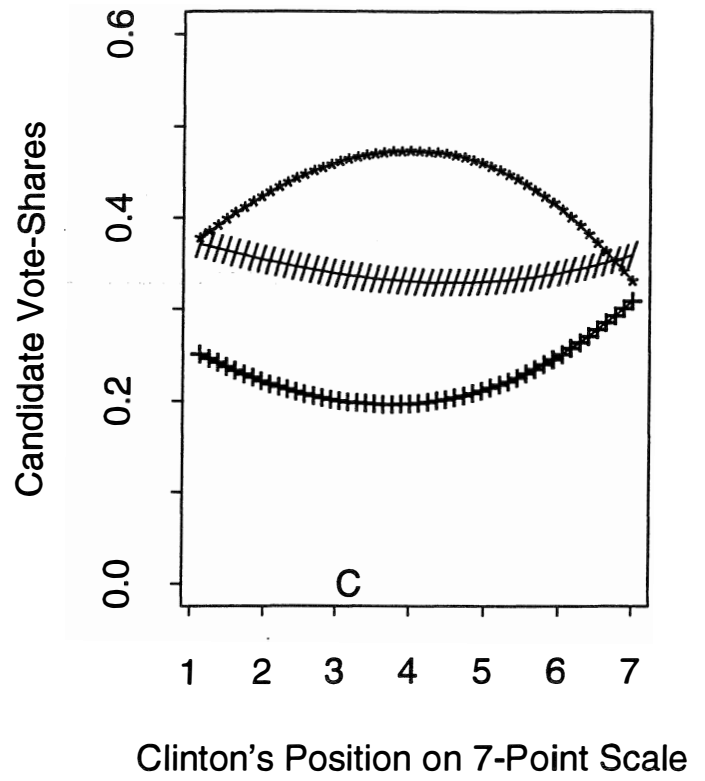
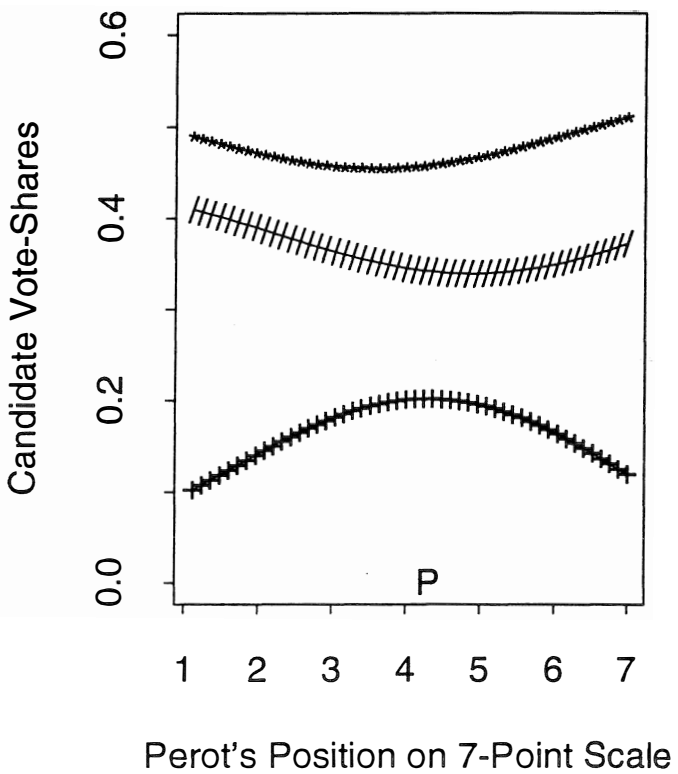


Figure 1c



/	Bush
*	Clinton
+	Perot

B = Bush's Position

C = Clinton's Position

P = Perot's Position

## 10 Endnotes

<sup>1</sup>Projection refers to the phenomena of respondents ‘projecting’ their position onto the candidate of their choice; this would cause respondents to appear closer to their choice than they really are (Brody and Page 1972).

<sup>2</sup>Bush moved only a slight bit to the left from 1988 to 1992 in respondents’ perceptions: from 5.11 to 5.05. Thus the voters saw the two major party candidates in roughly the same positions in 1992 as they did in 1988.

<sup>3</sup>Generalized Extreme-Value models also allow for IIA to be violated; but since they still impose a stronger assumption on the disturbances than does MNP we use the MNP model.

<sup>4</sup>We estimated models in which we relaxed this assumption. In those models, the three estimated coefficients for ideological distance were not statistically distinct from each other.

<sup>5</sup>We estimated a model with an identical systemic component using both a GEV and an independent probit (the independent probit model is a special case of MNP where all off-diagonal elements of the error covariance matrix are constrained to be zero). There are no appreciable differences in the estimated coefficients in either the GEV nor the independent probit estimates. In the GEV results, the estimates of the inclusive values were not informative about the groupings of the candidates.

<sup>6</sup>In the NES sub-sample of 909 respondents we use, there is a slight (3%) positive bias for Clinton, which our multinomial probit model reproduces.

<sup>7</sup>These predictions are the average value of  $\hat{P}_i$  over the 909 respondents in our sample.

<sup>8</sup>The reader used to seeing ‘race’ as a variable in models of vote-choice in American national elections will not find it here. So few blacks in the sample voted for Perot that it was impossible for us to estimate the coefficient. However, we ran the model on a sample of only whites and got essentially identical results.

<sup>9</sup>This was done by comparing the 1992 distribution of preferences on the national economy for our subsample of 909 voters that we estimated our model on to the 1988 distribution. For respondents who rated the economy as ‘worse’ in 1992 we randomly reassigned 58% of them to the ‘same’ category. We randomly reassigned 64% of the respondents who rated the economy as ‘same’ in 1992 to the ‘better’ category. This gave us a distribution matching 1988. A similar procedure was performed for ratings of respondent’s personal finances.

<sup>10</sup>In Appendix II we describe this calculation in more detail.

<sup>11</sup>These numbers are the average probability of voting for Bush and for Clinton among the Perot voters, as described in Appendix II.

<sup>12</sup>In this section we drop the  $i$  subscript for the sake of exposition.

<sup>13</sup>We tested this assumption in some alternative specifications and found no evidence that any of these three error variances violate this assumption.



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