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The Vote-Stealing and Turnout Effects of Ross Perot in the 1992 U.S. Presidential Election

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Including abstention as a choice in vote choice models enables one to calculate the vote-stealing and turnout effects of third-party candidates. A model of the vote including abstention also produces parameter estimates and marginal effects for some explanatory variables that differ from the results of a model that excludes abstention. We present two multinomial probit models of vote choice in the 1992 U.S. presidential election. One model includes abstention as a choice; the other does not. The model that includes abstention reveals that Ross Perot increased turnout by nearly three percentage points in 1992, and his candidacy decreased Clinton's margin of victory over Bush by seven percentage points. Under compulsory voting, Clinton's margin of victory barely increases, and Perot's vote share remains nearly constant.

> *If you choose not to decide, you still have made a choice.* — Lee, Lifeson, and Peart, "Free Will" (1980).

> *The act of voting requires the citizen to make not a single choice but two. He must choose between rival parties or candidates. He must also decide whether to vote at all.* — Campbell et al., *The American Voter* (1960, 89)

Studies of Anglo-American elections have been blessed by the simplicity of the two-party system. For decades, political scientists have used binary choice models such as logit or probit to study voter choice in elections in the U.S., U.K., and other systems with two major political parties. The dependent variable in a binary vote choice model takes two values: vote for the candidate from Party A or vote for the candidate from Party B. Political scientists who study elections using binary logit or probit delete from the analysis any voter who supported a third-party candidate and anyone who failed to vote. Recent studies of multicandidate elections have argued that researchers should use multinomial choice models that include all competing candidates or parties (Alvarez and Nagler 1995, 1998; Alvarez 1997;

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Whitten and Palmer 1996), but these models omit abstention as a choice. Omitting abstention as a choice leads to potentially erroneous conclusions about the effects of explanatory variables on vote choice and the impact of third-party candidates on elections.

We develop a unified model of vote choice and turnout, incorporating the decision whether to vote and the decision for whom to vote in the same statistical model. Our theoretical perspective is similar to the position of Aldrich, who argues that "one might view turnout as a part of voting, understood as an act to stand in comparison with choice of candidate or of party" (1997, 422). More generally, we believe that a model of any political action must attempt to explain all of the possible choices an actor might face. Vote choice models should include abstention as a choice in order to capture the effects of important explanatory variables on electoral behavior. Similarly, turnout models may lose information about voters when they fail to include the different candidates as distinct choices.

To demonstrate the range of phenomona that a unified model of vote choice and turnout explains, we turn to the 1992 U.S. presidential election. We focus on the 1992 presidential election since it is the one election in recent U.S. history in which a third-party candidate garnered more votes than the margin between the first and second-place candidates, and since much debate has focused on the impact of Ross Perot on the 1992 election. By including abstention in a model of the 1992 presidential vote, we are able to answer several substantively interesting puzzles, such as the impact of Ross Perot's candidacy on voter turnout and on the vote totals of the major party candidates.

We begin by discussing the advantages of incorporating vote choice and turnout decisions in the same model. We then present multinomial probit estimates of a model of the vote using two different samples of respondents: one sample excludes nonvoters, the other does not. We compare parameter estimates between the samples, revealing differences in the estimates of important parameters between the models. We then compare estimates of the vote-stealing effect of Ross Perot from the model that excludes abstention and the model that does not. The model including abstention reveals that Perot's candidacy increased turnout by nearly three percentage points and that he stole more votes from Clinton than from Bush.[1] Finally, we estimate the hypothetical outcome of the election under complete turnout, finding a slight increase in Clinton's margin of victory.

[1]Of course, Perot may have had an additional effect on the election by reframing the choice between Clinton and Bush or by changing the issues of emphasis in the campaign. As Asher notes, ". . . we can never rerun the presidential contest without Perot as a candidate. His very presence in the contest may have changed its dynamics in fundamental ways" (1995, 170).

1. A Unified Model of Vote Choice and Turnout

A unified model of turnout and vote choice has at least four advantages over models that examine only vote choice or only the decision to vote. First, statistical models that omit abstention also omit observations drawn from random-sample election surveys. This practice is equivalent to selecting on the dependent variable, which may produce a selection bias in parameter estimates. For example, suppose a researcher estimates a coefficient for the explanatory variable "retrospective evaluation of the national economy" in a vote choice model, finding that voters who have a positive evaluation of the economy are more likely to vote for the incumbent than for the challenger. Further suppose that most people who abstained from the election (and who were deleted from the analysis) had a positive view of the national economy. Then, the true relationship between economic evaluation and vote choice may not be revealed by the model that omits abstention. Omitting abstention as a choice also produces inaccurate calculations of the marginal effects of explanatory variables, which, in turn, affects simulations of the election outcome under different distributions of explanatory variables. By including abstention, and abstainers, in vote choice models, researchers gain a more accurate picture of electoral behavior.

Second, including abstention as a choice in a vote model with a third-party candidate will produce more precise estimates of the electoral effect of the third-party candidate than models that omit abstention. Ross Perot's strong showing in the 1992 U.S. presidential election led many researchers to study Perot's *vote-stealing effect:* Did he take more votes from Bill Clinton or George Bush? Alvarez and Nagler (1995) argue that in order to gain accurate estimates of the vote-stealing effect of third-party candidates, researchers should use multinomial probit (MNP) instead of simpler discrete choice methods such as multinomial logit (MNL). MNL assumes independence of irrelevant alternatives (IIA) or that the errors across choices are uncorrelated (see Hausman and Wise 1978; Maddala 1983). Alvarez and Nagler estimate an MNP model of vote choice in 1992 where the dependent variable is vote for George Bush, Bill Clinton, or Ross Perot, finding that Perot stole more votes from Bush than from Clinton.

By calculating the impact of Ross Perot on the 1992 election based on estimates from a three-choice model, Alvarez and Nagler assume that all of the Perot's supporters would still have voted had Perot not entered the race. We find sufficient reason to believe that many third-party supporters would abstain from the election if their preferred candidate were not in the race. To estimate accurately the vote-stealing effect of a third-party candidate, one should also estimate the candidate's *direct turnout effect,* which is the increase in turnout due to the candidate's presence in the race, holding other

things equal.[2] For the 1992 presidential election, we find that Perot took more votes from Clinton than from Bush after we control for Perot's direct turnout effect.

A third advantage of including abstention in a model of voter choice is that it enables researchers to estimate the impact of changes in turnout rates on election outcomes. A long literature in political science focuses on the likely outcome of elections under compulsory voting (Lijphart 1997) and relaxed voter registration laws (Rosenstone and Wolfinger 1978). By including abstention in vote choice models, we are better able to estimate the impact of changes in turnout rates on the vote totals of competing candidates. For the 1992 election, we find that compulsory voting would have increased Clinton's vote share slightly while holding Ross Perot's popular vote nearly constant.

Finally, unifying turnout and vote choice models will produce more accurate estimates of the effect of explanatory variables in turnout models. Turnout models typically lump all voters together and seek a model that explains their behavior versus the behavior of nonvoters. But voters differ. Lumping together the supporters of different candidates introduces measurement error in the dependent variable in vote choice models. In particular, we know that Democratic and Republican supporters often differ on the variables that researchers use to explain turnout, such as income, education, and age. If supporters of the competing candidates differ on variables that also explain turnout, then only a unified vote choice and turnout model will reveal the true effects of those variables. By separating supporters of the competing candidates in an election into separate categories of the dependent variable, researchers will provide better tests of explanations of turnout.

Two major issues surround the inclusion of abstention in a vote choice model. The first issue is theoretical: Is abstention an alternative comparable to voting for one of the candidates in the election or is abstention a wholly different kind of choice? The second issue is statistical: Should a model that includes abstention be estimated as a nested model, with a first choice of vote or abstain and a nested choice (after choosing to vote) among the competing candidates? These issues are intertwined. The estimation strategy should not be divorced from the substantive knowledge that an analyst has about the data being studied. Fortunately, a relatively new estimation technique in political science—multinomial probit—allows one to estimate a general model of vote choice and turnout that can accommodate several different positions on these two issues.[3]

[2]Third-party candidates may also increase turnout by making a race more competitive, but we do not calculate such *indirect turnout effects* in this paper.

[3]See Herron (1998) for an alternative method to incorporate abstention in vote choice models.

Abstention is generally included in a vote choice model in one of two ways. First, one might argue that choosing not to vote is very different from choosing among the competing candidates. Such a position argues for a nested model in which the first equation defines a choice between voting and abstaining while the second equation defines a choice among the competing candidates. Then, the choice among candidates is conditional on choosing to vote. Statistically, the nested model implies that the errors in the first equation are correlated with the errors in the second equation.

The appropriate nesting structure for a vote choice model is not clear. Many researchers assume that the initial choice is whether or not to vote, in which case the choice among competing candidates is nested. For example, Dubin and Rivers (1989) employ a selection model where the first-stage equation predicts turnout and the second-stage equation predicts vote choice. Born (1990) includes abstention in a nested logit model to explain voting in midterm congressional elections. However, a retrospective voting model (Key 1966) or "exit, voice, and loyalty" model (Hirschman 1970) might imply that voters first choose whether or not to vote for the incumbent (loyalty). If they choose not to vote for the incumbent, then they choose among the competing challengers (voice), or they choose not to vote (exit; see Dominguez and McCann 1996). The imposition of a nesting structure on the data is not a simple choice. We prefer to impose a nesting structure on the data only when one choice is clearly a precondition for subsequent choices. For example, Timpone (1998) presents a nested model where the first choice is whether to register to vote, and the nested choice, given that one has registered, is whether to turn out on election day. While registering to vote is a precondition for voting, choosing to vote does not clearly precede one's choice of candidate.

A second way to estimate the model would be to include abstention as a nonnested choice, similar in status to a choice among candidates. One might opt for this approach if the independent variables that explain a choice among the competing candidates also explain whether one decides to vote. Such a model might be estimated using multinomial logit, if one is willing to assume that the errors among alternatives are independent (Nownes 1992; Palfrey and Poole 1987).

Multinomial probit generalizes many nested models and allows one to estimate correlations in the errors across choices. By estimating the correlations in the errors between abstention and every other choice, the model captures a nesting structure in which voters first decide whether to vote and then decide for whom to vote. Multinomial probit also allows one to estimate a model in which different subsets of explanatory variables explain the choice among different subsets of alternatives. For example, one might include a voter's issue positions to explain the choice among competing

candidates, but not the choice to abstain. MNP also avoids making the statistical IIA assumption that many other models, such as multinomial logit, require.[4]

We conceive of the decision to vote and the decision for whom to vote as part of the same model in which individuals have utility for each of the candidates and for abstaining from the election. Though the theoretical debates on turnout have failed to generate a clear rationale for voting, we accommodate both a rational voting model (Downs 1957; Riker and Ordeshook 1968; Aldrich 1993) and a sociological model (Rosenstone and Wolfinger 1978; Wolfinger and Rosenstone 1980; Teixeira 1987). In a rational voting model, the individual's utility for voting is:

$$U_{\text{i,vote}} = P_i B_i - C_i + D_i \tag{1}$$

where P_{i} is the subjective probability of casting the decisive vote, B_{i} is the benefit from electing one's preferred candidate (or blocking one's least preferred candidate), C_{i} is the cost of voting, and D_{i} is civic duty, or the consumption value of voting. In our model, the benefits of voting for a candidate or of abstaining are a function of socioeconomic group membership, policy positions, evaluations of the economy, and evaluations of the candidates. The cost of voting is the inverse of education level (Rosenstone and Wolfinger 1978; Wolfinger and Rosenstone 1980). We include measures of age and efficacy to capture a person's sense of civic duty, *D*. We do not include a measure of a person's subjective probability that she will be decisive in the election since a direct measure is not available and since the objective probability of one person being decisive is close to zero (Gelman, King, and Boscardin 1998). We assume that the *B, C,* and *D* terms drive voting decisions.

To make explicit the link between turnout and vote choice, we rely on a random utility model in which a person has utility for each of the candidates and for abstention. The multinomial probit model is a form of random utility model in which the utility of individual $i \in \{1,...,I\}$ for alternative $j \in \{1,...,J\}$ is given by:

$$U_{ij} = \beta'_j x_i + \varepsilon_{ij} \tag{2}$$

where

[4]MNP is not the only model that permits IIA violations, though Alvarez and Nagler (1998) have argued for it due to flexibility. Other models that may accommodate IIA are the Generalized Extreme Value (Bhat 1995), Generalized Maximum Entropy (Golan, Judge, and Perloff 1996), and Random Parameters Logit (Jain, Vilcassim, and Chintagunta 1994).

x_i is a $q \times 1$ vector of individual characteristics, such as partisanship and issue positions,

β' is a $1 \times q$ vector of parameters on choice j,

ε_{ij} is the error term associated with i's utility for j.[5]

Stacking the individual's utilities for all choices yields the model:

$$U_i = \beta X_i + \varepsilon_i \quad \varepsilon_i = \left(\varepsilon_{i1}, \ldots, \varepsilon_{iJ}\right)' \sim IIDN_J(0, \Sigma), \tag{3}$$

where IID is assumed across observations, not choices. We observe individual i's self-reported choice, which we assume is utility-maximizing, such that $Y_{ij} = 1$ if $j = argmax_j(U_{ij})$ and 0 otherwise. We also observe the individual's characteristics, x_i, but we cannot observe utility. The model can be identified by normalizing the utility of one choice, J, to zero for all i and then estimating the difference in utility between J and all $j = (1,..., J - 1)$ (Dansie 1985; Bunch 1991; Keane 1992). The model is then:

$$U_i^* = \beta^* X_i^* + \varepsilon_i^* \qquad \varepsilon_i^* = \left(\varepsilon_{i1}^*, \ldots, \varepsilon_{i(J-1)}^*\right)' \sim IIDN_{J-1}(0, \Sigma^*) \tag{4}$$

where $U_{ij}^* = \dfrac{\left(U_{ij} - U_{iJ}\right)}{\sqrt{\left(\sigma_1^2 - \sigma_j^2 - 2\sigma_{iJ}\right)}}, j = (1, \ldots, J-1), U_{iJ}^* = 0, \beta_J^* = 0,$ and X^* is a reduction in the dimension of X given the deletion of J.

Now define the difference in the systematic components of i's utility for two alternatives, j and k, as:

$$\tilde{U}_{ijk} = \frac{\beta_j^{*\prime} X_i^* - \beta_k^{*\prime} X_i^*}{\sqrt{\left(\sigma_j^2 + \sigma_k^2 - 2\sigma_{jk}\right)}} \tag{5}$$

The probability that i chooses j is:

$$P_{ij} = \int_{-\infty}^{\tilde{U}_{ij1}} \cdots \int_{-\infty}^{\tilde{U}_{ij(j-1)}} \int_{-\infty}^{\tilde{U}_{ij(j+1)}} \cdots \int_{-\infty}^{\tilde{U}_{ij(J-1)}} \phi(J-1)\left[\sigma_1^*, \ldots, \sigma_{(J-1)}^*\right]' d\sigma_1^* \ldots d\sigma_{(J-1)}^* \tag{6}$$

[5]All vectors are column unless otherwise indicated.

where $\phi_{(J-1)}$ is the $(J-1)$-variate normal pdf with mean zero and covariance matrix Σ^*.[6]

We estimate β^* and Σ^* using maximum likelihood.[7] The log likelihood function is:

$$L_I(\beta^*, \Sigma^*) = I^{-1} \sum_{i=1}^{I} \sum_{j=1}^{J} d_{ij} \times \ln P\left(j|\beta^*, \Sigma^*, X^*\right) \tag{7}$$

where d_{ij}= 1 if individual i chooses j and 0 otherwise. $P\left(j|\beta^*, \Sigma^*, X_i\right) = P(U_{ij}^* \geq U_{ik}^*, \forall k \neq j|\beta^*, \Sigma^*, X_i^*)$.

To identify the model, we must impose restrictions on both Σ^* and β^*. Σ^* must have at least one fixed element (Bunch 1991; Keane 1992). To impose restrictions on Σ^*, we begin with the undifferenced Σ. Since we are primarily concerned with unobserved heterogeneity in the error covariances across pairs of choices, we assume that $\sigma_{jj} = 1, \forall j$, or that error variances are homoskedastic.[8] This normalization implies that σ_{jk} is a correlation. We also assume that $\sigma_{\text{Bush,Clinton}} = 0$ since we believe that the variables in our model best explain the two-party vote. These restrictions are sufficient to induce one fixed element of Σ^*.[9] Even with the appropriate restrictions on Σ^*, MNP models suffer from "fragile identification" unless the model also fixes some elements of β^* (Keane 1992).[10]

[6]The elements of Σ are

$$\Sigma = \begin{bmatrix} \sigma_1^2 & \sigma_{12} & \cdots & \sigma_{1J} \\ \sigma_{12} & \sigma_2^2 & \cdots & \sigma_{2J} \\ \vdots & \vdots & \ddots & \sigma_{(J-1)J} \\ \sigma_{1J} & \sigma_{2J} & \sigma_{(J-1)J} & \sigma_J^2 \end{bmatrix}$$

Given that choice $1 \in \{1, 2, 3\}$ is the baseline category for purposes of differencing utilities, then Σ^* is:

$$\Sigma^* = \begin{bmatrix} \sigma_1^2 + \sigma_2^2 - 2\sigma_{12} & \\ \sigma_1^2 - \sigma_{13} - \sigma_{12} + \sigma_{23} & \sigma_1^2 + \sigma_3^2 - 2\sigma_{13} \end{bmatrix}$$

[7]We obtain parameter estimates using the Broyden-Fletcher-Goldfarb-Shanno (BFGS) maximization algorithm. We obtained estimates of P_{ij} using numerical approximation. Estimating the four-choice model, including calculating predicted probabilities, took 1 hour on a Pentium 233mhz with 64MB RAM. We estimated each model presented in the paper three times, finding no differences in estimated coefficients, error correlations, or predicted vote across the replications.

[8]We also estimated all models with heteroskedastic-consistent (White) standard errors, finding no differences in results.

[9] $\sigma_b^2 + \sigma_c^2 - 2\sigma_{bc} = 1 + 1 - 0$.

[10]Such exclusion restrictions include fixing one coefficient to be identical across choices, (see Alvarez and Nagler 1995, 1998) or by fixing the effect of some independent variables on some choices, as we do.

Using data from the 1992 American National Election Study, we estimate two statistical models of electoral choice. One model includes only Bush, Clinton, and Perot as choices; the other model adds abstention as a choice. Some variables affect the decision to vote while other variables explain the choice among candidates. Consequently, we restrict several parameters to zero. In addition to the theoretical reasons for not estimating some parameters, a model that estimates coefficients for all of the explanatory variables and all of the error covariances would not be identified. We set Bush as the baseline candidate. The choice of baseline is arbitrary and does not change the results, other than to rescale the estimated coefficients.

The explanatory variables in the model capture utility derived from policy positions, group benefits, and assessments of the candidates on personal traits and past performance. We include respondents' retrospective personal and "sociotropic" evaluations of the economy (Kinder and Kiewiet 1981) since economics played a large role in Bush's defeat. We include opinions on two issues important at the time: health care and abortion. These are measured on the standard seven-point scale for health care and four-point scale for abortion from the NES. Group-related benefits are captured by a respondent's gender, age cohort, race, income,[11] and region of residence (South versus non-South). All of these variables affect both the decision to vote and the choice among candidates. Sociodemographic variables in the equation for abstention capture the different levels of voter mobilization across segments of the population as well as different levels of civic duty.

In the model that includes abstention as a choice, we include a dummy variable indicating that the respondent graduated from college, but we estimate the coefficient only for respondents who abstain.[12] For abstention we also include a measure of the respondent's external efficacy, captured by the respondent's agreement with the statement, "People like me have no say in what the government does."

We assess general political orientations by including party identification and ideology. Party identification includes two dummy variables—one for Democrats and one for Independents—with Republicans the excluded category. We estimate the parameter for Democratic identifiers only in the Clinton equation and for Independents only in the Perot equation. Ideology includes four dummy variables: conservative, liberal, moderate, and "no

[11] Income is measured on the NES 24-point income scale.

[12] In other models we defined education as the number of years of school completed by the respondent. We also estimated a coefficient for education for each of the candidates. Education was never significant for the choice of candidates, and our dummy variable indicating college education outperformed the number of years of school. For further discussion of the nonlinear effects of education on turnout, see Nagler (1991).

Table 1. Variable Descriptive Statistics

	3-Choice $\bar{x}$	4-Choice $\bar{x}$	Possible Range
Personal Finances	3.08	3.09	1 to 5
National Economy	4.37	4.37	1 to 5
National Health Care	3.53	3.47	1 to 7
Abortion	3.07	3.03	1 to 4
Democrat	0.37	0.36	0 or 1
Independent	0.34	0.37	0 or 1
Liberal	0.26	0.24	0 or 1
Conservative	0.33	0.31	0 or 1
No Ideology	0.16	0.20	0 or 1
South	0.28	0.31	0 or 1
College Educated	—	0.26	0 or 1
% Male	0.50	0.51	0 or 1
% African-American	0.12	0.11	0 or 1
Income	15.34	14.49	1 to 24
Age 18–29	0.17	0.19	0 or 1
Age 30–44	0.37	0.37	0 or 1
Age 45–59	0.23	0.22	0 or 1
Voted in 1988	0.83	0.70	0 or 1
Clinton Moral	2.65	2.65	1 to 4
External Efficacy	—	3.45	1 to 5
Number of Cases	1164	1471	

ideology" for those respondents who did not place themselves on the seven-point scale.[13] Because the "character issue" was salient in 1992 due to several scandals, we include a variable that assesses the degree to which respondents believed that Clinton could be described as "moral." This variable is restricted to affect only one's utility for Clinton. Finally, to assess the degree to which Perot mobilized new voters in 1992, we include a dummy variable indicating whether the respondent voted in 1988, which we estimate only for Perot in the three-choice model and for Perot and abstention in the four-choice model.

The explanatory variables for each of the models are listed along with descriptive statistics in Table 1. The three-choice model dataset contains 1164 observations; the four-choice dataset contains 1471 observations. Ideally, we would include all 2487 NES respondents in the data set that includes

[13] We chose not to use the standard seven-point left-right scale due to substantial nonresponse to the question.

abstention. However, for some independent variables in the model we have no clear guide to operationalize nonresponse. We faced a common trade-off between estimating a fully-specified model of voter choice or a limited model that would include more respondents. We chose a middle-ground, though further work is certainly necessary to overcome problems of nonresponse in surveys. We also deleted respondents who failed to answer the vote choice question or who voted for a minor party candidate. We saw no easy way to include all of the various minor party supporters as a category of choice since the minor party candidates vary across states.

Table 1 reveals interesting differences between mean values of the variables in the three- and four-choice datasets. Because the three-choice model deletes all observations where a respondent claims not to have voted, the subset of voters differs from the larger sample. Among other things, respondents in the three-choice dataset have a higher average income, are more likely to claim they voted in 1988, are more likely to respond to the ideology question, and are less likely to live in the South.

2. Results from the Three-Choice and Four-Choice Models

The results from the three- and four-choice models appear in Table 2 and Table 3, which provide the estimated coefficients and error correlations, ($\hat{\sigma}$).[14] Most of our findings are as expected. The economy exerts an important influence on the vote, in accord with the Clinton campaign's mantra that "It's the economy, stupid!" People who believe that the national economy worsened are more likely to vote for Clinton or to abstain than they are to vote for Bush. People who disapprove of the national economy are more likely to stay at home than to vote for the incumbent. Perceptions of the economy, therefore, have an impact on voter turnout (Southwell 1996; Lacy and Grant 1998; Mughan and Lacy 1998). Perceptions of personal finances are significant in the expected direction for Clinton and Perot, though people who abstain are statistically indistinguishable from Bush voters.

[14] Opinions differ on the presentation and interpretation of error correlations. Some authors argue that a statistically significant correlation between two choices indicates that the choices may be substitutes based on unobserved characteristics of the individuals (Hausman and Wise 1978; Alvarez and Nagler 1995). Others hold that the error correlations are uninterpretable since the mapping from Σ^* to Σ is one to many (Bunch 1991). Any given estimated Σ^* is consistent with several Σ. Bunch (1991) recommends imposing restrictions on Σ based on theory, then estimating Σ^* and considering transformations back to Σ. We choose to present Σ since we have expectations about some of its elements. Given Σ, the values of Σ^* are easily calculated (see earlier note). But given estimates of Σ^*, it is unclear what the initial model of Σ assumed about the error variances and covariances. Since the estimates of Σ^* are difficult to interpret, we prefer to invoke our assumptions about Σ to unpack Σ^* into a matrix of error correlations. We also require estimates of Σ for the calculations of choice probabilities with one alternative hypothetically eliminated from the race.

Table 2. Multinomial Probit Estimates for Three-Choice Model

	Clinton	Perot
Constant	.379	−1.770*
	(.634)	(1.01)
Personal Finances (worse)	.136**	.142*
	(.057)	(.080)
National Economy (worse)	.264**	.093
	(.069)	(.082)
National Health Care (oppose)	−.168**	−.153*
	(.053)	(.081)
Abortion (pro–choice)	.352**	.273*
	(.087)	(.146)
Democrat	1.660**	0.00
	(.189)	—
Independent	0.00	.361
	—	(.239)
Liberal	.923**	.268
	(.238)	(.271)
Conservative	−.648**	−.480
	(.212)	(.305)
No Ideology	.030	−.289
	(.225)	(.285)
Voted in 1988	0.00	−.036
	—	(.202)
Clinton Moral (disagree)	−.838**	0.00
	(.111)	—
South	.093	−.369
	(.180)	(.248)
Gender (male)	−.282	−.615*
	(.186)	(.323)
Race (African-American)	1.180**	−1.100
	(.328)	(.826)
Income	−.035**	.001
	(.015)	(.016)
Age 18–29	−.065	.945*
	(.282)	(.508)
Age 30–44	.058	.237
	(.247)	(.272)
Age 45–59	−.084	.470
	(.227)	(.313)
$\hat{\sigma}_{Bush,Perot}$	−.08	
	(1.10)	
$\hat{\sigma}_{Clinton,Perot}$	−.99	
	(.74)	
Final Log Likelihood	−799.13	
$\chi^2(36)$	959.31**	
Number of Iterations	28	
Percent Correctly Predicted	60.3	
Number of Cases	1164	

Note: Bush coefficients normalized to zero. Coefficients are maximum likelihood estimates with standard errors in parentheses. Parameters fixed at zero are indicated by 0.00 coefficients and (—) standard errors. * indicates $p < .05$, ** indicates $p < .01$, one-tailed.
Source: 1992 National Election Study

Table 3. Multinomial Probit Estimates for Four–Choice Model

	Clinton	Perot	Abstain
Constant	.313	–1.510	1.820**
	(.519)	(.981)	(.602)
Personal Finances (worse)	.102*	.141*	.007
	(.046)	(.061)	(.051)
National Economy (worse)	.207**	.094	.133*
	(.067)	(.082)	(.064)
National Health Care (oppose)	–.167**	–.193**	–.137**
	(.042)	(.054)	(.046)
Abortion (pro–choice)	.320**	.309**	.119
	(.069)	(.101)	(.076)
Democrat	.917**	0.00	0.00
	(.179)	—	—
Independent	0.00	.399**	0.00
	—	(.202)	—
Liberal	.781**	.405	.356
	(.218)	(.275)	(.226)
Conservative	–.716**	–.702**	–.528**
	(.180)	(.234)	(.201)
No Ideology	–.078	–.437	.289
	(.203)	(.306)	(.203)
Voted in 1988	0.00	.137	–1.86**
	—	(.309)	(.437)
Clinton Moral (disagree)	–.468**	0.00	0.00
	(.103)	—	—
South	–.122	–.486*	.072
	(.154)	(.225)	(.155)
Gender (male)	–.290*	–.561**	–.348*
	(.147)	(.203)	(.156)
Race (African-American)	1.040**	–.287	.478*
	(.286)	(.597)	(.289)
Income	–.030*	–.007	–.057*
	(.014)	(.019)	(.017)
Age 18–29	.134	1.02**	–.022
	(.234)	(.368)	(.246)
Age 30–44	.059	.133	.231
	(.220)	(.283)	(.263)
Age 45–59	–.022	.410	.279
	(.202)	(.270)	(.209)
College Educated	0.00	0.00	–.429*
	—	—	(.191)
External Efficacy	0.00	0.00	–.076*
	—	—	(.046)
$\hat{\sigma}_{Bush,Perot}$	–.99		
	(.91)		
$\hat{\sigma}_{Clinton,Perot}$	.11		
	(.47)		
$\hat{\sigma}_{Bush,Abstain}$	.23		
	(.30)		
$\hat{\sigma}_{Clinton,Abstain}$	–.09		
	(.42)		
$\hat{\sigma}_{Perot,Abstain}$	–.59		
	(.96)		

(continued)

Table 3. Multinomial Probit Estimates for Four–Choice Model (*continued*)

Final Log Likelihood	–1314.12
$\chi^2(57)$	1450.24**
Number of Iterations	35
Percent Correctly Predicted	50.6
Number of Cases	1471

Note: Bush coefficients normalized to zero. Coefficients are maximum likelihood estimates with standard errors in parentheses. Parameters fixed at zero are indicated by 0.00 coefficients and (—) standard errors. * indicates $p < .05$, ** indicates $p < .01$, one–tailed.
Source: 1992 National Election Study

Among the issues, opposition to national health care is closely associated with a vote for Bush over either Perot or Clinton. Those who oppose a government health care program are also more likely to choose Bush over abstention. A pro-choice position on abortion is closely associated with support for Clinton and Perot and abstention. This fits with Abramowitz's (1995) finding that abortion played a central role for voters in the 1992 election.

Democrats are more likely to vote for Clinton than for Bush, and ideology has a strong effect on respondents' decisions. Conservatives are more likely to vote for Bush than for Clinton or Perot, and they are less likely than moderates to stay home on election day. Liberals are more likely to vote for Clinton than for Perot or Bush, and they are indistinguishable from moderates in support for Perot and tendency to abstain. Respondents who could not provide an ideological position for themselves are statistically indistinguishable from moderates (4 on the left-right scale) across all choices. Not surprisingly, respondents who believe that Clinton is moral are more likely to choose him than Bush. Though the three-choice model finds that people who voted in 1988 are no more or less likely to vote for Perot than other voters, the four-choice model indicates that these individuals are less likely to abstain.

The sociodemographic variables exhibit their expected effects. Residing in the South has little effect on vote choice since Clinton's Southern background likely negated the pro-Republican leanings of Southern voters in presidential elections. In accord with the well known gender gap, women are more likely than men to choose Clinton over Bush, but they are also significantly more apt to select Perot or to abstain than to vote for Bush. The gender gap may apply to turnout as well as vote choice given this finding. As a

long literature has documented, less educated people are more likely to abstain. African-Americans and people with lower incomes are more likely to vote for Clinton or to abstain than they are to vote for Bush. People with lower levels of external efficacy are also less likely to turn out on election day. Finally, age has little effect on electoral decisions, except for the tendency of the youngest cohort (age 18–29) to vote for Perot.

While the estimated effects of the independent variables prove interesting and generally consistent with Alvarez and Nagler's (1995) results from a different model, there are some notable differences in the parameter estimates across the two models. Several explanatory variables that are not statistically significant in the three-choice model prove significant in the four-choice model.[15] In the four-choice model, we find that conservatives and Southerners are more likely to vote for Bush than for Perot, and Independents are more likely to vote for Perot. The four-choice model also reveals a gender gap that the three-choice model does not: men are more likely to vote for Bush than for Clinton.

Several other explanatory variables change levels of significance between the three-choice and four-choice models. For the choice of Perot, p values for abortion, health care, and age (18–29) are all lower in the four-choice sample than in the three-choice sample. For the choice of Clinton, p values for income and retrospective evaluation of one's personal economic condition are all higher in the four-choice sample than in the three-choice sample. In addition, two variables that achieve the same levels of statistical significance in both samples show significantly different parameter estimates across equations. The coefficients under Clinton for Democrats and people rating him as moral are significantly lower in the four-choice sample ($z > 2.2$). The results suggest that estimating a three-choice model may mislead researchers about the parameter estimates and statistical significance of some explanatory variables.

Differences in parameter estimates across the models also have a substantial effect on calculations of the marginal effects of the explanatory variables and on simulations of the outcome of the election under different distributions of the explanatory variables. Rather than presenting differences in marginal effects for all explanatory variables, we focus on retrospective evaluations of the national economy. Table 4 presents the predicted probability that a typical person will choose each of the alternatives when that person believes the national economy worsened during the previous year and when

[15] Comparing estimated coefficients and p-values across models is not accepted practice in classical statistics. However, we compare coefficients and p-values across samples, not models, since the set of estimated coefficients, β^* and σ^* for any choice is identical between the models that include and exclude abstention.

Table 4. Impact of Evaluations of the National Economy on Vote Probabilities

Choices	Three-Choice Economy Worse	Three-Choice Economy Better	Four-Choice Economy Worse	Four-Choice Economy Better
Bush	.18	.42	.21	.41
Clinton	.72	.46	.60	.41
Perot	.10	.12	.10	.12
Abstain	—	—	.09	.06

Note: Entries are probability of choosing each alternative for a person at the mode or mean of independent variables: Democrat, moderate, white, male, non-South, no college degree, middle income, age 30–44, voted in 1988, neutral on Clinton as moral, neutral on external efficacy, no change in personal financial situation over past year, position on abortion = 3, position on health care = 3.

she believes the economy improved. The three-choice model reveals that the probability of voting for Clinton drops by .26 percentage points when a typical person's evaluation of the national economy moves from "worse" (the modal response in 1992) to "better." In the four-choice model, however, the drop in the probability of voting for Clinton is only .19 as a person's evaluation of the economy changes from "worse" to "better." The four-choice model, unlike the three-choice model, reveals that as a person's evaluation of the national economy worsens, her probability of abstaining increases.[16] Calculations of changes in the probability of supporting a candidate given changes in retrospective evaluations of the economy will be incorrect if based on the three-choice model since the model fails to account for the fact that as a person becomes more negative about the economy, she also becomes less likely to vote. Similarly, simulations of the vote shares of the candidates under different values of an explanatory variable may be erroneous if the model fails to include abstention.

Including abstention in a vote choice model also allows one to calculate the vote stealing and turnout effects of third-party candidates. After the 1992 election, political scientists and pundits debated the impact of Ross Perot on the election: Did he steal more votes from Bill Clinton or from George Bush? One of the most rigorous answers to this question was provided by Alvarez and Nagler (1995), who use estimates from a three-choice model to simulate the outcome of the election with Perot removed from the choice set. Since their model does not include abstention as a choice, they assume that all of Perot's supporters would have voted for one of the remaining candi-

[16] Lacy and Grant (1998) and Mughan and Lacy (1998) use data from different election surveys in 1996 to document the relationship between retrospective evaluations of the economy and turnout. Lacy and Grant (1998) calculate that turnout in 1996 would have been 4 points lower had evaluations of the economy been as bad as they were in 1992.

Table 5. Comparison of Vote Percentages

	NES Sample Self-Report	3-Choice Model Predictions	4-Choice Model Predictions
Outcome with Perot			
Bush	32.0	33.5	32.6
Clinton	48.6	48.4	48.4
Perot	19.3	18.1	18.9
Abstention Rate	20.9	—	20.9
Bush share of 2-party	39.7	39.9	40.3
Outcome without Perot			
Bush	—	45.7	38.4
Clinton	—	54.3	61.6
Abstention Rate	—	—	23.7

Note: Actual Vote Shares: Bush, 37.4%; Clinton, 43.0%; Perot, 18.9%; with 44.8% abstention.

dates had Perot not stayed in the race. Including abstention in the vote choice model enables us to calculate the percentage of Ross Perot's supporters who would have voted for Clinton or Bush or abstained. Among Perot's supporters, if those who would have voted for Clinton turned out at different rates than those who would have voted for Bush, then results from a three-choice model will be inaccurate.

To calculate the predicted vote shares and abstention rate with Perot out of the race, we recalculate the predicted probability that each respondent in our sample would choose each of the remaining alternatives. To do this, we use a variation of Equation 6, replacing $(J-1)$ with $(J-2)$ since Perot is excluded. We also replace the upper limits of integration with the differences in utility across all remaining choices, and we replace Σ^* with a reduction of Σ^* excluding Perot. The equation redefines the probability of choosing each j from among the remaining alternatives.[17] Since we recalculate the predicted probability of choosing each of the remaining alternatives for every person in the sample—rather than only for Perot voters, which Alvarez and Nagler (1995) do—we allow for the possibility that the elimination of Perot as a choice changes the relative probabilities that a voter will choose Clinton or Bush. Table 5 compares the self-reported vote of the NES sample along with the vote shares predicted by our three- and four-choice models. Predicted vote shares for the entire sample are the mean of respondents' individual probabilities of choosing each alternative.

It is clear from the table that the NES sample underreports abstention and overreports Clinton's vote share. Brehm (1993) demonstrates that

[17]We calculate P_{ij} numerically using the binorm and normprob commands in Stata 5.0.

election surveys such as the NES systematically exclude some respondents. Many of these potential respondents represent a sizable nonvoting segment of the population. Wright (1993) shows that respondents to post-election surveys often misreport their vote. The most common misreport is for nonvoters to claim they voted for the winner.

The most interesting comparison for our purposes is the difference in the predicted vote outcomes with Perot removed from the choice set. The three-choice model predicts an outcome of 45.7% of the vote for Bush and 54.3% for Clinton, or an 8.6 point margin of victory for Clinton with Perot out of the race. Compared to the NES sample margin of 16.6 points between Bush and Clinton, it appears that Perot hurt Bush at the polls, though not enough to change the election outcome. The four-choice model points to a different conclusion. With Perot out of the race, Bush would have polled 38.4% of the vote to Clinton's 61.6%, giving Clinton a 23.2 point landslide. Again, the baseline for comparison is the NES sample margin of 16.6 points, thus Clinton's margin of victory is seven points higher with Perot out of the race. The three-choice model misrepresents the outcome of the election without Perot since it fails to account for differences in abstention rates between Clinton and Bush supporters. Once we account for abstention, it appears that Perot significantly hurt Clinton at the polls.

The four-choice model also reveals the turnout effect of Ross Perot. With Perot out of the race, abstention would have climbed to 23.7%, or 2.8 points higher than the abstention rate of 20.9% in the NES sample. Our model obviously misestimates the true rate of abstention due to the NES sample. If we assume that the low rate of abstention in the NES sample is due primarily to the exclusion of a substantial block of nonvoters, then Perot's candidacy added nearly three percentage points to turnout in the 1992 election.[18] Though many observers believe that Perot contributed to turnout in some way, our estimate is higher than the conventional wisdom. Burnham (1993), for instance, estimates about a two percentage point Perot

[18]We could correct the NES sample by weighting all observations to bring their marginal distribution on the dependent variable in line with actual results. To do so would assume that the nonvoters in our sample represent the nonvoters who were not interviewed, which we doubt is true. To introduce sample weights would also increase our estimates of the abstention rate with Perot out of the race since every nonvoter would count as extra observations. We adopt the conservative strategy of reporting results from the unweighted sample. We also estimated an identical model with ideology coded on the seven-point scale, thereby excluding people who did not respond to the ideology question and dropping the number of cases to 1169. The sample of 1169 was closer to the actual election results (and abstention rate) than the full NES sample. Moreover, the predictions from our model were even closer to the actual results, leading us to believe that the model corrected for misreported abstention. Substantively, this suggests that respondents who do not respond to the ideology question may be the most likely to misreport their vote. We chose to report results based on the larger sample.

effect. Abramson, Aldrich, and Rohde (1995) use exit poll data to infer that Perot increased turnout by 1.5 points, though they admit that this probably underestimates Perot's effect. Similarly, Nichols and Beck (1995) employ a variety of indicators to conclude that Perot stimulated turnout, particularly among disaffected citizens. However, Rosenstone, Behr, and Lazarus (1996) argue that Perot's candidacy did not affect voter turnout largely because his campaign personally contacted only a small fraction of the electorate (see also Knack 1997). While Perot's campaign was not based on registering voters, his visibility, antiestablishment message, and anti-Bush campaign surely interested some otherwise disinterested citizens enough to come to the polls.

Between 1988 and 1992, turnout in U.S. presidential elections increased by 5.1 percentage points, from 50.1% of eligible voters to 55.2%. Ross Perot's candidacy appears to account for over one-half of the aggregate increase in turnout between the two elections, ceteris paribus. The remainder of the turnout increase is likely due to the introduction of "Motor Voter" laws to increase registration and to other factors not considered here (Franklin and Grier 1997; Knack 1995).

We also calculated vote shares deterministically by presuming that each voter will choose with probability 1 the alternative she has the highest predicted probability of supporting. We then counted the number of respondents that would choose each alternative. The results are nearly the same as the mean of the individual predicted probabilities. The candidates' vote shares from the three-choice model are Bush, 45.8%, and Clinton, 54.2%, for an 8.4 point margin. From the four-choice model, the vote shares are Bush, 36.3%, and Clinton, 63.7%, or a 27.4 point margin. Using a deterministic allocation of respondents to each alternative, we estimate an abstention rate of 23.1%, which implies a turnout effect of 2.2% for Perot.

If we look only at Perot's voters in the sample, we find that 36.1% would support Bush with Perot out of the race, 44.1% would support Clinton, and 19.8% would abstain, producing an eight point pro-Clinton margin among Perot's supporters. Using estimates from a three-choice model, Alvarez and Nagler (1995) find that with Perot out of the race, 49.5% of Perot's supporters would have voted for Bush while 50.5% would have voted for Clinton, or a one point Clinton margin. Our four-choice model reveals that Perot supporters are more pro-Clinton than once believed. This pro-Clinton bias in the four-choice model makes sense if one expects that many Perot supporters who rated Bush second would not have voted, probably due to Bush's apparently poor job handling the economy. Perot voters who rated Clinton second were more likely to vote as a protest against the Bush administration. When we multiply the number of Perot voters in the sample, 225, by the proportion who would abstain without Perot in the race, .198, we find that the abstention rate is 23.9%, or that Perot increased turnout by three percentage points.

Regardless of the method we use to calculate Perot's turnout effect, it appears that Perot's candidacy boosted turnout by two to three percentage points.

Including abstention in a model of vote choice also contributes to debates about the likely outcome of elections under compulsory voting (Lijphart 1997). By hypothetically eliminating abstention from the choice set, much the same as we did with Perot, we are able to calculate how nonvoters would have voted in 1992. Under compulsory voting, Clinton would have received 49.2% of the popular vote in a three-way race, compared to his 48.6% support in the NES sample. Compulsory voting in 1992 would have had little effect on the vote share of Ross Perot, who would poll 19.1% of the vote.[19] Similar calculations in other election years should prove interesting and informative to debates about the electoral effects of changes in voter turnout. However, our conclusions must be tempered by the fact that the NES sample significantly under-reports abstention, and the nonvoters that the NES misses may behave differently than the nonvoters in the sample.

3. Conclusion

By including abstention in a model of vote choice, we are able to address several important issues in electoral politics. We demonstrate that parameter estimates from vote choice models that exclude abstention may be biased. Several conclusions about the substantive and statistical significance of explanatory variables change when abstention enters the model. Our conclusions are disturbing since they cast doubt on the results of decades of voting research. The impact of excluding abstention in a model of the 1992 vote may not be as pronounced as in other years. Including abstention in models of vote choice in other elections should be part of the future agenda in voting behavior research.

A model of the vote that includes abstention also provides precise estimates of the vote-stealing and direct turnout effects of third-party candidates. In 1992 Ross Perot reduced rather than increased Bill Clinton's margin of victory over George Bush. Perot's candidacy increased turnout by nearly three percentage points, and one out of every five Perot supporters would not have voted had Perot not entered the race. The turnout effect of third-party candidates in American elections is often debated, but until now a technique for calculating their effect using survey data has not existed.

[19]Since we do not expect that the removal of abstention as a choice affects people's relative probability of choosing among the competing candidates, we calculate the vote outcome under compulsory voting by multiplying the number of nonvoters by the mean probability of choosing Bush, Clinton, or Perot for nonvoters. We then add the expected vote for each candidate among nonvoters to the vote totals of each of the candidates.

Future research on third-party candidates and multi-party political systems should include abstention as an option for voters, especially if such research seeks to determine the hypothetical outcome of races among subsets of the candidates.

Including abstention in vote choice models also allows one to calculate the outcome of the election under compulsory voting. Using the estimates from the four-choice model, one could simulate the likely turnout rates given changes in the explanatory variables. What would turnout be if the average level of income or education rose? What is the effect of perceptions of the national economy on voter turnout? Does turnout rise or decline when public perceptions of the economy are optimistic? These and other substantively interesting questions are easily answered by models of vote choice that include abstention.

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