Political Information, Institutions and Citizen Participation in American Politics

Thesis by

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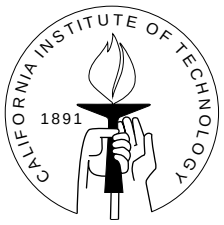

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Dedication

To my parents, Franklin Wilson and Sally Hart,
and my sister Florence Wilson.

The insightful and helpful comments of R. Michael Alvarez have been of tremendous benefit to this research. The support of Steve Callander and our many conversations about elections and formal models of behavior have furthered this research, and been both enjoyable and enlightening. As well, the financial support of the Division of the Humanities and Social Sciences at Caltech is gratefully acknowledged.

Abstract

I estimate the effects of uncertainty about candidates' ideological positions and institutionally imposed costs of voting on the likelihood that an individual turns out and votes. I do this using a simple model of turnout and vote choice that reflects the combined, simultaneous nature of vote decision-making. I show that eliminating the registration deadline and instituting DMV registration would have increased turnout in the 1972-2000 Presidential elections by an average of 6.0 percentage points. This effect is smaller than that of reducing uncertainty, which would have increased turnout in the same elections by an average of 9.2 percentage points.

I show that these changes would have had quite different impacts on the outcome of each election. The increased number of votes due to eliminating registration deadlines would generally have advantaged Democratic candidates, even changing the outcome of one of the eight elections (1984) in favor of the Democratic candidate. This is in contradiction to the conclusion of Wolfinger and Rosenstone (1980) who claim that registration law reform would have no impact on election outcomes. In contrast, I find that the increased number of votes due to reducing uncertainty would have advantaged candidates of both parties fairly equally over the course of the elections studied. This suggests that it may be more politically feasible to increase turnout with policies that aim to reduce uncertainty rather than with policies that aim to reduce registration barriers.

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Chapter 1 Introduction

In recent U.S. Presidential elections just over half of the electorate has turned out to vote. As shown by Rosenstone and Hanson (1993), E.E. Schattschneider (1960), and Verba, Schlozman and Brady (1995), turnout and participation is markedly higher among individuals with high amounts of resources such as education and income. For this reason, low rates of turnout cause potentially grave problems for the democratic process because the political preferences and demands revealed to elected officials through the election mechanism are biased toward those of citizens with elevated social and economic status.

Moreover, politicians face clear incentives to enact policies that satisfy the needs of that segment of the electorate that is most likely to ensure their reelection. As voters are unlikely to be low income, low education or minority, politicians are thus strategically motivated to focus their efforts on legislation that benefits the most elite and wealthy among U.S. citizens. In this way, not only do elected officials not hear the unvoiced political demands of those that do not participate in U.S. elections, they also face few incentives to enact policies that benefit non-voting groups of the U.S. electorate.

This suggests that a worthwhile endeavor is to find the determinants of turnout and how it is influenced by policies and institutions. A number of books and papers (for example, Highton (1997), Katosh and Traugott (1981), Kim, Petrocik and Enokson (1975), Leighley and Nagler (1992), and Palfrey and Poole (1987)) have been published in efforts to do this. Wolfinger and Rosenstone's seminal book *Who Votes?* (1980) is perhaps the most comprehensive such analysis. Wolfinger and Rosenstone show that turnout is strongly predicted by both individual and institutional factors that effect the costs of voting incurred by the individual voter. Their results indicate that institutions, particularly registration deadlines, play a critical role in turnout. They conclude that eliminating registration deadlines would lead to an increase in

turnout of 6.1 percentage points and eliminating this and a number of other state requirements would increase turnout by 9.1 percentage points.

Rosenstone and Hanson (1993) shed further light on the causes of turnout. Like Wolfinger and Rosenstone they show that both resources and institutions influence the likelihood that an individual turns out to vote. Additionally, they demonstrate that individuals' evaluations of political parties and of the candidates running for office affect the likelihood that they turnout. Their results show that individuals who hold the parties and candidates in high regard are more likely to vote than those who do not. This analysis is one of the first systematic attempts to incorporate political preferences into the study of turnout.

Yet these efforts suffer from the fact that they are not based upon a well-defined model of the individual's decision to vote. As shown by Dubin and Kalsow (1996) and Lacy and Burden (1999), the decision to turnout is not one that is made independently of the decision to vote for one or another candidate. Rather, turnout and candidate choice are combined actions that result from a single decision-making process. As such, divorcing the study of turnout from that of candidate choice may result in a mis-specified model and incorrect results.

Perhaps it is because studies of turnout have mostly ignored vote choice that the role of information in turnout has been largely overlooked. This is in spite of the fact that studies of candidate choice have shown that uncertainty and information about each of the candidates running for election strongly influence voting behavior. Alvarez (1997) and Bartels (1986) demonstrate that voters are much less likely to vote for a candidate of whose ideological position they are uncertain. Franklin (1991) discusses how election campaigns that stress candidate issues lead to increased clarity among voters' perceptions of their candidates' ideologies.

Rosenstone and Wolfinger (1980) show that political informedness is highly correlated with education. Yet they do not include political information as an independent variable in their model of turnout. Rather, they conclude from the correlation that "education imparts information about politics" (p. 18), thus implying that its causal relationship is so strong that it may proxy for it as a predictive variable. However,

Alvarez (1997), Alvarez and Franklin (1994, 2002), and Franklin (1991) have shown that political uncertainty is caused by a number of factors including media exposure and candidate strategy as well as education. Hence, it may be expected to play a role in turnout that is distinct from that of education.

Palfrey and Poole (1987) and Sanders (2001) are among the few published studies of information and turnout. Palfrey and Poole (1987) model the vote decision in a nested fashion such that the decision to turnout is binary and vote choice is conditional upon turnout. They also measure information as a single composite index, hence, they show that political information is correlated with turnout, without evaluating the effect of candidate-specific information on either turnout or vote choice. Sanders (2001) assumes that the influence of uncertainty on turnout is dependent on preferences: as individuals' uncertainty increases, those who strongly prefer one candidate to the other are more likely to abstain whereas those who have weak preferences or are indifferent are more likely to turnout. Although it is supported by his empirical test, there is no intuitive nor rational justification given for this model of the vote decision.[1]

The goal of the analysis presented in this study is to evaluate the effects of both political information (or uncertainty) and institutions on turnout and vote choice. This is done using a simple, standard model of voting behavior that recognizes the simultaneous nature of the decision between abstention, voting for one candidate or voting for the other candidate. The elections analyzed are U.S. Presidential elections between 1972 and 2000. As Table 1.1 shows, turnout for each of these elections was roughly 50% of the voting-age population.[2] The empirical results described later in this study show that uncertainty causes aggregate turnout in U.S. Presidential elections to decline substantially. Between 1972 and 2000 it reduced the rate of turnout by an average of 9.2 percentage points in Presidential elections. Institutional registration requirements had a less powerful impact over the same years – decreasing

[1] This model is analyzed in Wilson (2001) where it is shown to be less accurate than the model of the vote decision used in this study.

[2] FEC statistics slightly under estimate turnout as they are based upon the voting-age population rather than the eligible electorate.

Table 1.1: Turnout in U.S. Presidential Elections 1972-2000

Year	Percent of U.S. Voting-Age Population* Turnout
1972	55.2%
1976	53.6%
1980	52.6%
1984	53.1%
1988	50.1%
1992	55.1%
1996	49.1%
2000	51.3%

* Source: Federal Election Commission Web page.

turnout by an average of 6.0 percentage points in Presidential elections.

Importantly, reducing these two barriers to turnout would have had quite different effects on the election outcome. The increased number of votes due to minimizing uncertainty would have advantaged the candidates of both major parties as well as third parties over the course of the eight elections studied. Likewise, it would have varied across elections in whether or not it advantaged the incumbent or the major party challenger.

Conversely, registration law reform would generally have advantaged the Democratic candidate. In seven of the eight elections analyzed it would have increased the expected percentage of the electorate turning out to vote for the Democrat by more than the change for the Republican. Moreover, in one election it would have been expected to change the outcome of the election in favor of the Democratic candidate. This contradicts the results of Wolfinger and Rosenstone (1980), who concluded that changing the registration deadline would not change election outcomes. Thus, these results demonstrate the importance of modeling turnout and vote choice together, as well as that turnout may be increased through two factors: political information and the length before the election of the registration deadline.

The organization of the rest of this study is as follows. The model of turnout and vote choice is discussed in detail in Chapter 2. In Chapter 3, I describe the operationalization of uncertainty and the data measuring these variables along with the statistical methods I employ. The results of the empirical estimation and simulated

changes in turnout and vote choice are detailed in Chapter 4. Chapter 5 contains a slightly different analysis that examines the impact of changes in uncertainty and institutional deterrents to turnout on the composition of the voting population. Finally, Chapter 6 contains a concluding discussion of both the model and the empirical results presented in this study.

Chapter 2 The Vote Decision

The model of the vote decision that is proposed in this study is unlike those used in previous research on turnout because it is not a simple binary-action model. Past studies of turnout (among them Highton (1997), Leighley and Nagler (1992), Rosenstone and Hanson (1993), and Wolfinger and Rosenstone (1980)) have assumed that the choice faced by the eligible voter on election day is between turnout and abstention. This assumption is problematic in that it fails to account for the fact that the decision to turnout is inextricably linked to the choice between candidates running for office.

The binary turnout decision model implies that candidate choice is nested after the turnout choice on the decision tree. Such a decision-making process would involve a tie-breaking mechanism (such as flipping a coin) when voters are indifferent between the candidates running for office. Yet, as individuals facing the vote decision, we know that this is not how our choice is made. Rather, when we decide to turnout it is because we are going to turnout and vote for a particular candidate. Evidence of this is demonstrated by the results of Campbell, Converse, Miller and Stokes (1964) who show that less than 0.2% of voters make their candidate selection on election day.

Thus, the model of the vote decision that is the basis for the analysis in this paper is one that combines the individual's choice of which candidate to support with her choice of whether to turnout or abstain.[1] The reason for this is simple: these are not decisions that are made sequentially, but rather a single decision made among a set of choices (to vote for one candidate, to vote for another candidate, or to abstain) that are evaluated simultaneously. Empirical evidence for this is provided by Lacy and Burden (1999), who show that the decision to abstain depends upon the utility an individual earns from voting for each of the candidates running for office.

[1] For simplicity I use the male pronoun to refer to candidates and the female pronoun to refer to voters.

This model is a simple extension of the traditional spatial model of sincere voting that was first discussed in the seminal work "Stability in Competition" by Hotelling (1929). While this paper is most famous among economists who specialize in Industrial Organization, its impact spread across disciplines to include political scientists studying voting behavior. According to Hotelling, a choice set (whether it be consumer goods or candidates) could be accurately modeled as arrayed across a single dimensional line along with consumer (or individual) ideal point locations. Individuals would prefer those goods or candidates located close to their ideal points over those located far away. In his discussion of this formal structure, Hotelling foretold Black's famous Median Voter Theorem (1958):

> The competition for votes between the Republican and Democratic parties does not lead to a clear drawing of issues, an adoption of two strongly contrasted positions between which the voter may choose. Instead, each party strives to make its platform as much like the others as possible. Any radical departure would lose many votes, even though it might lead to stronger commendation of the party by some who would vote for it anyhow. (p. 1928)

Later work by Palfrey (1984) and Callander (2000) have shown that realistic extensions to the formal game of candidate competition including third-party entry and party competition over multiple districts produce equilibria with the separate, non-centrist candidate platform locations that we observe in most U.S. elections. Smithies (1941) extended Hotelling's model of individual decision-making to include costs, thereby demonstrating why individuals might choose to abstain rather than vote for a candidate. Accordingly, the individual i's expected utility for voting for a candidate j may be represented as

$$E(U_{ij}) = E(\delta_j p_{ij} - \gamma_j c_i). \tag{2.1}$$

The variables δ and γ in this model represent (strictly positive) decision weights. The first term p_{ij} represents the proximity of the candidate's platform to the individual's ideal point. The second term c_i represents the total costs of voting that are incurred by the individual. These costs of voting include the costs of becoming informed about the candidates, how (or where) to register and cast a ballot, and the lost income of the time taken to do so.

In this model, voting is assumed to be a consumptive act. This is consistent with (although may not necessarily be interpreted as) the notion of voting as expressive behavior that benefits individuals by allowing them to demonstrate personal political beliefs and convictions. Expressive models of voting and their relationship to other models are detailed in Shuessler (2000) and Green and Shapiro (1994). This theory of voting implies that there is no purposive benefit of abstention. By abstaining, an individual neither incurs the cost nor receives the benefit of voting for a candidate. For this reason, her utility from abstention is equal to zero.

$$U_{i\emptyset} = 0. \tag{2.2}$$

Since the formalization of this model, (often referred to as the "spatial" or "proximity" model), by Smithies (1941), it has been a mainstay in the political science literature. However, its application has generally been to empirical studies of vote choice rather than turnout. Examples of research where it has been used (with varying degrees of formality) include Abramowitz (1984), Alvarez (1997), Alvarez and Nagler (1995), Kelley and Mirer (1974), Lacy and Burden (1999), Page and Jones (1979), and Schofield, Martin, Quinn and Whitford (1998).

The reason for the widespread use of this model in political science is fairly clear: it is more accurate than any other spatial model at explaining voting behavior. The two most well-known rival models are the rational choice model (Riker and Ordeshook (1968)) and the directional model (Rabinowitz and MacDonald (1989)). Merrill and Grofman (1999) discuss a unified extension of the directional and proximity models.

The rational choice model is actually a fairly simple extension of the sincere voting

model in which the modifications are driven by the perception of the individual as completely instrumental in evaluating her utility for voting for a candidate versus her utility for abstaining. Nonetheless, while the rational choice model is remarkable for its logical elegance and simplicity, it performs poorly when subjected to empirical testing. A number of studies (Ferejohn and Fiorina (1975), Foster (1984), Whitely (1995), and Alvarez, Ansolabehere and Wilson (2002)) have shown that the likelihood that an individual turns out to vote is not significantly increased by the closeness of an election.

The directional model has, if anything, fared less well under empirical scrutiny than the rational choice model. This model posits that an individual's utility for voting for a candidate increases as both her ideal point and the candidate's platform move toward the extreme end of the same side of the ideology scale. King and Lewis (2000) show that empirical support for the directional model rests on the assumptions employed in the data analysis. Among these assumptions is the use of objective candidate ideological placement. Using the mean yields support for the directional model yet obliterates the pattern in survey response of individuals placing the candidates they prefer closer to their own ideal point and those that they do not prefer farther from their own ideal point. Strikingly, the motivation for this survey response pattern strongly corroborates the sincere rather than the directional model. Likewise, Westholm (1997, 2002) and Lewis (2002) show that careful empirical analysis leads to rejection of the directional model in favor of the sincere model.

Thus, while the sincere voting model remains the most accurate model to explain voting behavior, it has not been applied to the study of turnout. Here, I employ a form of the model that has been generalized in the manner first discussed by Enelow and Hinich (1984). Enelow and Hinich recognized that eligible voters have imperfect information about candidates' ideological platforms. Instead of perceiving candidates' platforms as isolated points on the ideology scale, citizens perceive them as distributions over likely points, each with an expected mean value and an associated variance. It is this variance that represents the individual's uncertainty about the candidate's ideology. The level of variance corresponds with the level of uncertainty in the in-

dividual's perception of the location of the candidate's platform. As described by Enelow and Hinich, this uncertainty may be categorized according to three types of causes: candidate-induced, perceptual, and predictive.

The research presented here is focused on perceptual rather than predictive or candidate-induced uncertainty, as the former varies across individuals while the latter varies only across candidates. As described by Enelow and Hinich, perceptual uncertainty is due to imperfect information because "information is costly to acquire, and incentives for doing so are typically weak or nonexistent in mass elections" (p. 122). Individuals who incur high costs of becoming informed are therefore more likely to be uncertain. Further, the conveyance of information about candidates to eligible voters through the mass media is inherently imperfect.

The sincere voting model presented in Equation 2.1 above may be modified slightly so as to incorporate individual uncertainty. Assuming the candidate's proximity to the individual's ideology is measured by the negative quadratic distance between the individual's ideological position s_i and that of the candidate x_j yields

$$E(U_{ij}) = E(-\delta_j(s_i - x_j)^2 - \gamma_j c_i. \tag{2.3}$$

Incorporating the assumption that the individual has imperfect information and perceives the candidate's ideological position with error such that the expected location is $\widetilde{x}_j$ and the error is ϵ_{ij} produces

$$E(U_{ij}) = E(-\delta_j(s_i - (\widetilde{x}_j + \epsilon_{ij}))^2 - \gamma_j c_i. \tag{2.4}$$

Working through the equation algebraically and assuming that the expected value of the error term is zero yields the following sequence

$$\begin{aligned} E(U_{ij}) &= E(-\delta_j(s_i - \widetilde{x}_j - \epsilon_{ij})^2 - \gamma_j c_i) \\ E(U_{ij}) &= E(-\delta_j(s_i^2 - 2s_i\widetilde{x}_j - 2s_i\epsilon_{ij} + \widetilde{x}_j^2 + 2\widetilde{x}_j\epsilon_{ij} + \sigma_{ij}^2) - \gamma_j c_i) \\ U_{ij} &= -\delta_j(s_i^2 - 2s_i\widetilde{x}_j + \widetilde{x}_j^2 + \sigma_{ij}^2) - \gamma_j c_i. \end{aligned}$$

Re-substituting $\widetilde{p}_{ij}$ for the ideological proximity of the candidate to the individual and assuming δ is made up of the two parameters α and β produces a simple function representing the individual's utility for voting for the candidate

$$U_{ij} = \alpha_j\widetilde{p}_{ij} - \beta\sigma_{ij}^2 - \gamma_j c_i. \tag{2.5}$$

This specifies that the utility an individual earns from voting for a candidate is increasing in that candidate's ideological proximity to the individual, decreasing in the individual's uncertainty about the candidate's ideological position and decreasing in the cost she incurs to vote.[2]

To evaluate the potential magnitude of the impact of uncertainty on voting behavior I translate the utility function shown above in Equation 2.5 into one that describes probabilistic behavior. To do this, I incorporate into the model above a term υ_{ij} that represents the unmeasured components of an individual's utility for voting for candidate j. I assume that υ_{ij} is distributed extreme-value and is independent of the other predictive variables in the model.

$$U_{ij} + \upsilon_{ij} = \alpha_j\widetilde{p}_{ij} - \beta\sigma_{ij}^2 - \gamma_j c_i + \upsilon_{ij}. \tag{2.6}$$

An individual is expected to vote for candidate j if her utility for voting for j is

[2]Note that in Equation 2.5 the parameter β is constant for all U_{ij}. This leads me to estimate a conditional multinomial logit, discussed in more detail in Section 3.2.

greater than that for abstention or for voting for another candidate j'. This can be written

$$\begin{aligned} U_{ij} + \upsilon_{ij} &> U_{ij\prime} + \upsilon_{ij\prime} \\ U_{ij} + \upsilon_{ij} &> 0. \end{aligned}$$

Probabilistically, this implies

$$Pr(Vote_{ij}) = \frac{\exp(U_{ij})}{1 + \exp(U_{ij}) + \exp(U_{ij\prime})}. \tag{2.7}$$

Figures 2.1–2.2 show graphically the relationship between uncertainty and the vote decision. These figures are produced by inserting hypothetical values into the terms shown in Equation 2.6 above.

Figure 2.1 shows the influence of uncertainty about a candidate's ideology on the probabilities that an individual votes for that candidate or for the opposing candidate. The x-axis measures the individual's uncertainty about the candidate (increasing from left to right) and the y-axis measures the probability that the individual makes a given vote decision. As the solid line shows, the individual is less likely to turnout and vote for a candidate the more uncertain she is about that candidate's ideology. Conversely, she becomes more likely to turnout and vote for the opposing candidate (indicated by the broken line), as this makes the size of the utility of voting for that candidate large by comparison. Likewise, the individual becomes more likely to abstain, as shown by the dotted line, because the relative utility of abstention increases.

Figure 2.2 shows the influence of uncertainty about a candidate's ideology on turnout, broken down by three different levels of costs of voting. The axes are essentially the same as in Figure 2.1, although the y-axis in this case may be specifically interpreted as the probability of turnout. Not surprisingly, the general trend shown

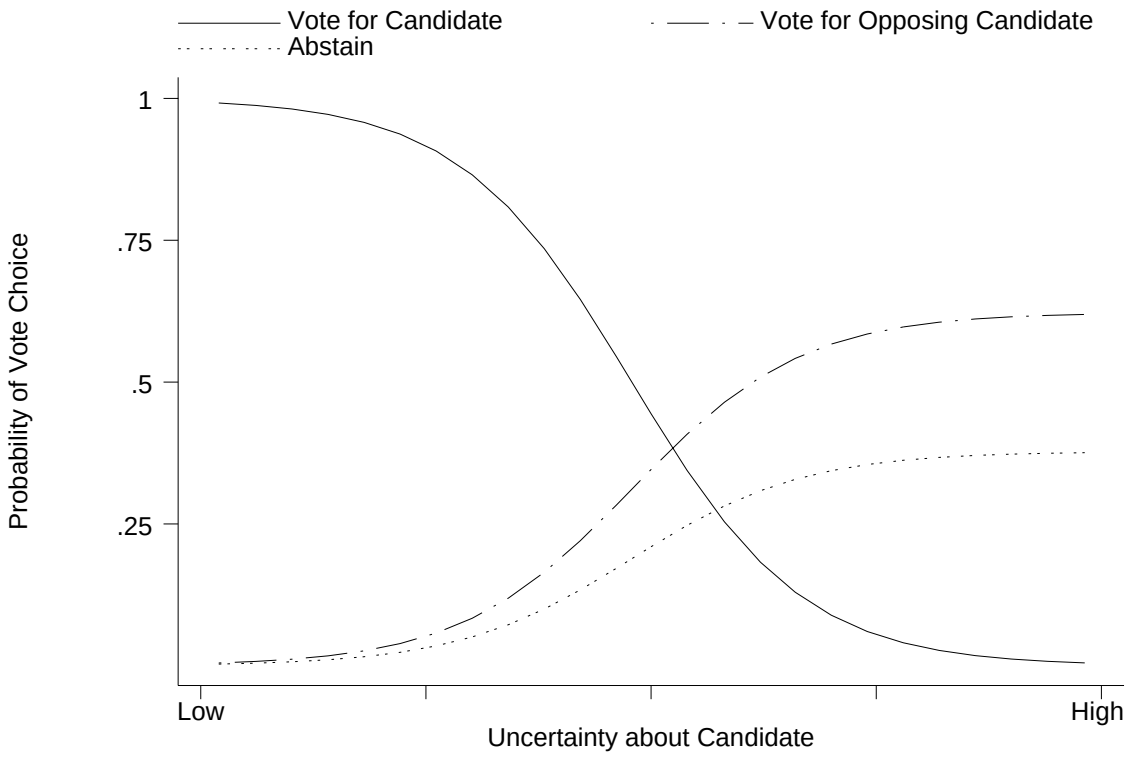

Figure 2.1: The Effects of Uncertainty on the Vote Decision

in Figure 2.2 is that uncertainty about a candidate reduces the likelihood that an individual turns out to vote. In addition, the figure shows that high costs of voting cause uncertainty to decrease the likelihood of turnout by more than for low costs of voting. This is because costs of voting impact the utility for each candidate individually, whereas uncertainty about a given candidate impacts only the utility for that candidate.

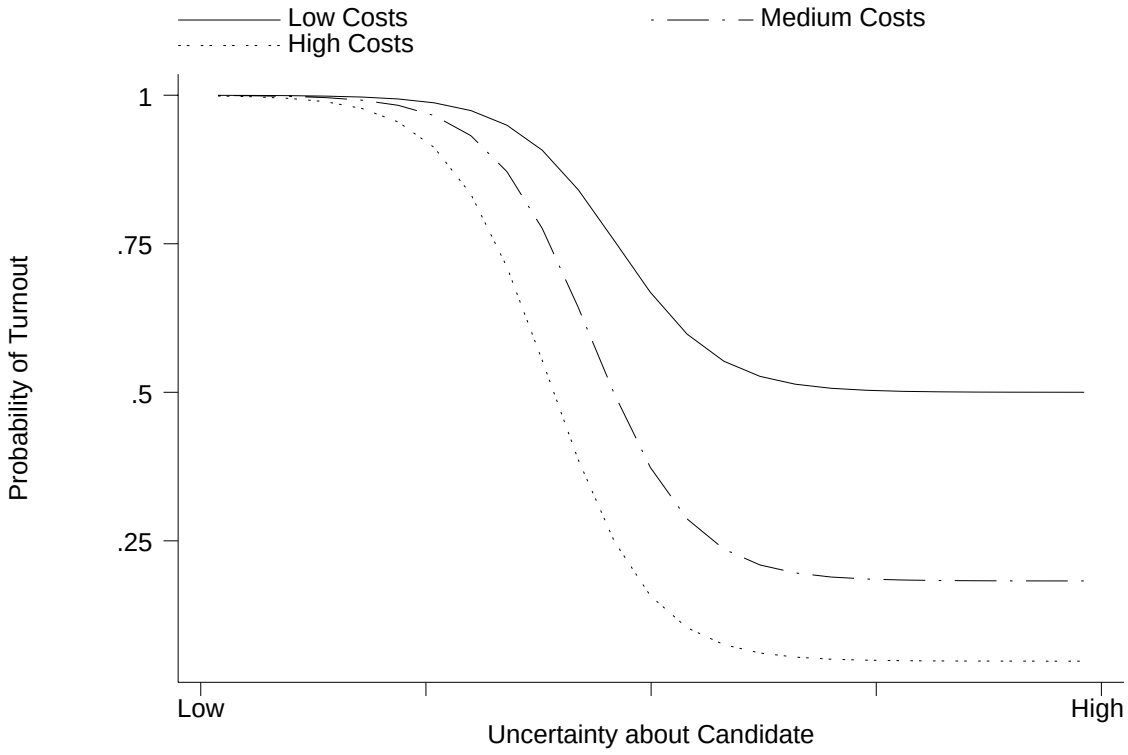

Figure 2.2: The Effects of Uncertainty on Turnout by Costs of Voting

The model of the vote decision formalized in Equation 2.5 may be used to derive hypotheses about voting behavior. The following three hypotheses (supported formally in the appendix) result from this model:

Hypothesis 1: Turnout increases as the electorate's uncertainty about one or all candidates decreases.

An individual who is more certain about a single candidate's ideological position is weakly more likely to turnout and an individual who is more certain about all candidates' ideological positions is strictly more likely to turnout than an identical individual who is less certain. This is because the utility for voting for a candidate is decreasing in uncertainty about the candidate. Decreasing uncertainty across the electorate (who are expected to have a broad range of differences in utility for the candidates) will thus increase turnout.

Hypothesis 2: The vote share of a candidate increases as the electorate's uncertainty about a candidate decreases.

The intuition behind this hypothesis is similar to that behind Hypothesis 1. Reducing uncertainty about a candidate increases individuals' utility for voting for that candidate. Across the electorate this will cause many individuals to vote for that candidate when they otherwise would have abstained or voted for the opposing candidate.

Taken together, Hypotheses 1 and 2 have very clear implications for candidate campaign strategy. The most obvious effect is that candidates will seek to minimize uncertainty about their own ideological positions so as to increase turnout among their own supporters. In addition, candidates will seek to increase uncertainty about competitors so as to decrease turnout among competitors' supporters as well as switch the preference of voters from the competitor to the given candidate. An example of the latter strategy occurred in the 2002 California Republican Gubernatorial primary campaign when Democratic Governor Gray Davis paid for television advertisements that detailed Republican candidate Richard Riordan's changing stance on abortion

rights. A strong candidate before the ads were aired, Riordan's vote share declined and he subsequently lost the election by a wide margin (Finnegan (2002)).

Hypothesis 3: Turnout increases as the costs (including those that are institutionally imposed) of voting incurred by the electorate decrease.

Lowering the costs of voting increases individuals' utility for voting for all candidates. Across an electorate with a wide range of utilities for voting for each candidate, lowering costs of voting will cause many individuals to turnout and vote when previously it would have been too costly for them to do so. For this reason, we should expect to see turnout increase when both institutional and individual costs of voting are reduced.

In Chapter 4 I describe how these hypotheses stand up to empirical analysis. In the next chapter, I begin my discussion of this empirical analysis by describing the details of its construction. This includes the source of the data I use, how the formal variables are empirically measured and coded as well as the assumptions and properties of the statistical model that is employed.

Chapter 3 Analysis of the Vote Decision

I test the accuracy of the model just described using data from the past eight Presidential elections (1972–2000). The primary reason that I use data from all eight elections rather than merely one or two is that taken together they provide an extremely robust analysis of the vote decision. The variety in the context and the features of the elections is tremendous: three of the elections had strong third-party candidates (1980, 1992, and 1996), two of the elections had no incumbent (1988, 2000), one had an incumbent who was not previously elected to the office (1976), three had governors as challengers (1976, 1988, 1992), three had senators as challengers (1972, 1984, 1996), one had a congressman as a challenger (1980) and two had (the same) high profile businessman (1992, 1996) as a challenger. Furthermore, using these elections allows me to compare my results with those of other studies of turnout in the same elections such as DeNardo (1980), Nagler (1991), Rosenstone and Hanson (1993), and Rosenstone and Wolfinger (1980).

The data I use for this analysis is the National Election Studies (NES) collection merged with variables measuring state-level registration requirements. The NES data is based on an individual-level survey that has been administered to a national sample of eligible voters during every midterm and Presidential election since 1948. The NES survey includes a variety of questions about respondents' demographic traits, political preferences and ideology, their placements of the major candidates for President on the ideology scale, their interest in the national news and their attention to media coverage of various aspects of the election campaign. Most importantly, the NES questionnaire asks respondents if they voted in the Presidential election and (if so) for which candidate they cast their vote.

It is this question that sets the NES collection apart from the Current Population Survey (CPS) data, which is the basis for most studies of turnout (Alvarez, Ansolabehere and Wilson (2002), Highton (1997), Leighley and Nagler (1992), and

Wolfinger and Rosenstone (1980)). The advantages of the CPS collection are twofold. First is its sheer size; collected every year since 1964 by the Census Bureau, the voter supplement generally contains approximately 100,000 observations. This allows researchers to produce very stable, consistent results. Second is its reported rate of turnout, which is somewhat higher than the estimates of turnout released by the FEC and shown in Table 1.1 but quite a bit lower than the reported rate of turnout in NES data.

Katz (2000) proposes an elegant method for correcting for over-report when using a binary probit model. This method relies on voter validated NES data, the most recent collection of which occurred in 1988. However, validating survey respondent voting proved prohibitively difficult for the NES due to the sizable ratio of respondents whose voting records either couldn't be checked (from 1964–1988 this ranged between 1.7% and 15.8%) or even if they could be checked, could not be found (from 1964–1988 this ranged from 5.8% to 15.6%).[1] In addition, Katosh and Traugott (1981) and Sigelman (1982) provide evidence that using voter validated data rather than reported data has no strong effect on predictions about voting.

The most likely cause of the difference between the NES and CPS reported rates of turnout is the fact that CPS data, unlike NES data, does not consist of a pre-election wave containing questions about the upcoming election. A number of studies including Clausen (1968), Kraut and McConahay (1973), and Yalch (1976) have shown that these questions increase respondent's awareness of the election, prompting many to turnout when previously they would not have done so. In fact, the impact of the pre-election wave may be quite dramatic, as controlled studies by Kraut and McConahay (1973) have found an increase in the actual rate of turnout by 29–31 percentage points. In fact, given the inaccuracies of survey vote validating, it is possible that most of the increase in the turnout rate as measured by the NES rather than the FEC is due to the effects of the pre-election survey.

Yet the NES survey contains important information that is not found in the CPS survey. Because it is conducted by the government, the CPS survey does not ask

[1] These statistics are available in Traugott (1989).

questions about political ideology, partisan attachment or vote choice. Hence, studies that are based on this data can only explain turnout as a product of individual and contextual costs. They must ignore the effects of political preferences as well as the fundamental role of vote choice.

It is for this reason that I analyze the individual-level NES data merged with state-level registration data. The state-level data is taken from two sources: for the years 1972–1992 it comes from an ICPSR collection of those years by Mitchell and Wlezien and for the years 1996–2000 it comes from the appropriate editions of "The Book of the States" published by the Council of State Governments.[2] Both of these sources apply rigorous and consistent data collection techniques, drawing on state statutes and information made available by Secretaries of State. Together, the NES data and the institutional data provide an ideal forum for analyzing the relationship between information, institutions and the vote decision.

3.1 Operationalization of the Formal Model

In this section I describe how the variables that compose the formal model are measured for the empirical analysis. The dependent variable is a limited variable that denotes whether or not the respondent abstains, votes for one candidate or votes for another candidate in each of the eight Presidential data collections. I code the vote choice for all candidates that earn a minimum of 5% of the total vote share in each election. I do this for two reasons. Firstly, it is difficult to obtain consistent estimates for models run with candidates who earn less than 5% of the vote share. There simply are not enough observations that relate to such candidates to be confident in most statistical packages' ability to estimate the relevant coefficients. Secondly, the federal government matches the campaign funds of all candidates that exceed the 5% vote share threshold. Hence, it is a level of candidate viability that is nationally recognized. Table 3.1 shows the voteshares earned by those candidates in the eight elections I study that surpass this threshold.

[2]ICPSR 01102.

Table 3.1: Vote Shares of Major U.S. Presidential Candidates 1972–2000

Percent of the U.S. Popular Vote*			
Year	Democrat	Republican	Other
1972	37.5%	60.7%	
1976	50.1%	48.0%	
1980	41.0%	50.7%	8.2%
1984	40.6%	58.8%	
1988	45.6%	53.4%	
1992	43.0%	37.4%	18.9%
1996	49.2%	40.7%	8.4%
2000	48.4%	47.9%	

* Vote share shown for all candidates winning at least 5% of the total.
Source: Scammon, McGillivray and Cook (2001)

In the rest of this section, I describe how the independent variables that make up the right-hand side of the formal model (candidate proximity, uncertainty and the costs of voting) are operationalized for the empirical analysis. A beneficial aspect of the NES data is the consistency of the questions that make up the survey across election years. Nonetheless, there is some variation and in the following discussion I will cover differences by year in both the existence of specific variables and the manner in which they are coded.

3.1.1 Uncertainty about the Candidate

An eligible voter's uncertainty about the ideological platforms of candidates running for office is an intrinsically difficult thing to measure. The most obvious and perhaps best way of doing this is simply to ask the individual directly. Since 1994 the NES has done this in their survey, asking respondents immediately after each candidate ideology placement question, "How certain are you of [name's] position on this scale?" Respondents are then allowed one of three possible answers: "very certain," "pretty certain," and "not very certain."

Alvarez and Franklin (separately and jointly) address the validity of this measure with a series of studies (Alvarez (1996, 1997) and Alvarez and Franklin (1994,

2002)). These studies put to rest obvious fears regarding the comparability of directly measured uncertainty across survey respondents. Such fears are based upon the suspicion that the response to the NES question is driven by a sense of uncertainty that is unique to the individual. As Alvarez and Franklin show, the NES variable corresponds well with the theoretical structure of uncertainty.

The direct measure of uncertainty is both strongly correlated with the individual's costs of voting and consistent with the individual's theorized perception of the candidate's ideological position. According to this theory, while certain individuals generally perceive the candidates' ideological location with a probability density function (pdf) that covers a short interval, has a narrow variance and an off-center expected mean, uncertain individuals generally perceive the candidates' ideological location with a pdf that covers the entire ideology scale and has an expected mean at the scale midpoint.[3] Alvarez and Franklin demonstrate that NES respondents are more likely to place a candidate at the ideological midpoint the more uncertain they are about the candidate's ideological position, hence supporting the validity of the direct measure of uncertainty.

Before 1994 the NES survey did not include any sort of direct measure of uncertainty. For this reason, it is necessary to use a different operationalization of uncertainty about the six Presidential elections between 1972 and 1992. There are two established ways of doing this: one proposed by Bartels (1986) (hereafter referred to as the "Bartels measure") and one proposed by Alvarez (1997) (hereafter referred to as the "Alvarez measure"). In the following discussion I will evaluate both of these measures along with a third measure that is a slightly modified version of the Alvarez measure.

The Bartels measure is based upon the assumption that survey respondents "place a candidate on an issue if they are sufficiently certain of the candidate's position on that issue, but . . . refuse to place the candidate if their uncertainty exceeds some threshold value" (Bartels, p. 713). Accordingly, the level of uncertainty about a given

[3]The mean is expected to be located on the left half of the scale for liberal candidates and the right half of the scale for conservative candidates.

candidate may be estimated from the parameters of a model that predicts the probability of candidate placement using variables that measure the costs of information to the individual. Individuals with higher costs of information are expected to have greater levels of predicted uncertainty. As shown by the analysis of Bartels (1986), this is soundly supported.

The assumptions behind the Bartels measure are compatible with the theory of uncertainty and candidate placement discussed by Alvarez and Franklin (1994, 2002) as well as with the standard Bayesian economic understanding of information and learning (discussed by Achen (1992)). The individual's prior beliefs about candidates' political ideology are assumed to be distributed normally across the real (unbounded) line. Candidates send out signals about their ideological positions so as to inform voters about themselves. Whether due to candidate strategy or to imperfect information transmission, these signals take the form of a distribution of location points with the candidates' true position at the mean and the aggregate uncertainty across the electorate indicated by the variance. Because the prior beliefs of individuals are based essentially upon no candidate-specific information, individuals are assumed to update their perceptions of the candidates' positions by heavily weighting the information signals they receive during the campaign.

Well-informed individuals receive more of the signals about candidates' locations than less informed individuals. For this reason, their perception of a candidate's ideological position is more likely to have a mean position at the candidate's true position with a more narrowly distributed pdf around that point. Across the electorate, individuals with weak information (meaning that they received a low number of signals from the candidate) are expected to place the candidate relatively far from the mean, in the tails of the distribution of signals transmitted about his location. Conversely, individuals with strong information (meaning they received a high number of signals from the candidate) are expected to place the candidate at or close to the mean of the distribution of signals transmitted about his location. Importantly, individuals with no information (meaning they received no signals from the candidate) perceive the candidate with the prior pdf and hence are very uncertain and likely to place the

candidate at the midpoint of the prior distribution.

This defines two basic types of eligible voters. One type has some degree of information that varies across individuals, and candidate placements by that type should (in the aggregate) look like the distribution of signals sent about the candidate's political ideology with a greater frequency of placement at the mean than in the tails. The other type has no information, and candidate placements by that type should generally be at the mean of the prior pdf. This theory is essentially that described and empirically supported by Alvarez and Franklin (1994, 2002), who show that individuals scale their perception of candidate ideology on to the bounded scales designed for survey use.

However, Alvarez and Franklin do not address respondents' motivations for not placing the candidates on survey-defined ideology scales. Clearly, this is an important aspect of the relationship between information and candidate perception as an average of 10%–15% of all NES respondents refuse to place one or all Presidential candidates on the 7-point ideology scale. As shown by Bartels (1986), respondents do not place the candidates because they are generally too uncertain to do so. Yet, as shown by the pattern of survey responses catalogued by Alvarez and Franklin (1994, 2002), it is clear that some respondents who do not receive information signals (and so should be maximally uncertain) place the candidates on the ideology scale (at the scale midpoint, with a small variance). It is fairly natural to assume that the factor that distinguishes those uncertain individuals who place the candidates from those who do not is a slightly heterogeneous level of dis-utility for being wrong. Those with greater dis-utility as well as greater uncertainty are less likely to place the candidates on the ideology scale than otherwise.

The Alvarez measure is based upon *where* the respondent places the candidate rather than *whether or not* the respondent places the candidate. Specifically, it is the distance squared between the respondent's placement of the candidate and the survey mean placement of the candidate. There are two fundamental assumptions upon which this rests: that the mean placement of the candidate is the true location of the candidate, and that the respondent's perceived uncertainty about the candidate's

location is a function of the distance that she places the candidate from his true location. In fact, the theory of information, learning and candidate placement that is described above and that is consistent with the studies of Alvarez and Franklin (1994, 2002) indicate that the mean candidate placement is not the true candidate placement. As an unknown percentage of survey respondents have an uninformed perception of the candidate's ideological position, the survey mean is to some degree biased toward the prior expected belief.

Furthermore, while this measure is an accurate measure of the difference in the individual respondent's information from the mean respondent's information, it does not necessarily follow that it is a precise measure of the individual respondent's perceived uncertainty. Respondents that place the candidate far across the ideology scale from the mean placement may have received political information that makes them very certain about the candidate's location – even as their perception of that location varies greatly from that of the rest of the electorate. It is their perceived uncertainty, not the objective quality of their information, that enters into their decision calculus. Nonetheless, as Alvarez (1997) shows, this is a reliable measure of uncertainty since the aggregate link between uncertainty and political information remains.

The last measure of uncertainty that I shall consider is designated the "Wilson measure." It involves a simple alteration of the Alvarez measure in which the true location of the candidate is taken to be his mean placement by respondents who both fall into the most highly educated 30% of the population and report regularly following current events in the news.[4] The goal of this modification is to base the measure on a more accurate estimate of the candidate's location. Using the most highly informed respondents' placements is a rough means of finding the mean placement among only informed survey respondents. However, not only is it unknown how precisely this weeds out uniformed placements, it is also possible that due to political preferences this leads to biased estimates of candidate location. Nonetheless, proof of the validity of this measure is shown by how the mean placement of the highly

[4]The measurement of this varies slightly with the question used by the NES. For 1984-2000 it is reading a newspaper 5-7 times per week, for 1976-1980 it is reading a newspaper on a daily basis, and for 1972 it is whether or not the respondent read about the campaign in the newspaper.

educated respondents corresponds with the expected relationship of placement and uncertainty outlined above; for the Democratic and Republican candidates it is further from the midpoint of the scale than the mean placement of the entire survey sample.

Table 3.2: Correlation of Uncertainty Measures for 1996 Presidential Candidates

Full Sample Correlation Coefficients

	Alvarez	Wilson	Bartels	Direct
		Bill Clinton		
Alvarez	1.00			
Wilson	0.98**	1.00		
Bartels	0.37**	0.41**	1.00	
Direct	0.13**	0.20**	0.22**	1.00
		Bob Dole		
Alvarez	1.00			
Wilson	0.99**	1.00		
Bartels	0.40**	0.41**	1.00	
Direct	0.33**	0.37**	0.33**	1.00
		Ross Perot		
Alvarez	1.00			
Wilson	0.97**	1.00		
Bartels	0.24**	0.26**	1.00	
Direct	0.20**	0.26**	0.16**	1.00

* indicates a ρ=.10 level of statistical significance, two-tailed test.
** indicates a ρ=.05 level of statistical significance, two-tailed test.

The simplest way to evaluate the measures of uncertainty is to check how well they correlate with one another and the direct measure of uncertainty. Accordingly, Tables 3.2–3.3 show the correlation coefficients of the uncertainty measures for each of the major candidates in the 1996 and 2000 elections (these years are selected because before 1994 the NES survey did not contain the direct question about respondent uncertainty).

Of the three alternative measures, the Bartels measure is the most highly correlated with the direct measure of uncertainty for two of the five 1996 and 2000 Presidential candidates, George W. Bush and Bill Clinton. Likewise, the Wilson measure is the most highly correlated with the direct measure for another two of the five 1996 and 2000 Presidential candidates, Robert Dole and Ross Perot. Surprisingly, the two

Table 3.3: Correlation of Uncertainty Measures for 2000 Presidential Candidates

Full Sample Correlation Coefficients

	Alvarez	Wilson	Bartels	Direct
		Al Gore		
Alvarez	1.00			
Wilson	0.98**	1.00		
Bartels	0.27**	0.32**	1.00	
Direct	0.26**	0.32**	0.32**	1.00
		George W. Bush		
Alvarez	1.00			
Wilson	0.99**	1.00		
Bartels	0.38**	0.39**	1.00	
Direct	0.35**	0.37**	0.39**	1.00

* indicates a ρ=.10 level of statistical significance, two-tailed test.
** indicates a ρ=.05 level of statistical significance, two-tailed test.

measures are equally well correlated with the direct measure for the fifth of the 1996 and 2000 Presidential candidates, Al Gore.

Table 3.4: Correlation of Uncertainty Measures for 1996 Presidential Candidates

Partial Sample Correlation Coefficients

	Alvarez	Wilson	Bartels	Direct
		Bill Clinton		
Alvarez	1.00			
Wilson	0.95**	1.00		
Bartels	0.18**	0.24**	1.00	
Direct	-0.16**	-0.05**	0.10**	1.00
		Bob Dole		
Alvarez	1.00			
Wilson	0.98**	1.00		
Bartels	0.27**	0.29**	1.00	
Direct	0.07**	0.14**	0.25**	1.00
		Ross Perot		
Alvarez	1.00			
Wilson	0.92**	1.00		
Bartels	0.03**	0.04**	1.00	
Direct	-0.23**	-0.16**	0.05	1.00

* indicates a ρ=.10 level of statistical significance, two-tailed test.
** indicates a ρ=.05 level of statistical significance, two-tailed test.
* This is the subsample of respondents that place the candidates on the ideology scale.

Table 3.5: Correlation of Uncertainty Measures for 2000 Presidential Candidates

Partial Sample Correlation Coefficients

	Alvarez	Wilson	Bartels	Direct
		Al Gore		
Alvarez	1.00			
Wilson	0.95**	1.00		
Bartels	0.03	0.11**	1.00	
Direct	-0.13**	-0.01	0.23**	1.00
		George W. Bush		
Alvarez	1.00			
Wilson	0.98**	1.00		
Bartels	0.23**	0.24**	1.00	
Direct	0.04	0.09**	0.29**	1.00

* indicates a ρ=.10 level of statistical significance, two-tailed test.
** indicates a ρ=.05 level of statistical. significance, two-tailed test.
* This is the subsample of respondents that place the candidates on the ideology scale.

This indicates that the measures perform similarly in comparison with the direct measure. To verify that this true across survey respondents, I limit the correlations shown in Tables 3.2–3.3 to include only those respondents that place the candidates on the ideology scale. The correlation coefficients from this exercise are shown in Tables 3.4–3.5. Although the correlation of each measure with the direct measure drops substantially, the Bartels measure continues to perform fairly well. These results indicate that the Wilson measure relies heavily upon respondent non-placement to predict respondent uncertainty.

The poor performance of the Alvarez measure may be attributed to the fact that it was designed to be constructed from multiple issue dimensions (for a discussion of this see Alvarez (1997)) rather than the single ideology scale used here. Hence, the measure included in this analysis does not contain as much information as it would if constructed in a multiple dimensional framework. Obviously, this makes it less reliable in the present context.

The weakness of the Wilson measure in Tables 3.4–3.5 indicates that its estimation most likely suffers from an identification problem. This would arise from an inability to distinguish informed respondents from uninformed respondents who place the candidate on the ideology scale (in spite of being uninformed), due to a low dis-utility of being wrong. Obviously, a measure of uncertainty that takes advantage of the information contained in both the placement of the candidate on the ideology scale and the location of the placement of the candidate on the ideology scale is likely to be a superior measure. Unfortunately, it appears from the results in Tables 3.2–3.5 that such a measure is not yet available for the single dimensional data employed here. Hence, I use the Bartels measure of uncertainty, which performs well consistently, in the analysis that follows.

3.1.2 Ideological Proximity of the Candidate

The first variable in the utility function shown in Equation 2.5 is the ideological proximity of the candidate to the eligible voter. The most obvious operationalization

of this variable is probably the negative quadratic distance between the candidate's placement and the individual's self-placement on the 7-point NES ideology scale. Obviously, this relies critically upon the individual's self-placement and the candidate's location on the NES 7-point ideology scale. Yet as discussed previously, the mean candidate placement is most likely not the true location due to bias toward the scale midpoint. Moreover, individuals who do not place themselves on the ideology scale are dropped from the analysis, thereby inducing selection bias in the data and estimation results.

As shown by Bartels (1986), individuals who are less certain about a candidate's ideology are less likely to place the candidate on the 7-point ideology scale. This logic extends to the individual's self-placement as individuals who are more uncertain about their own location on the scale are more likely not to place themselves. Moreover, because political information is a determining factor of uncertainty about one's own ideology just as it is a determining factor of uncertainty about a candidate's platform, these variables are likely to be correlated.

That this is true is shown by the following three tables. Tables 3.6–3.7 show respondents' reported uncertainty about the major candidates running for election in the years 1996 and 2000. The right half of each table shows the uncertainty of the subsample that would be dropped from the analysis if it included the negative quadratic difference between the candidates' and respondents' ideological locations. The left half of each table shows the uncertainty of the full sample. For each candidate, individuals who do not place themselves on the ideology scale are less likely to report being "very certain" or "pretty certain" than those who do place themselves on the ideology scale. Furthermore, the abstention rate differs dramatically between the subsample and the full sample. In 1996 the rate of abstention was 44.4% for the subsample and 24.9% for the full sample, and likewise in 2000 the rate of abstention was 44.4% for the subsample and 25.7% for the full sample.

Table 3.8 shows a more condensed version of the same pattern in Tables 3.6–3.7 using the Bartels measure of uncertainty for every major candidate in all Presidential

Table 3.6: Sample and Subsample: Respondent Uncertainty (Directly Measured)

1996 Presidential Candidate Ideological Positions

	Full Sample			Subsample*		
Candidate	Clinton	Perot	Dole	Clinton	Perot	Dole
Very Certain	372	185	313	43	26	29
	(27.8%)	(13.8%)	(23.4%)	(15.1%)	(9.2%)	(10.3%)
Pretty Certain	629	459	592	97	58	74
	(47.0%)	(34.3%)	(44.3%)	(34.2%)	(20.5%)	(26.2%)
Not Very Certain	337	694	433	144	199	180
	(25.2%)	(51.9%)	(32.4%)	(50.7%)	(70.3%)	(63.6%)

* This is the subsample of respondents that do not place themselves on the ideology scale.

Table 3.7: Sample and Subsample: Respondent Uncertainty (Directly Measured)

2000 Presidential Candidate Ideological Positions

	Full Sample		Subsample*	
Candidate	Gore	Bush	Gore	Bush
Very Certain	284	263	10	8
	(22.9%)	(21.2%)	(8.9%)	(7.1%)
Pretty Certain	548	547	26	24
	(44.1%)	(44.2%)	(23.0%)	(21.4%)
Not Very Certain	411	429	77	80
	(33.1%)	(34.6%)	(68.1%)	(71.4%)

* This is the subsample of respondents that do not place themselves on the ideology scale.

elections 1972–2000. The left section of the table shows the mean uncertainty about each candidate for the full sample and the center section of the table shows the mean uncertainty about each candidate for the subsample that would be dropped from the analysis if the negative quadratic distance between the candidate and the respondent's self-placement was used. The right section of the table shows the difference between the two measures of uncertainty.

As this table makes apparent, individuals who do not place themselves on the ideology scale are consistently more uncertain about the candidates' ideological locations than individuals who do place themselves on the ideology scale. An analysis that included the negative quadratic distance between the individual's and the candidates' ideological locations would drop such individuals and would therefore be based on a much more certain set of individuals. Hence, I do not measure ideological proximity

Table 3.8: Sample and Subsample: Respondent Uncertainty (Bartels Measure)

1972–2000 Uncertainty about Presidential Candidate Ideological Positions

		Full Sample		Subsample*		Difference
Year	Candidate	Mean Uncertainty	N	Mean Uncertainty	N	Mean Uncertainty
1972	George McGovern	-1.15	2015	.69	459	2.84
	Richard Nixon	-1.58	2015	.53	459	2.11
1976	Jimmy Carter	-1.09	1691	.96	425	2.05
	Gerald Ford	-1.39	1691	.96	425	2.35
1980	Jimmy Carter	-.61	1174	.04	356	.65
	John Anderson	-.05	1174	.62	356	.67
	Ronald Reagan	-.64	1174	.08	356	.72
1984	Walter Mondale	-2.86	1586	-2.26	377	.60
	Ronald Reagan	-3.39	1586	-2.59	377	.80
1988	Michael Dukakis	-1.70	1556	-.72	384	.98
	George Bush	-1.97	1556	-.87	384	1.10
1992	Bill Clinton	-2.46	1837	-1.49	428	.97
	Ross Perot	-1.24	1837	-.55	428	.89
	George Bush	-2.78	1837	-1.63	428	1.15
1996	Bill Clinton	-3.85	1262	-2.72	265	1.13
	Ross Perot	-1.57	1262	-1.07	265	.50
	Bob Dole	-3.36	1262	-2.09	265	1.27
2000	Al Gore	-2.62	1203	-.46	114	2.20
	George W. Bush	-2.52	1203	-.34	114	2.18

* This is the subsample of respondents that do not place themselves on the ideology scale.

with the negative quadratic distance and instead use an operationalization that avoids reliance on the individual's self-placement on the 7-point ideology scale. One method for doing this is imputation. However, as ideological placement is a perception and thus a non-objective variable that is not well enough predicted by the other variables in the NES dataset to be satisfactorily imputed, I do not use this method.

Fortunately, I am able to accurately operationalize the individual's ideological proximity to the candidate using two measures of the individual's political preferences that are strongly related to ideological self-placement: partisan identification and ideological self-categorization. Previous research has shown that both ideology (see Lazarsfeld, Berelson and Gaudet (1944)) and partisanship (see Campbell, Converse, Miller and Stokes (1964) and Bartels (2000)) strongly predict vote choice. The partisan identification variable was formed using respondents' answers to the question "Generally speaking, do you usually think of yourself as a Republican, a Democrat,

an Independent, or what?" Those that answered Republican were coded -1, those that answered Democrat were coded +1, and those that answered neither were coded 0.

The ideological categorization variable was formed by respondents' answers to two related questions. If they placed themselves on the seven-point ideology scale it was formed using that answer, where positions 1–3 were designated "liberal," position 4 was designated "moderate," and positions 5–7 were designated "conservative." If they did not place themselves on the ideology scale they were asked "If you had to choose, would you consider yourself a liberal or a conservative?" Those that replied to this question "conservative" and those that were designated by their ideological placements conservative were coded a -1, those that replied to this question "liberal" and those that were designated by their ideological placements liberal were coded a +1, and those that replied to this question as neither "conservative" nor "liberal" and those that were designated by their ideological placements moderate were coded a 0. Thus, each of these three variables is expected to have a positive coefficient when predicting the utility of voting for the Democratic candidate and a negative coefficient when predicting the utility of voting for the Republican candidate.

3.1.3 The Costs of Voting

The costs of voting include costs of finding out about the election (the issues, where to register, when to vote, etc.), costs of taking the time necessary to vote as well as institutionally imposed costs. I measure these as being a function of eight variables: six that are the product of individual attributes and two that are the product of institutional conditions. The former set of six variables is composed of: the respondent's age, education level, family income, whether or not she watched programs about the campaign on television and whether or not she frequently watches the national news on television or reads a daily newspaper. The latter set of two variables is: the state registration deadline and whether or not the state allows citizens to register at the DMV.

The respondent's age is measured in years. It corresponds to her general level of experience both in evaluating political candidates and in dealing with the type of government bureaucracies involved in elections. The respondent's education is measured using three indicator variables denoting levels of education – a high school degree, some college coursework, or a junior college degree, and a Bachelor of Arts degree. Education has been shown (Rosenstone and Hanson (1993) and Alvarez and Brehm (1995)) to have a particularly strong impact on one's ability to gather and process political information. The respondent's family income is similarly measured using three indicator variables that roughly correspond to the second, third and fourth sample income quartiles. Because of inflation, these range from \$5,000–\$9,000, \$9,000–\$15,000 and \$15,000+ per year in 1972 to \$25,000–\$50,000, \$50,000–\$75,000 and \$75,000+ per year in 2000. Family income relates both to the costs of acquiring sources of information as well as to the opportunity costs of the time spent voting.

The costs of acquiring information through the media are measured by the respondent's attention to the newspaper, television news and programs about the campaign. Each of these is measured with an indicator variable. The newspaper variable is coded a 1 if the respondent reports normally reading a daily newspaper 5–7 times per week for the years 1984–2000. For the previous two election years the question was changed so as not to record how many days per week the respondent read a daily newspaper but only *if* she read a daily newspaper. Accordingly, the variable is coded a 1 for 40–50% of the sample from 1984–2000 and 65–72% of the sample from 1976–1980. Unfortunately, the NES changed the question in 1972 so that it could not be used to measure normal respondent newspaper attention.

Likewise, the television national news variable is coded a 1 if the respondent reports normally watching the national news 5–7 times per week for the years 1984–2000. In both 1976 and 1980, the question was asked differently, so that for 1980 the variable is coded a 1 if the respondent reports watching the national news every night and for 1976 it is coded a 1 if the respondent reports watching the national news frequently. For this reason, the variable is coded a 1 for approximately 40–60% of the sample from 1984–2000, 38% in 1980 and 54% in 1976. In 1972 the NES did

not ask the question and so it is not included in the analysis for that year.

The campaign programs variable is coded a 1 if the respondent reports having watched any television programs about the election campaign. The NES asked this question in surveys between 1992–2000 and 1976–1984. Accordingly, it does not appear in the 1988 or 1972 analyses. For the elections that it is included, it is coded a 1 for 75–89% of the survey respondents.

The two institutional variables are the state registration deadline and whether or not the state allows eligible voters to register at the DMV. Once the National Voter Registration Act (NVRA) was enacted in 1993, states were required to institute DMV registration unless they allowed election day registration at the polling place.[5] Thus, in the 1996 and 2000 data the variance in the indicator variable I use to denote the presence of DMV registration in a respondent's state virtually disappears. Furthermore, it became strongly correlated with the registration deadline. For this reason, I do not include it in the 1996 and 2000 analyses.

Between 1972 and 1992, the number of states with DMV registration increased steadily. In 1972 only one state permitted DMV registration – Illinois. Four years later Pennsylvania and Washington D.C. also permitted DMV registration. In 1980 Minnesota instituted DMV registration and in 1984 Arizona and North Carolina followed suit. Eight years later, in 1992, 19 states had provisions allowing DMV registration. Thus, across the years there is a fair amount of change (and variance) in the number of states allowing DMV registration.

State registration deadlines followed a similar although less dramatic trend. In 1972 only one state (Maine) allowed registration on election day and the average registration deadline was 25.5 days. Following the implementation of the NVRA many states reformed their registration process so that by 2000 six states allowed registration on election day (Idaho, Maine, Minnesota, New Hampshire, Wisconsin, and Wyoming) and the average registration deadline was 21.8 days. This decline in the length of the registration deadline suggests that it presents less of a barrier to

[5]This exempted Minnesota, Wisconsin, Wyoming, Idaho, and New Hampshire. North Dakota was exempted because it does not have voter registration.

turnout in recent Presidential elections than it did in earlier Presidential elections.

So as not to impose an overly linear structure on the effect of the registration deadline on the vote decision I measure it with two variables, the first denoting the number of days that the deadline falls before the election and the second being the square root of the first. This attempts to capture the likely non-linear shape of the effect of the registration deadline – one that is marginally decreasing in the length of the deadline.

In the next and final section of this chapter, I introduce the statistical model used for this analysis. This will cover the last important aspect of how I test the model presented in the previous chapter. In subsequent chapters I will proceed to discuss the results and findings of the empirical estimation.

3.2 The Statistical Model

The model of the vote decision discussed in Chapter 2 demonstrates that citizens generally face a choice between three actions on election day: voting for the Democratic candidate, voting for the Republican candidate, and abstaining. The statistical model that is appropriate for analyzing this decision is therefore a polychotomous limited-dependent variable model such as the conditional multinomial logit. The dependent variable of this model codes each of the three choices described above separately, is built on the assumption that the errors are distributed logistically, and is consistent with a random utility framework that incorporates the vote decision model.

Unfortunately, this model cannot be applied without accounting for the potentially endogenous relationship between vote choice and uncertainty. This endogeneity is the product of two aspects of information gathering. The first involves the effects of costs of information. Individuals who have high costs of information may rationally choose to pay attention only to information about one particular candidate if they expect that by doing so they will be persuaded to vote for that candidate (Downs (1957)). In this way, such individuals maximize their utility by making an expected correct vote decision while minimizing the costs of information that they incur. The

result of such strategic information gathering is that many voters are likely to be substantially less uncertain about the candidate for whom they vote than for the competing candidate(s).

Another potential cause of endogeneity between uncertainty and vote choice is described by Lazarsfeld, Berelson and Gaudet (1944), as they found many of the subjects in their study practicing "selective information processing." Such subjects were more likely to pay attention to information that was favorable to their preferred candidate. This behavior is similar to that described in theories of how the media influences voter information gathering (Graber (1988) and Patterson (1980)). Voters engaged in this behavior are expected to be relatively less uncertain of their preferred candidate the earlier they make their vote decision, as this allows them to practice "selective information processing" for a longer span of the election campaign.

To account for this endogeneity I use two-stage estimation (a discussion of this can be found in Greene (1997)) of the following set of equations:

$$\begin{aligned} U_{ij} &= \alpha_j T_{ij} + \beta_j X_{i1} + \gamma_j X_{i2} + \epsilon_{Uij} \\ T_{ij} &= \delta U_{ij} + \kappa_j X_{i1} + \mu_j X_{i3} + \epsilon_{Tij}. \end{aligned}$$

I assume that the institutional variables (the registration deadline and whether or not the state allows DMV registration) may be represented by the matrix X_{i2} above, and have no direct causal relationship with uncertainty, thus satisfying the exclusion conditions necessary to ensure that the set of equations is identified. Unfortunately, no research has been published on the properties of two-stage estimation of two limited-dependent variable models. A number of econometricians and methodologists, including Achen (1986), Alvarez and Glasgow (2000), Amemiya (1978), and Rivers and Vuong (1988) discuss two-stage estimation where one of the models has a limited-dependent variable. They demonstrate that the coefficient estimates obtained from this model are consistent, although the standard errors are likely to be biased.

Nonetheless, from their applications of the model, Alvarez and Glasgow (2000) conclude that the two-stage estimation yields small sample results that are superior to those of alternative models.

The other important methodological issue concerns the second-stage estimated standard errors. As shown by Achen (1986) and discussed by Alvarez and Glasgow (2000), two-stage estimation of a set of simultaneous structural equations with a limited-dependent variable model is likely to yield biased standard errors. Further, little is known about the asymptotic properties of estimates involving two limited-dependent variable models.

Yet statistical inference relies upon estimates of standard errors, making it important to produce trustworthy variance results. Accordingly, I generate the standard errors presented in the following chapters by bootstrapping (re-sampling with replacement and then calculating the variance across estimates), both the first and second-stage models simultaneously. As discussed by Mooney and Duval (1993), bootstrapping involves empirically estimating the entire sampling distribution of model parameters, thereby avoiding dependence upon potentially unrealistic model assumptions. As boot-strapped estimates of standard errors are generally consistent, this technique enables me to incorporate statistical inference into the discussion that follows.

Accordingly, the estimation that I use is a two-stage estimation of (first) a logit model to predict the reduced-form uncertainty equation and (second) a conditional multinomial logit model to predict the vote decision.[6] Although the multinomial logit imposes a more restrictive error variance covariance structure than the multinomial probit, its computational ease makes it advantageous to estimate. Furthermore, as I am not interested in measuring the effects of changing the choice set, I am not concerned by the fact that the restriction on the error variance covariance matrix entails the IIA assumption.

The results of my estimation are described in detail in the next chapter. I will

[6]For the years 1972–1992 this is a binary logit on the reduced-form of the Bartels measure of uncertainty and for the years 1996–2000 this is an ordered logit on the reduced-form of the direct measure of uncertainty.

briefly describe the first-stage results, but I will focus most closely on the second-stage results, as it is these that are relevant to the model of the vote decision proposed earlier. I will discuss how these results relate to the three proposed hypotheses using not only the model estimates but also first differences and whole-sample counterfactual simulations.

Chapter 4 The Empirical Results

The first-stage estimates of the reduced-form models predicting individuals' uncertainty about each of the candidates are shown in Tables A.1–A.8 in the appendix. The results of these models provide strong evidence that costs of information determine eligible voter's uncertainty about candidate ideology. Most of the coefficients on the variables measuring respondent's education, family income and news or campaign coverage attention are both negative and statistically significant (none are both positive and statistically significant). This indicates that the hypothesized relationship between these variables, the costs of information and uncertainty about the candidates is correctly specified.

The results also demonstrate moderate support for the theories that explain the existence of endogeneity between vote choice and uncertainty. These theories, which are described in Section 3.2, suggest that voters engage in selective information processing and strategic information gathering. Hence, they are likely to be relatively less uncertain of the candidate they prefer than the candidates they do not prefer. Some evidence for this is shown by the effects of variables measuring strength and direction of partisan attachment – although conclusions drawn from these variables are mitigated by the synonymous roles of party strategy and strategic information gathering in influencing uncertainty. More substantial evidence is given by the effects of variables measuring decision timing. Individuals deciding to vote early in the campaign for a candidate are often less uncertain about that candidate than otherwise, demonstrating that they engage in selective information gathering after making their decisions.

Further detail and discussion of these models may be found in the appendix. They are not given more consideration here simply because they reiterate the results of similar models described by Alvarez (1997), Alvarez and Franklin (1994), Alvarez and Glasgow (2000) and Bartels (1986).

4.1 Second-Stage Coefficient Estimates

The estimates of the second-stage vote decision models are shown in Tables 4.1–4.8. These results provide support for the vote decision model proposed in Chapter 2 as well as correspond with the predictions of the three hypotheses yielded by that model. In the discussion that follows, each of these models will be analyzed in turn.

Table 4.1 shows the conditional multinomial logit model estimates for the 1972 race between Senator George McGovern and incumbent President Richard Nixon. The results of this estimation provide evidence in favor of the vote decision model described earlier. The direction of the ideological categorization and partisan identification are as predicted by the ideological proximity variable in Equation 2.5. With only one exception, each is statistically significant at standard levels. The coefficient on the candidate uncertainty variable is negative and statistically significant, demonstrating that uncertainty about a candidate decreases the individual's utility for voting for that candidate.

Likewise, the results for the costs of voting variables further support this model of voting. Nearly all of the costs of voting coefficients are the signs predicted by the theory (positive for the individual-level variables and negative for the registration requirement variables) and most are statistically significant. The weakest results pertain to the registration deadline variables – only the variable measuring the impact on McGovern of DMV registration is statistically significant. This suggests that registration requirements may not have a huge impact on turnout and that they may asymmetrically effect the competing candidates.

The results of the 1976 model (Table 4.2) follow a similar pattern to that of the 1972 results. Again, the ideology and partisan attachment variables show that liberals, weak Democrats, and strong Democrats are more likely to vote for the Democratic candidate (in this case Carter) than conservatives, weak Republicans, and strong Republicans, who are more likely to vote for the Republican candidate (in this case Ford). Likewise, the coefficient on the candidate uncertainty variable is negative and strongly significant.

The individual-level costs of voting variables (age, education, and family income) also show strikingly similar influences as in 1972. In addition to these variables are the three news/campaign attention variables that were not available in the 1972 NES collection. The coefficients on the television news and daily newspaper attention variables are statistically insignificant while the coefficients on watching television programs about the campaign are positive and statistically significant. This indicates that for this election such television shows had the greatest impact of all the measured sources of information on voting behavior. Lastly, DMV registration seems to have had no effect in 1976 whereas the registration deadline had a negative and statistically significant effect for the Democratic candidate, Jimmy Carter.

The 1980 and 1984 results are much less consistent and more unexpected than those of both the previous and subsequent election years.[1] Table 4.3 contains the estimates for the 1980 vote model. This is the first of three four-choice conditional logit models (the others are for the years 1992 and 1996). Unlike for the Democratic and Republican candidates, there is no theoretically driven expectation for the direction of the coefficients on the ideological categorization and partisan attachment variables for the third-party candidates. With respect to Carter, we see support for the role of ideological proximity in the statistically significant coefficients on weak and strong partisan identification.

Again, the effect of candidate uncertainty is negative and statistically significant. Across the elections considered thus far this variable has been very consistent. The costs of voting variables, however, exhibit a different trend. While the coefficient on the individual's age is positive and significant, those on the other costs of voting variables tend to be either negative and significant or positive and statistically insignificant. This holds true for the registration requirements where only one coefficient is significant – that on DMV registration for Anderson – with a negative rather than positive sign.

The 1984 estimates shown in Table 4.4 demonstrate a less pronounced but similar

[1] To be sure that these results are not caused by local maxima of the likelihood function I re-estimated the models using various non-zero starting values and search algorithms. In each instance the model returned the same coefficients shown in Tables 4.3–4.4.

pattern. Three of the six variables indicating ideological proximity are statistically significant (each are the expected sign). Candidate uncertainty is again negative and statistically significant. The costs of voting variables are not always as predicted, as many although not all of the individual-level variables have statistically significant negative rather than positive effects. The registration variables are also all statistically insignificant.

Although the estimates for 1980 and 1984 do not corroborate the vote decision model as fully as those for 1972 and 1976 (and, for the subsequent elections, as I will show), they only indicate weakness among the cost of voting variables. The cause of this weakness is unclear – most likely it arises from a shared trait between the two elections. One possibility is the candidacy of Ronald Reagan – the only Hollywood movie star to run for President in any of the elections I analyze. Perhaps his popularity and appeal along non-political lines drew individuals to vote when otherwise they would not have done so.

The results of the 1988 analysis shown in Table 4.5 are more consistent than those just discussed with the trends of the 1972 and 1976 elections. The roles of ideological proximity and candidate uncertainty are more strongly supported, with four of the six coefficients being the expected sign and significance. The coefficients on age are positive and statistically significant. However, the coefficients on the education and family income variables and the news attention variables are rather weak. Only one each on education and family income is statistically significant. The coefficients on the registration requirements are not statistically significant, indicating that they did not play a role in determining turnout in the 1988 election.

The 1992 election, like the 1980 election, included a strong third-party candidate. The results of the analysis of this election are shown in Table 4.6. The effects of the proximity and uncertainty variables are for the most part statistically significant and in accordance with the theoretical predictions regarding their influence. The costs of voting variables are also as expected. The coefficients on the age and education variables are all positive, and with only two exceptions, statistically significant. However, the coefficients on the other individual-level costs of voting variables are all

insignificant. Only those on the institutional cost of voting variables are significant. Most notably, the coefficients on the square root of the registration deadline are negative and statistically significant for both Clinton and Perot, demonstrating that high registration deadlines reduced voter utility for these candidates.

Similarly, the 1996 election was a three-candidate race that included Clinton as the Democratic candidate (now the incumbent President) and Perot as the Reform Party candidate. Something that sets this election apart from the previous elections is the implementation of the NVRA in 1994. Following the NVRA, nearly all U.S. states adopted DMV registration (hence, it is no longer a part of the analysis) and many significantly reduced the length of their registration deadlines.

The results of the model estimation for 1996 are shown in Table 4.7. Generally, they are supportive of the vote decision model described earlier. The coefficients on the variables measuring ideological proximity and candidate uncertainty are the expected sign and many are statistically significant. The variables measuring the costs of voting generally have the expected impact, and when statistically significant always have the expected impact. All of the registration deadline indicators are negative and statistically insignificant. This may be indicative of the registration reform efforts that accompanied the NVRA.

The results of the final election model in this analysis, the 2000 election, are shown in Table 4.8. Again, these results are consistent with the decision-making model upon which the study is based. The coefficients on the ideological proximity variables and candidate uncertainty are the expected sign and statistically significant. The costs of voting variables are also generally as predicted. The one exception is attention to television news, which significantly decreased turnout for both candidates. In fact, in no instance has this variable statistically significantly increased turnout for a candidate, suggesting some support for the claim (Clarke and Fredin (1978) and Patterson and McClure (1976)) that television news is a poor cousin to printed news. Although the coefficients on the square root of the registration deadline are negative, neither is statistically significant.

Overall, the results in Tables 4.1–4.8 support the model proposed in Chapter 2.

Most remarkable in its consistency across election years is the effect of candidate uncertainty. For each of the eight elections studied, the impact of uncertainty is negative and statistically significant. This demonstrates that uncertainty and information about the candidates plays a substantial role in determining turnout and vote choice. For this reason, its effects will be studied more closely throughout the rest of this and the next chapters.

Table 4.1: 1972 Vote Decision

Conditional Multinomial Logit Results

Variable	Choice Specific	McGovern Vote	Nixon Vote
Candidate Uncertainty	-0.45** (0.09)		
Constant		-1.67** (0.61)	-2.14** (0.74)
Ideology		0.74** (0.22)	-0.13 (0.22)
Weak Partisan I.D.		0.75** (0.15)	-0.35** (0.12)
Strong Partisan I.D.		1.50** (0.19)	-0.78** (0.16)
Age		1.66** (0.50)	3.27** (0.43)
Education			
HS Degree		0.53** (0.20)	0.45** (0.16)
Some College		0.57** (0.21)	0.30* (0.18)
BA Degree		0.75* (0.39)	0.19 (0.36)
Family Income			
$5K-$9K		0.25 (0.20)	0.53** (0.18)
$9K-$15K		0.33* (0.20)	0.88** (0.19)
$15K+		0.62** (0.27)	1.22** (0.26)
DMV Registration		0.77* (0.46)	0.28 (0.47)
Registration Deadline		-0.01 (0.03)	0.01 (0.03)
Sqrt Registration Deadline		-0.09 (0.24)	-0.08 (0.27)
log-likelihood	-1622.4		
observations	2015		

Note: (Abstention coefficients normalized to zero).
Entries are maximum likelihood estimates
with associated standard errors in parenthesis.
* indicates a ρ=.10 level of statistical significance, two-tailed test.
** indicates a ρ=.05 level of statistical significance, two-tailed test.

Table 4.2: 1976 Vote Decision

Conditional Multinomial Logit Results

Variable	Choice Specific	Carter Vote	Ford Vote
Candidate Uncertainty	-0.25** (0.07)		
Constant		-2.59** (0.45)	-3.57** (0.51)
Ideology		0.39** (0.13)	-0.47** (0.14)
Weak Partisan I.D.		0.54** (0.11)	-0.56** (0.13)
Strong Partisan I.D.		1.30** (0.15)	-1.41** (0.22)
Age		2.99** (0.52)	3.46** (0.53)
Education			
HS Degree		0.52** (0.20)	0.59** (0.20)
Some College		0.88** (0.28)	0.99** (0.28)
BA Degree		0.40 (0.32)	0.64* (0.35)
Family Income			
$6K-$12K		0.46** (0.21)	0.62** (0.24)
$12K-$20K		0.44* (0.23)	0.85** (0.23)
$20K+		0.70** (0.29)	1.32** (0.29)
TV News		0.12 (0.15)	-0.10 (0.15)
Newspaper		0.23 (0.17)	0.20 (0.22)
TV Campaign Programs		0.93** (0.22)	1.03** (0.27)
DMV Registration		0.25 (0.22)	-0.13 (0.24)
Registration Deadline		0.03 (0.03)	0.01 (0.03)
Sqrt Registration Deadline		-0.35** (0.17)	-0.18 (0.20)
log-likelihood	-1365.8		
observations	1691		

Note: (Abstention coefficients normalized to zero).
Entries are maximum likelihood estimates
with associated standard errors in parenthesis.
* indicates a ρ=.10 level of statistical significance, two-tailed test.
** indicates a ρ=.05 level of statistical significance, two-tailed test.

Table 4.3: 1980 Vote Decision

Conditional Multinomial Logit Results

Variable	Choice Specific	Carter Vote	Anderson Vote	Reagan Vote
Candidate Uncertainty	-3.05** (0.90)			
Constant		-0.22 (1.76)	-0.49 (4.74)	-0.77 (1.74)
Ideology		0.24 (0.32)	0.23 (0.35)	-0.34 (0.34)
Weak Partisan I.D.		1.07** (0.42)	-0.18 (0.47)	0.08 (0.44)
Strong Partisan I.D.		1.65** (0.66)	0.85 (0.65)	-0.28 (0.60)
Age		3.41** (1.60)	3.13 (2.06)	2.85* (1.53)
Education				
HS Degree		-1.13 (0.79)	0.74 (4.41)	-0.74 (0.85)
Some College		-3.57** (1.40)	-1.79 (4.46)	-3.17** (1.49)
BA Degree		-4.87** (2.20)	-2.89 (4.83)	-4.87** (2.37)
Family Income				
\$10K-\$20K		0.22 (0.65)	0.12 (0.76)	0.03 (0.73)
\$20K-\$30K		-0.71 (0.66)	-1.31 (0.95)	-0.39 (0.70)
\$30K+		-1.11 (0.94)	-0.90 (1.07)	-1.83* (1.08)
TV News		-0.02 (0.51)	-0.68 (0.68)	0.00 (0.49)
Newspaper		-0.84 (0.60)	-0.45 (0.68)	-0.50 (0.60)
TV Campaign Programs		-0.79 (0.80)	-1.27 (1.72)	-0.15 (0.77)
DMV Registration		0.07 (0.82)	-1.98** (0.97)	-0.06 (0.89)
Registration Deadline		-0.07 (0.12)	0.05 (0.13)	0.06 (0.11)
Sqrt Registration Deadline		0.49 (0.80)	-0.20 (0.85)	-0.12 (0.75)
log-likelihood	-964.7			
observations	1174			

Note: (Abstention coefficients normalized to zero).
Entries are maximum-likelihood estimates with associated standard errors in parenthesis.
* indicates a ρ=.10 level of statistical significance, two-tailed test.
** indicates a ρ=.05 level of statistical significance, two-tailed test.

Table 4.4: 1984 Vote Decision

Conditional Multinomial Logit Results

Variable	Choice Specific	Mondale Vote	Reagan Vote
Candidate Uncertainty	-1.50** (0.53)		
Constant		-5.21** (1.70)	-6.54** (1.90)
Ideology		-0.01 (0.26)	-0.66* (0.38)
Weak Partisan I.D.		1.03** (0.33)	-0.15 (0.43)
Strong Partisan I.D.		1.55** (0.34)	0.57 (0.75)
Age		5.81** (1.66)	4.51** (1.29)
Education			
HS Degree		0.59 (0.41)	0.66 (0.41)
Some College		-0.43 (0.78)	-0.20 (0.85)
BA Degree		0.42 (1.18)	-1.04 (1.67)
Family Income			
$10K-$22K		0.27 (0.51)	-0.12 (0.54)
$22K-$35K		-0.95* (0.55)	0.07 (0.56)
$35K+		-0.59 (0.67)	-0.11 (0.91)
TV News		-0.22 (0.42)	0.48 (0.46)
Newspaper		-0.13 (0.52)	0.09 (0.39)
TV Campaign Programs		-0.33 (0.71)	-0.66 (0.74)
DMV Registration		-0.37 (0.62)	-0.76 (0.77)
Registration Deadline		0.12 (0.10)	-0.01 (0.09)
Sqrt Registration Deadline		-0.83 (0.61)	0.15 (0.60)
log-likelihood	-1108.5		
observations	1586		

Note: (Abstention coefficients normalized to zero).
Entries are maximum likelihood estimates
with associated standard errors in parenthesis.
* indicates a ρ=.10 level of statistical significance, two-tailed test.
** indicates a ρ=.05 level of statistical significance, two-tailed test.

Table 4.5: 1988 Vote Decision

1988 Conditional Multinomial Logit Results

Variable	Choice Specific	Dukakis Vote	Bush Vote
Candidate Uncertainty	-1.08** (0.24)		
Constant		-3.20** (0.85)	-3.28** (0.87)
Ideology		0.09 (0.15)	-0.62** (0.17)
Weak Partisan I.D.		0.21 (0.20)	-0.58** (0.20)
Strong Partisan I.D.		1.54** (0.29)	-0.94** (0.31)
Age		4.26** (0.99)	4.30** (0.97)
Education			
HS Degree		0.49 (0.32)	0.42 (0.32)
Some College		0.19 (0.46)	0.08 (0.52)
BA Degree		1.24** (0.48)	0.81 (0.57)
Family Income			
$12K-$25K		0.08 (0.29)	0.04 (0.31)
$25K-$40K		0.15 (0.41)	0.21 (0.41)
$40K+		-0.21 (0.40)	0.84* (0.44)
TV News		-0.12 (0.32)	-0.44 (0.32)
Newspaper		-0.12 (0.28)	-0.15 (0.30)
DMV Registration		-0.02 (0.28)	-0.45 (0.32)
Registration Deadline		-0.04 (0.07)	-0.05 (0.07)
Sqrt Registration Deadline		0.02 (0.43)	0.04 (0.43)
log-likelihood	-1055.2		
observations	1556		

Note: (Abstention coefficients normalized to zero).
Entries are maximum likelihood estimates
with associated standard errors in parenthesis.
* indicates a ρ=.10 level of statistical significance, two-tailed test.
** indicates a ρ=.05 level of statistical significance, two-tailed test.

Table 4.6: 1992 Vote Decision

Conditional Multinomial Logit Results

Variable	Choice Specific	Clinton Vote	Perot Vote	Bush Vote
Candidate Uncertainty	-1.40** (0.31)			
Constant		-5.05** (0.94)	-4.32** (0.95)	-4.34** (1.01)
Ideology		0.38** (0.16)	-0.13 (0.13)	-0.69** (0.20)
Weak Partisan I.D.		0.60** (0.20)	0.00 (0.24)	-0.37 (0.26)
Strong Partisan I.D.		1.66** (0.35)	0.11 (0.28)	-0.27 (0.52)
Age		6.19** (1.23)	4.38** (1.14)	4.81** (1.07)
Education				
HS Degree		1.54** (0.37)	0.91** (0.38)	0.58 (0.42)
Some College		1.52** (0.46)	1.40** (0.41)	1.08** (0.51)
BA Degree		1.16 (0.74)	1.08** (0.48)	0.18 (0.87)
Family Income				
\$13K-\$30K		-0.08 (0.36)	0.51 (0.42)	-0.28 (0.39)
\$30K-\$50K		-0.07 (0.43)	0.70 (0.45)	0.21 (0.46)
\$50K+		-0.49 (0.45)	0.79 (0.50)	0.12 (0.49)
TV News		-0.21 (0.33)	-0.19 (0.26)	0.04 (0.31)
Newspaper		-0.04 (0.35)	0.40 (0.27)	-0.15 (0.33)
TV Campaign Programs		0.31 (0.42)	0.69 (0.45)	-0.26 (0.50)
DMV Registration		-0.15 (0.28)	0.02 (0.24)	-0.08 (0.29)
Registration Deadline		0.12* (0.07)	0.10* (0.06)	0.06 (0.08)
Sqrt Registration Deadline		-1.01** (0.47)	-0.92** (0.42)	-0.77 (0.50)
log-likelihood	-1575.7			
observations	1837			

Note: (Abstention coefficients normalized to zero).
Entries are maximum-likelihood estimates with associated standard errors in parenthesis.
* indicates a ρ=.10 level of statistical significance, two-tailed test.
** indicates a ρ=.05 level of statistical significance, two-tailed test.

Table 4.7: 1996 Vote Decision

1996 Conditional Multinomial Logit Results

Variable	Choice Specific	Clinton Vote	Perot Vote	Dole Vote
Candidate Uncertainty	-1.84** (0.45)			
Constant		-4.76** (0.63)	-6.31* (3.38)	-8.36** (1.00)
Ideology		0.23* (0.14)	-0.07 (0.16)	-1.15** (0.18)
Weak Partisan I.D.		1.07** (0.26)	0.19 (0.29)	-0.29 (0.29)
Strong Partisan I.D.		1.53** (0.29)	0.08 (0.42)	-1.85** (0.42)
Age		3.47** (0.91)	3.09** (1.18)	4.92** (0.98)
Education				
HS Degree		0.13 (0.46)	1.68 (3.33)	1.44** (0.57)
Some College		0.64 (0.54)	1.76 (3.36)	1.18* (0.66)
BA Degree		1.23** (0.52)	1.96 (3.36)	1.89** (0.64)
Family Income				
$15K-$30K		0.56* (0.33)	0.55 (0.49)	0.57 (0.44)
$30K-$50K		0.59* (0.33)	0.01 (0.49)	0.56 (0.51)
$50K+		1.01** (0.37)	0.82* (0.45)	1.09** (0.49)
TV News		0.02 (0.28)	-0.50 (0.45)	-0.17 (0.29)
Newspaper		-0.01 (0.27)	-0.37 (0.38)	0.13 (0.34)
TV Campaign Programs		-0.07 (0.34)	0.42 (0.35)	-0.06 (0.36)
Registration Deadline		-0.02 (0.07)	0.15 (0.11)	0.07 (0.08)
Sqrt Registration Deadline		-0.03 (0.41)	-0.89 (0.63)	-0.37 (0.48)
log-likelihood	-990.4			
observations	1340			

Note: (Abstention coefficients normalized to zero).
Entries are maximum-likelihood estimates with associated standard errors in parenthesis.
* indicates a ρ=.10 level of statistical significance, two-tailed test.
** indicates a ρ=.05 level of statistical significance, two-tailed test.

Table 4.8: 2000 Vote Decision

2000 Conditional Multinomial Logit Results

Variable	Choice Specific	Gore Vote	Bush Vote
Candidate Uncertainty	-1.60** (0.41)		
Constant		-3.73** (0.65)	-4.43** (0.76)
Ideology		0.49** (0.14)	-0.48** (0.16)
Weak Partisan I.D.		1.33** (0.28)	-0.55** (0.24)
Strong Partisan I.D.		1.65** (0.29)	-1.12** (0.36)
Age		2.44** (0.75)	3.08** (0.93)
Education			
HS Degree		0.30 (0.39)	-0.38 (0.45)
Some College		0.31 (0.44)	-0.48 (0.54)
BA Degree		1.00* (0.55)	-0.49 (0.67)
Family Income			
$25K-$50K		0.13 (0.33)	0.56 (0.35)
$50K-$75K		0.60* (0.34)	0.73** (0.35)
$75K+		-0.02 (0.43)	0.94** (0.46)
TV News		-0.54* (0.32)	-0.87** (0.36)
Newspaper		0.28 (0.26)	0.35 (0.24)
TV Campaign Programs		0.15 (0.32)	0.28 (0.36)
Registration Deadline		0.07 (0.05)	0.03 (0.05)
Sqrt Registration Deadline		-0.46 (0.32)	-0.24 (0.32)
log-likelihood	-809.6		
observations	1250		

Note: (Abstention coefficients normalized to zero).
Entries are maximum likelihood estimates
with associated standard errors in parenthesis.
* indicates a ρ=.10 level of statistical significance, two-tailed test.
** indicates a ρ=.05 level of statistical significance, two-tailed test.

4.2 Effects of Uncertainty

One aspect of these results that is not easily observable from the estimates shown in Tables 4.1–4.8 is the relative magnitude of the impact of uncertainty on the individual's probability of abstaining or voting for one or another candidate. This is because the probability that an individual chooses any one option in the conditional multinomial logit model is determined by a non-linear function of the exponent of the expected utilities generated by the independent variables. Thus, while the most salient aspects of a coefficient, its sign and whether or not it is statistically different from zero, are immediately knowable from looking at results like those shown in Tables 4.1–4.8 , an understanding of the impact of each of the independent variables on the individual's probable choice is not so easily gained.

For this I turn to another way of presenting the results of a conditional multinomial logit model, the "first differences" for each of the independent variables shown in Tables 4.9–4.16.[2] The "first difference" methodology is relatively simple (King, 1989). Here each independent variable is set to the sample mean value and with this the probability that a hypothetical "representative citizen" would choose a particular action (to abstain, vote for the Democratic candidate or vote for the Republican candidate) is determined. Then, for any given independent variable (for example, age) the value of that variable is increased by one sample standard deviation and the probability that the hypothetical citizen chooses each possible action is calculated. The difference between these two probability estimates provides the "first difference," which can be thought of as an estimate of the impact on the outcome of a standard deviation change in one independent variable, holding all other effects in the model constant.

Tables 4.9–4.16 show the results of this exercise for four variables: ideology, uncertainty, age and the registration deadline.[3] The other variables are omitted from

[2]The estimates of the standard errors in this and subsequent tables are produced by re-sampling. I drew 100 samples using re-sampling of the dataset, estimated the coefficients on each variable and then estimated the first differences described above. The reported probabilities are the probabilities calculated for the original dataset and the reported standard errors are the standard deviations from the mean of the estimated probabilities across the 100 draws.

[3]For ideology the first difference shows the effect of changing from a moderate to a liberal on the

the first difference analysis because they are not continuous variables, hence, a sample standard deviation shift requires a discrete jump from one categorical level (for example, an individual with a high school education) to another categorical level (continuing the example: an individual with a B.A. degree). In almost every case such a shift encompasses much more than just a one sample standard deviation change – therefore across variables the magnitude of the effects of such first differences is incomparable.

As the results of Tables 4.9–4.16 show, the effects of ideological categorization are much stronger for vote choice than abstention. In fact, for every year the impact of ideology was not statistically different from zero. Furthermore, every year shows the same direction of impact: a statistically significant increase in the probability of voting for the Democrat accompanied by a statistically significant decrease in the probability of voting for the Republican. For the third candidate in the three-candidate races the effect was never statistically significant. With regards to Perot, this finding is similar to that of Lacy and Burden (1999).

The results of the first differences demonstrate a similarly consistent trend in the impact of age on abstention. In each year, (except 1980, where the effect is not significant), the effect of an increase in age is to statistically significantly decrease the likelihood of abstention (providing limited support for Hypothesis 3). The magnitude of this effect varies in its relation to the magnitude of the effects of candidate uncertainty. The impact of age on vote choice also differs across elections. In 1972, 1976, and 1984, it advantaged Republican candidates (Nixon, Ford, and Reagan) at the expense of Democratic candidates. Conversely in 1988, 1992, and 1996 it advantaged Democratic candidates (Dukakis and Clinton) at the expense of Republican candidates. Finally, in 2000 it again advantaged the Republican candidate, George W. Bush. It is possible that this trend indicates a gradual shift attributable to generational replacement.

The first differences on candidate uncertainty are remarkably robust with regard both to abstention and vote choice. Increasing by one sample standard deviation

probability of abstention and vote choice.

uncertainty about each candidate (separately) raises the likelihood that the representative citizen abstains. The only exceptions to this are uncertainty about Mondale in the 1984 election, and uncertainty about Perot in the 1996 election, which had insignificant effects on abstention. Nonetheless, taken as a whole these results provide substantial support for Hypothesis 1 as they demonstrate that the effect of increasing uncertainty about a candidate is to decrease an individual's probability of turnout.

The effects of uncertainty about a candidate on vote choice are remarkably similar across elections in terms of their direction and statistical significance. Increasing uncertainty about each candidate analyzed in these models significantly decreases the probability of voting for that candidate. Likewise, it significantly increases the probability of voting for the other major candidates in all cases except four in 1996. The influence of candidate uncertainty on vote choice indicates support for Hypothesis 2, as decreasing uncertainty for a candidate raises probable turnout for that candidate and decreases probable turnout for opposing candidates.

It is interesting to observe that the effects of uncertainty on candidate choice rise over the course of the elections studied. This is evidence in favor of the claims made both by political scientists and media pundits that election coverage increasingly contains less information about political candidates and current issues (Patterson (1980)) and more fluff or "horse race" content. However, it is also important to note that the magnitude of the influence of uncertainty on vote choice rise most in the 1980 and 1984 elections. The largest impact is on the probability of voting for Reagan, which decreases by 75.5 percentage points in 1980, and 48.0 percentage points in 1984, due to a standard deviation increase in uncertainty about Reagan. As discussed before, this may be related to Reagan's status as a famous Hollywood actor. Awareness of his acting career may have gone hand-in-hand with favorable perceptions of his candidacy.

Table 4.9: Effects of Each Independent Variable on 1972 Choice

	First Differences		
Variable	Abstains	McGovern Vote	Nixon Vote
Ideology	-1.9 (3.0)	+14.4** (4.3)	-12.5** (4.4)
Candidate Uncertainty			
McGovern Uncertainty	+3.1** (0.6)	-12.1** (3.3)	+9.0** (2.9)
Nixon Uncertainty	+13.3** (2.0)	+10.0** (3.2)	-23.3** (4.4)
Age	-8.8** (1.8)	-1.9 (1.4)	+10.7** (2.1)
Registration Deadline	+0.7 (1.5)	-2.0 (1.3)	+1.3 (2.0)

Note: First Difference estimates based on conditional multinomial logit estimates in Table 4.1.

Table 4.10: Effects of Each Independent Variable on 1976 Choice

	First Differences		
Variable	Abstains	Carter Vote	Ford Vote
Ideology	-0.4 (2.2)	+15.7** (2.7)	-15.3** (2.1)
Candidate Uncertainty			
Carter Uncertainty	+4.7** (1.3)	-12.1** (3.3)	+7.4** (2.2)
Ford Uncertainty	+6.1** (1.6)	+8.4** (2.5)	-14.5** (3.8)
Age	-11.0** (1.6)	+3.6* (2.0)	+7.4** (2.1)
Registration Deadline	+0.7 (3.1)	-0.2 (3.8)	-0.5 (4.2)

Note: First Difference estimates based on conditional multinomial logit estimates in Table 4.2.

Table 4.11: Effects of Each Independent Variable on 1980 Choice

	First Differences			
Variable	Abstains	Carter Vote	Anderson Vote	Reagan Vote
Ideology	+0.5 (2.8)	+8.6* (4.8)	+4.2 (4.1)	-13.4** (4.3)
Candidate Uncertainty				
Carter Uncertainty	+6.8* (3.5)	-62.2** (14.9)	+10.5** (5.3)	+44.8** (14.1)
Anderson Uncertainty	+4.5* (2.7)	+13.8** (5.8)	-48.2** (16.3)	+29.9** (11.2)
Reagan Uncertainty	+13.5** (5.5)	+41.1** (13.0)	+20.9** (8.8)	-75.5** (12.4)
Age	-4.4 (3.4)	+3.0 (3.0)	+0.8 (3.2)	+0.6 (4.8)
Registration Deadline	-1.5 (3.3)	-9.0 (5.4)	+0.9 (3.7)	+9.5 (5.7)

Note: First Difference estimates based on conditional multinomial logit estimates in Table 4.3.

Table 4.12: Effects of Each Independent Variable on 1984 Choice

	First Differences		
Variable	Abstains	Mondale Vote	Reagan Vote
Ideology	+9.9 (6.6)	+6.2 (4.3)	-16.2** (6.9)
Candidate Uncertainty			
Mondale Uncertainty	+5.6 (3.5)	-21.6** (10.4)	+16.0* (8.4)
Reagan Uncertainty	+29.3** (8.6)	+18.7** (9.2)	-48.0** (13.6)
Age	-14.8** (4.3)	+5.4 (3.7)	+9.4** (4.7)
Registration Deadline	-1.8 (6.6)	+3.2 (4.6)	-1.3 (6.6)

Note: First Difference estimates based on conditional multinomial logit estimates in Table 4.4.

Table 4.13: Effects of Each Independent Variable on 1988 Choice

	First Differences		
Variable	Abstains	Dukakis Vote	Bush Vote
Ideology	+3.6 (3.9)	+6.9* (3.6)	-10.6** (2.6)
Candidate Uncertainty			
Dukakis Uncertainty	+19.1** (4.8)	-31.6** (7.0)	+12.5** (4.2)
Bush Uncertainty	+15.4** (4.1)	+13.8** (4.7)	-29.2** (7.1)
Age	-18.6** (4.0)	+10.6** (3.3)	+8.0** (2.7)
Registration Deadline	+7.7* (4.6)	-3.8 (3.5)	-4.0 (3.3)

Note: First Difference estimates based on conditional multinomial logit estimates in Table 4.5.

Table 4.14: Effects of Each Independent Variable on 1992 Choice

	First Differences			
Variable	Abstains	Clinton Vote	Perot Vote	Bush Vote
Ideology	-1.2 (2.8)	+15.9** (3.8)	-2.2 (1.6)	-12.5** (3.0)
Candidate Uncertainty				
Clinton Uncertainty	+16.2** (4.0)	-42.6** (8.6)	+9.4** (3.2)	+17.0** (4.4)
Perot Uncertainty	+4.0* (2.3)	+7.2** (2.5)	-15.3** (5.2)	+4.2** (1.5)
Bush Uncertainty	+10.8** (3.9)	+19.5** (5.0)	+6.3** (2.3)	-36.6** (8.8)
Age	-18.0** (4.4)	+15.0* (3.3)	+0.4 (2.2)	+2.7 (2.6)
Registration Deadline	-0.9 (3.8)	+3.5 (4.4)	+0.6 (2.6)	-3.1 (3.8)

Note: First Difference estimates based on conditional multinomial logit estimates in Table 4.6.

Table 4.15: Effects of Each Independent Variable on 1996 Choice

	First Differences			
Variable	Abstains	Clinton Vote	Perot Vote	Dole Vote
Ideology	-1.4 (2.7)	+10.7** (4.2)	-0.7 (1.1)	-8.6* (4.8)
Candidate Uncertainty				
Clinton Uncertainty	+21.0** (6.0)	-35.6** (7.0)	+5.0 (3.3)	+9.6** (3.4)
Perot Uncertainty	+1.4 (1.0)	+2.9 (1.9)	-5.0* (3.0)	+0.7 (0.7)
Dole Uncertainty	+5.5* (2.9)	+11.1** (3.7)	+1.3 (1.3)	-17.9** (6.5)
Age	-12.8** (3.7)	+7.5** (3.7)	+0.5 (1.4)	+4.8 (3.3)
Registration Deadline	+2.4 (4.0)	+1.5 (4.8)	-2.6 (2.4)	-1.4 (2.6)

Note: First Difference estimates based on conditional multinomial logit estimates in Table 4.7.

Table 4.16: Effects of Each Independent Variable on 2000 Choice

	First Differences		
Variable	Abstains	Gore Vote	Bush Vote
Ideology	-2.1 (3.6)	+17.5** (3.5)	-15.4** (3.8)
Candidate Uncertainty			
Gore Uncertainty	+13.1** (4.5)	-29.2** (7.4)	+16.1** (5.3)
Bush Uncertainty	+14.9** (5.2)	+17.1** (5.7)	-32.0** (7.8)
Age	-9.9** (2.9)	+2.8 (3.0)	+7.0** (3.4)
Registration Deadline	-3.1 (4.3)	+4.9 (4.3)	-1.8 (4.3)

Note: First Difference estimates based on conditional multinomial logit estimates in Table 4.8.

The influence of candidate uncertainty on abstention and vote choice are shown graphically for each candidate in the 1972 and 2000 elections in Figures 4.1–4.4. These elections are selected simply because they are the first and last in the series analyzed. All show the effect of candidate uncertainty on the probable vote action of the representative individual. The pattern in each is strikingly similar: increasing uncertainty about a given candidate decreases both the probability of turnout and the probability of voting for that candidate while increasing the probability of voting for the opposing candidate.

It is the differences between these figures that may be most illuminating. The effects of uncertainty about the 2000 candidates (Gore and Bush) in Figures 4.3–4.4 are graphically quite similar: as uncertainty about a candidate increases, turnout declines and support for each candidate decreases and increases, respectively, in S-shaped curves that intersect in the middle of each figure. This indicates fairly symmetric effects of uncertainty on the vote for each candidate.

In contrast, the graphs for the 1972 candidates appear somewhat different. In Figure 4.1 the intersection of the probable vote choice curves as related to uncertainty about McGovern appears to the left of the graph midpoint, indicating that Nixon benefited rather quickly from uncertainty about McGovern. Moreover, the probable vote choice curves in Figure 4.2 relating to uncertainty about Nixon barely intersect at the maximal level of uncertainty, indicating that even when the median voter was extremely uncertain about Nixon, she was more likely to cast her vote for him than for McGovern. This demonstrates the importance of other variables in shaping candidate preference. As McGovern was notoriously left-wing, he alienated voters to such an extent that even drastic changes in uncertainty about Nixon could not sufficiently alter vote choice so as to yield him much electoral support.

These figures provide further support for the statements in Hypothesis 1 and Hypothesis 2. Nonetheless, all of the hypotheses in those statements pertain to aggregate behavior among the entire population of eligible voters. Therefore, to accurately evaluate them we turn to the whole-sample simulations detailed in the next section of this chapter.

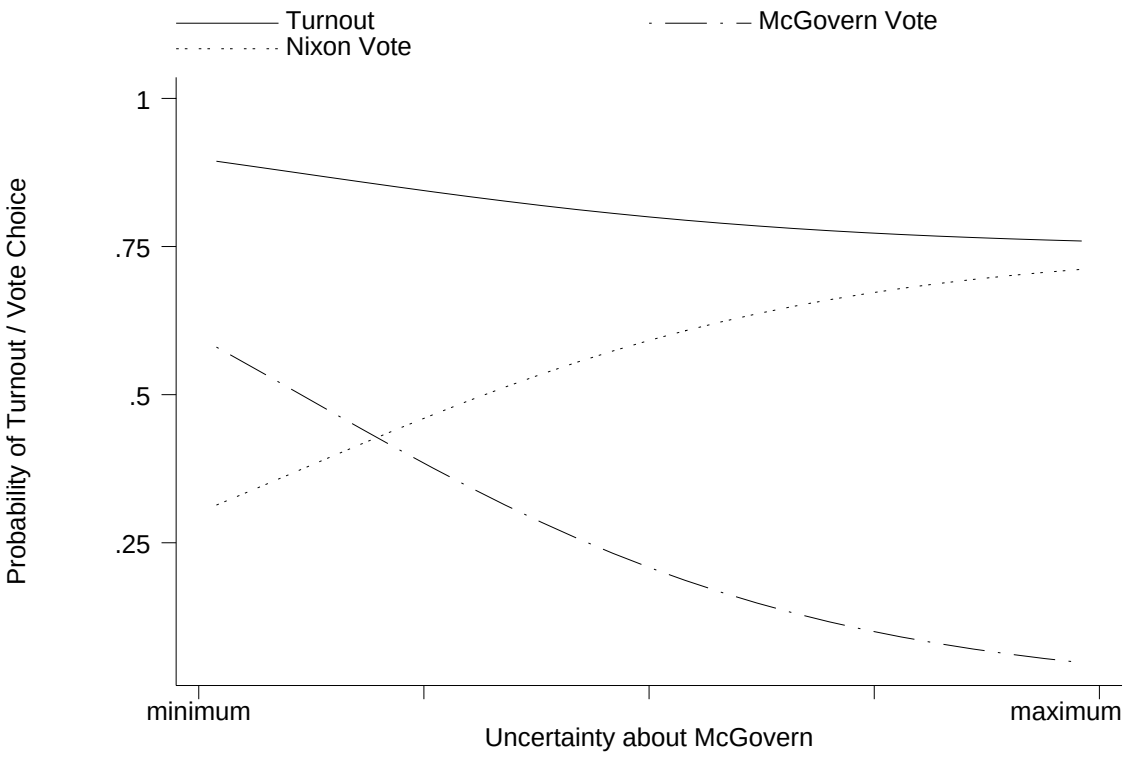

Figure 4.1: The Effect of Uncertainty about McGovern on the 1972 Vote Decision

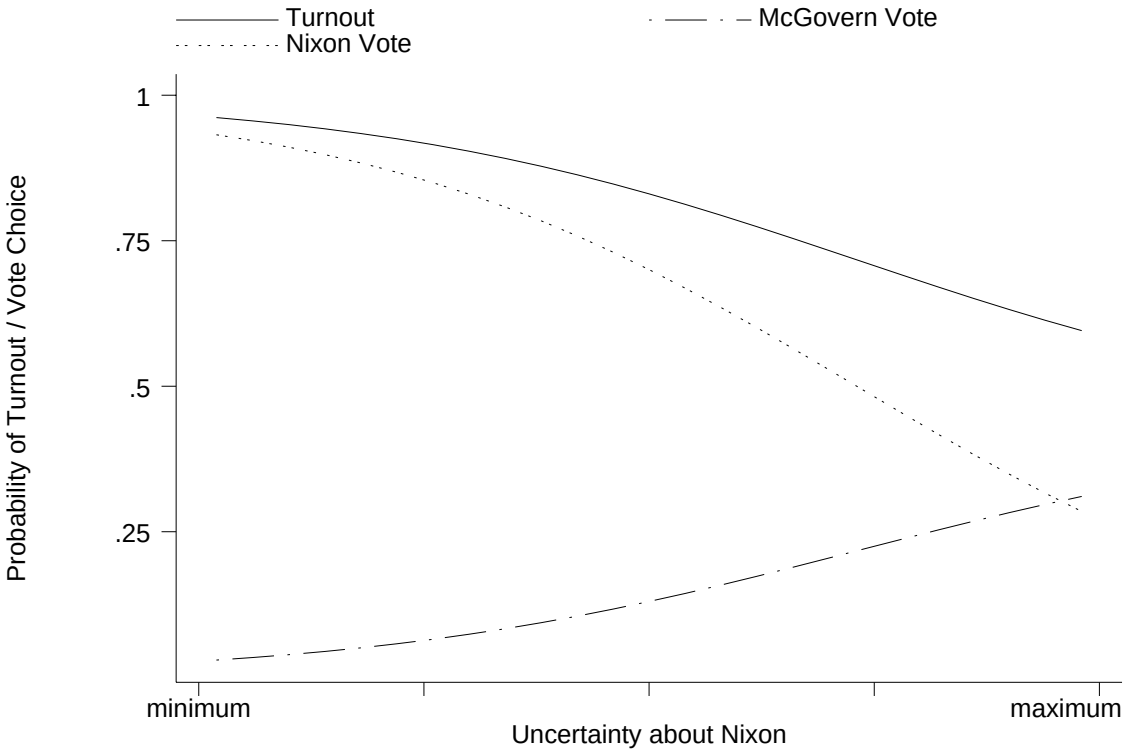

Figure 4.2: The Effect of Uncertainty about Nixon on the 1972 Vote Decision

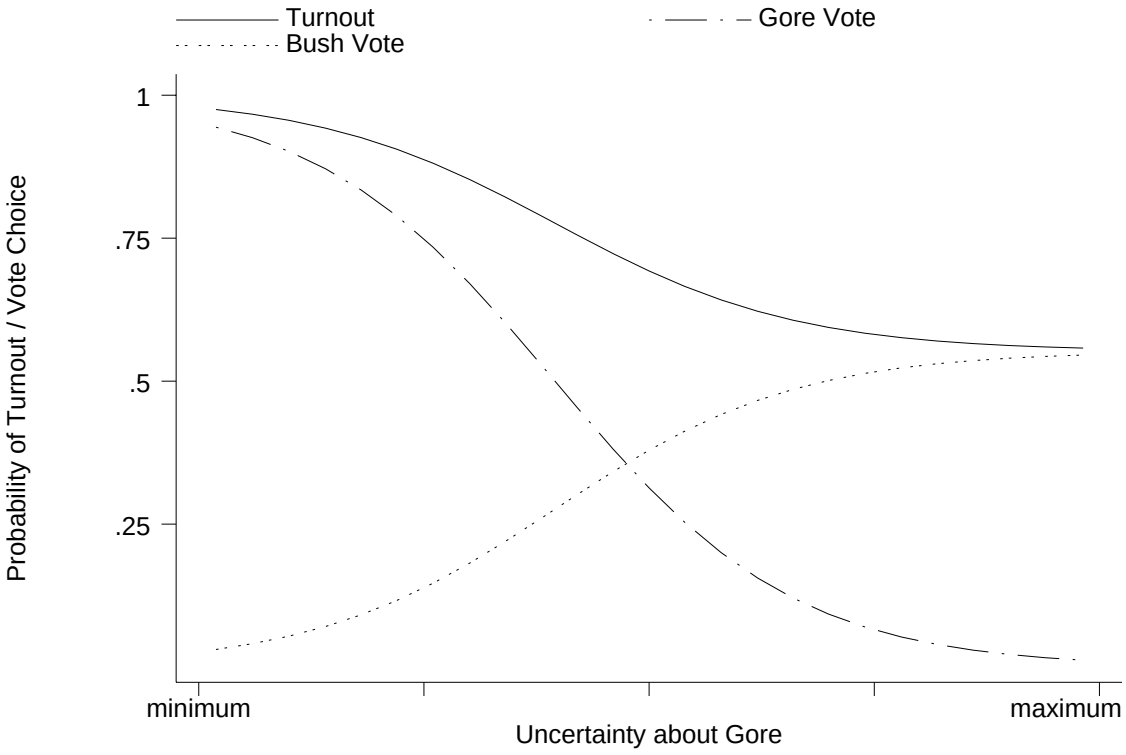

Figure 4.3: The Effect of Uncertainty about Gore on the 2000 Vote Decision

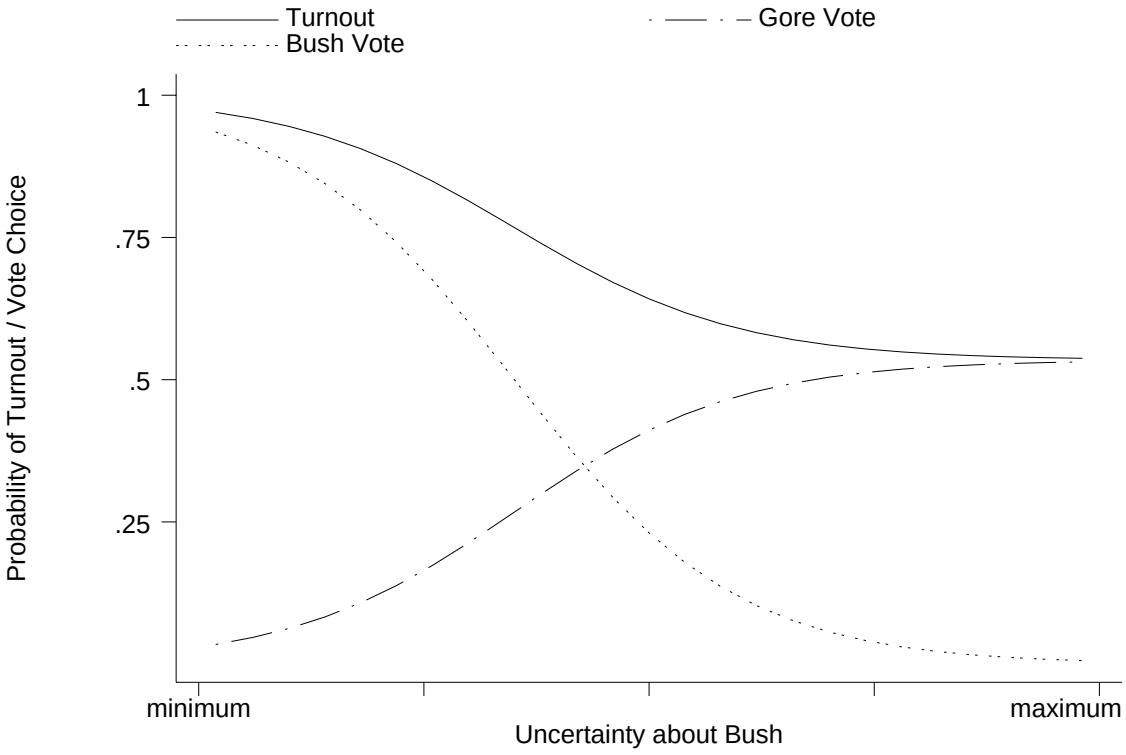

Figure 4.4: The Effect of Uncertainty about Bush on the 2000 Vote Decision

4.3 Counterfactual Simulations

In this section I discuss direct evidence relating to the three hypotheses that result from the formal model and are set forth in Chapter 2. I do this by estimating the effects of changes in uncertainty and the registration requirements on the national rate of turnout and candidates' vote shares. This is done with counterfactual simulations that are based on the entire dataset for each election and the corresponding estimated conditional multinomial logit coefficients shown in Tables 4.1–4.8.

The counterfactual simulations are used to demonstrate the effects of changes in selected independent variables on population aggregated turnout and vote choice. This entails first predicting baseline choice probabilities using the original, unaltered independent variables. Next, one or more independent variables are set to selected values and the individual choice probabilities are re-calculated. The difference between these predictions and those of the baseline prediction indicate the effect of the change on the vote decisions of the sample population.[4]

In the tables that follow I show the results of this for two basic sorts of changes: one individual and one institutional. The first is a change in the level of uncertainty across the electorate and the second is a change in the institutional barrier imposed by registration requirements. To produce the counterfactual regarding uncertainty for the 1972–1992 election data I set the level of uncertainty (about each candidate separately) of each individual in the dataset to equal the mean level of uncertainty of those who place the candidate on the ideology scale (rather than refuse to do so). To produce the same counterfactual for the 1996–2000 data I set each level of uncertainty to equal the mean of those reporting to be either "pretty certain" or "very certain." Likewise, to produce the counterfactual regarding registration requirements I set the registration deadline to zero and the DMV registration indicator variable to one in every state analyzed.

The results of this exercise are shown in Tables 4.17–4.24. The first row of each table shows the baseline predicted rates of abstention and turnout for each candidate.

[4]The calculated rate of turnout and candidate support is the average probability of choosing each action across all of the individuals in the dataset.

Obviously, the predicted rates of abstention are quite a bit lower than those indicated by the FEC reported rates of turnout in Table 1.1. In fact, they range between 15.2 percentage points (in 1972) and 26.0 percentage points (in 1996) lower than the government estimates. The two well-documented reasons for this, respondent over-report and changes in respondent behavior due to the pre-election wave of the survey, were discussed previously in Chapter 3.

Tables 4.17–4.24 indicate that the effect of uncertainty on turnout is much more consistent than that of registration requirements. Most likely, this is due to a relationship between voter mobilization and the registration deadline. In elections where voters make their vote decisions early, the registration deadline would have a much weaker effect than in elections where voters choose to vote for a particular candidate in the last few weeks of the campaign. In the latter case, a state with a high registration deadline would be expected to experience lower turnout than a state with a low registration deadline, as unregistered or improperly registered voters would be unable to vote without having contacted the registrar before the state deadline. Thus, the impact of election-specific voter mobilization timing may account for the inconsistent influence of the registration deadline shown in Tables 4.17–4.24.

Reducing uncertainty to the levels just described for all Presidential candidates in the 1972–2000 elections would have increased turnout by between 5.0 percentage points (note, that this is not statistically significant) in 1984 and 12.2 percentage points in 1980. In contrast, eliminating the registration deadline and instituting DMV registration would have increased turnout by between -10.1 percentage points (not statistically significant) in 1980 and 15.5 percentage points in 1992. Across all eight elections, the average expected increase in turnout due to reducing uncertainty would be 9.2 percentage points, while that due to eliminating registration barriers would be 6.0 percentage points. These results demonstrate that while reducing uncertainty consistently increases turnout, reducing registration barriers is not so reliable.

Table 4.17: Reduction of Barriers to Voting and Change in 1972 Turnout and Vote Choice

	Counterfactual Simulations		
	Abstention	McGovern Vote	Nixon Vote
Baseline Prediction	29.6**	24.7**	45.7**
	(1.6)	(1.4)	(1.8)
Informational Barriers			
Uncertainty about McGovern	-6.0**	+7.4**	-1.4**
	(1.7)	(2.0)	(0.7)
Uncertainty about Nixon	-9.2**	-1.3*	+10.4**
	(2.4)	(0.8)	(2.8)
Total Uncertainty	-10.9**	+3.4**	+7.5**
	(2.4)	(1.0)	(2.4)
Registration Requirements			
Deadline	-6.5	+8.1	-1.6
	(12.5)	(10.5)	(13.3)
DMV	-7.0	+8.6	-1.6
	(6.5)	(7.9)	(8.0)
Deadline and DMV	-13.0	+17.6	-4.6
	(11.2)	(15.1)	(14.4)

Note: Simulations based on conditional multinomial logit estimates in Table 4.1.
* indicates a ρ=.10 level of statistical significance, two-tailed test.
** indicates a ρ=.05 level of statistical significance, two-tailed test.

Table 4.18: Reduction of Barriers to Voting and Change in 1976 Turnout and Vote Choice

Counterfactual Simulations			
	Abstention	Carter Vote	Ford Vote
Baseline Prediction	28.3**	36.0**	35.7**
	(1.2)	(1.1)	(1.2)
Informational Barriers			
Uncertainty about Carter	-4.3**	+5.4**	-1.2**
	(1.3)	(1.6)	(0.4)
Uncertainty about Ford	-3.5**	-1.5**	+5.0**
	(1.1)	(0.5)	(1.4)
Total Uncertainty	-6.2**	+3.4**	+2.9**
	(1.6)	(1.1)	(0.8)
Registration Requirements			
Deadline	-9.7**	+9.8**	+0.1
	(2.8)	(3.6)	(3.7)
DMV	-1.3	+4.8*	-3.5
	(2.7)	(2.9)	(2.4)
Deadline and DMV	-11.0**	+14.9**	-4.0
	(3.5)	(4.9)	(4.4)

Note: Simulations based on conditional multinomial logit estimates in Table 4.2.
* indicates a ρ=.10 level of statistical significance, two-tailed test.
** indicates a ρ=.05 level of statistical significance, two-tailed test.

Table 4.19: Reduction of Barriers to Voting and Change in 1980 Turnout and Vote Choice

	Counterfactual Simulations			
	Abstention	Carter Vote	Anderson Vote	Reagan Vote
Baseline Prediction	29.6**	27.3**	6.1**	36.9**
	(1.3)	(1.3)	(0.7)	(1.5)
Informational Barriers				
Uncertainty about Carter	-20.2**	+24.8**	+0.7	-5.3**
	(3.1)	(4.3)	(0.5)	(1.7)
uncertainty about Anderson	-16.3**	-7.5**	+28.7**	-4.9**
	(5.1)	(3.0)	(9.7)	(2.0)
Uncertainty about Reagan	-20.5**	-6.9**	+2.7**	+24.7**
	(3.3)	(2.0)	(1.0)	(4.4)
Total Uncertainty	-12.1**	+2.9	+3.0	+6.2**
	(3.1)	(2.9)	(2.2)	(3.0)
Registration Requirements				
Deadline	+8.6	-2.3	+0.9	-7.2
	(14.4)	(7.8)	(4.5)	(8.1)
DMV	+1.1	+2.6	-4.7**	+0.9
	(7.9)	(5.5)	(0.9)	(5.8)
Deadline and DMV	+10.1	+0.4	-4.4**	-6.1
	(15.2)	(8.9)	(1.8)	(9.0)

Note: Simulations based on conditional multinomial logit estimates in Table 4.3.
* indicates a ρ=.10 level of statistical significance, two-tailed test.
** indicates a ρ=.05 level of statistical significance, two-tailed test.

Table 4.20: Reduction of Barriers to Voting and Change in 1984 Turnout and Vote Choice

Counterfactual Simulations			
	Abstention	Mondale Vote	Reagan Vote
Baseline Prediction	25.9**	31.0**	43.1**
	(1.1)	(1.2)	(1.2)
Informational Barriers			
Uncertainty about Mondale	-6.9**	+6.0**	+0.9
	(2.3)	(2.9)	(1.7)
Uncertainty about Reagan	-7.5**	-2.2	+9.7**
	(3.1)	(2.5)	(4.8)
Total Uncertainty	-5.0	-0.4	+5.4
	(3.9)	(3.2)	(4.5)
Registration Requirements			
Deadline	-4.5	+19.0**	-14.5**
	(8.7)	(7.8)	(6.9)
DMV	+7.3	+0.2	-7.5
	(7.8)	(4.6)	(6.7)
Deadline and DMV	+1.3	+18.6*	-19.8**
	(11.7)	(10.0)	(7.3)

Note: Simulations based on conditional multinomial logit estimates in Table 4.4.
* indicates a ρ=.10 level of statistical significance, two-tailed test.
** indicates a ρ=.05 level of statistical significance, two-tailed test.

Table 4.21: Reduction of Barriers to Voting and Change in 1988 Turnout and Vote Choice

Counterfactual Simulations			
	Abstention	Dukakis Vote	Bush Vote
Baseline Prediction	31.6**	32.1**	36.3**
	(1.2)	(1.0)	(1.3)
Informational Barriers			
Uncertainty about Dukakis	-8.6**	+8.9**	-0.3
	(2.2)	(2.5)	(8.1)
Uncertainty about Bush	-7.1**	+0.5	+6.6**
	(2.0)	(1.4)	(2.4)
Total Uncertainty	-9.9**	+6.3**	+3.6**
	(2.1)	(2.1)	(1.8)
Registration Requirements			
Deadline	-11.3*	+5.3	+6.1
	(5.9)	(5.9)	(4.8)
DMV	+2.3	+2.1	-4.4*
	(2.6)	(2.4)	(2.5)
Deadline and DMV	-9.6	+8.2	+1.3
	(6.0)	(5.7)	(4.9)

Note: Simulations based on conditional multinomial logit estimates in Table 4.5.
* indicates a ρ=.10 level of statistical significance, two-tailed test.
** indicates a ρ=.05 level of statistical significance, two-tailed test.

Table 4.22: Reduction of Barriers to Voting and Change in 1992 Turnout and Vote Choice

	Counterfactual Simulations			
	Abstention	Clinton Vote	Perot Vote	Bush Vote
Baseline Prediction	25.0**	36.5**	13.2**	25.2**
	(1.0)	(1.1)	(0.8)	(1.0)
Informational Barriers				
Uncertainty about Clinton	-7.7**	+5.5**	+1.5*	+0.7
	(1.7)	(1.9)	(0.9)	(0.8)
uncertainty about Perot	-3.7**	-0.3	+3.6**	+0.4
	(1.2)	(0.4)	(1.5)	(0.4)
Uncertainty about Bush	-6.6**	-0.9	+2.3**	+5.3**
	(1.8)	(0.9)	(1.1)	(2.6)
Total Uncertainty	-7.8**	+4.0**	+2.4	+1.4
	(1.8)	(1.9)	(1.6)	(2.0)
Registration Requirements				
Deadline	-15.8**	+6.6	+2.1	+7.1
	(3.2)	(6.6)	(5.9)	(6.5)
DMV	+0.6	-1.0	+0.6	-0.2
	(1.6)	(1.7)	(1.2)	(1.5)
Deadline and DMV	-15.5**	+5.6	+2.9	+7.0
	(3.4)	(6.5)	(6.2)	(6.5)

Note: Simulations based on conditional multinomial logit estimates in Table 4.6.
* indicates a ρ=.10 level of statistical significance, two-tailed test.
** indicates a ρ=.05 level of statistical significance, two-tailed test.

Table 4.23: Reduction of Barriers to Voting and Change in 1996 Turnout and Vote Choice

	Counterfactual Simulations			
	Abstention	Clinton Vote	Perot Vote	Dole Vote
Baseline Prediction	24.9**	40.6**	5.3**	29.2**
	(1.2)	(1.3)	(0.6)	(1.3)
Informational Barriers				
Uncertainty about Clinton	-9.2*	+10.2	-1.1	+0.1
	(4.9)	(8.6)	(1.2)	(2.7)
uncertainty about Perot	-1.0	-0.5	+1.3*	+0.2
	(1.6)	(1.6)	(0.7)	(3.9)
Uncertainty about Dole	-5.3*	+0.2	-0.7	+5.8
	(3.1)	(4.0)	(1.0)	(7.6)
Total Uncertainty	-10.8*	+7.2	-1.4	+4.9
	(5.9)	(8.0)	(2.5)	(5.9)
Registration Requirements				
Deadline	-5.1	+6.3	+1.0	-2.2
	(4.1)	(4.8)	(2.6)	(3.2)

Note: Simulations based on conditional multinomial logit estimates in Table 4.7.
* indicates a ρ=.10 level of statistical significance, two-tailed test.
** indicates a ρ=.05 level of statistical significance, two-tailed test.

Table 4.24: Reduction of Barriers to Voting and Change in 2000 Turnout and Vote Choice

	Counterfactual Simulations		
	Abstention	Gore Vote	Bush Vote
Baseline Prediction	25.7**	39.9**	34.4**
	(1.3)	(1.3)	(1.3)
Informational Barriers			
Uncertainty about Gore	-8.5**	+9.0	-0.4
	(4.1)	(6.5)	(2.7)
Uncertainty about Bush	-6.9*	-0.5	+7.3
	(3.7)	(3.8)	(7.2)
Total Uncertainty	-10.7**	+5.9	+4.8
	(5.5)	(5.7)	(5.5)
Registration Requirements			
Deadline	-4.8	+2.8	+2.0
	(3.9)	(4.4)	(3.8)

Note: Simulations based on conditional multinomial logit estimates in Table 4.8.
* indicates a ρ=.10 level of statistical significance, two-tailed test.
** indicates a ρ=.05 level of statistical significance, two-tailed test.

Unfortunately, the simulations presented in Tables 4.17–4.22 suffer from the fact that their meaning is somewhat unintuitive. It is not easy to comprehend the mean level of uncertainty of all individuals who place a candidate on the ideology scale. Yet for lack of a more familiar value, this is what I use in the 1972–1992 data. Fortunately, for 1996 and 2000, there is a better option available in the form of the direct measure of uncertainty.

Therefore, to measure the effects of more realistic changes in uncertainty I use the direct measure, which is calibrated to the three stated levels: "very certain," "pretty certain," and "not very certain." In Figure 4.5, I show the changes in turnout and the percentage of eligible voters that vote for each candidate given this sort of decrease in uncertainty. As the Bartels measure of uncertainty cannot be attached to such intuitively comprehensible levels of uncertainty, I apply this exercise only to the 1996 and 2000 elections, which contain the direct uncertainty measure.

The left half of the figure shows the estimates for the 1996 election and the right half of the table shows the estimates for the 2000 election. For each election, the first cluster of bars shows the aggregate changes that result when the uncertainty of those that are "not very certain" decreases to the level of the "pretty certain" response. Likewise, for each election the second cluster of bars shows the aggregate changes that result when the uncertainty of those that are "not very certain" as well as "pretty certain" decreases to the level of the "very certain" response.[5] It is important to recognize that even when respondents say they are "very certain" they may have a degree of residual uncertainty. Hence, these simulations do not completely eliminate uncertainty. Rather, they minimize uncertainty to levels that (hopefully) are attainable by public policies aimed at informing the electorate before an election.

The magnitude of the increase in turnout caused by these shifts is quite dramatic. Increasing only the certainty of those who said they were "not very certain" to the "pretty certain" level results in a 5.5 percentage point increase in turnout in 1996 and a 6.9 percentage point increase in turnout in 2000 (note that all of the changes shown

[5] To simulate these effects, I use the average uncertainty predicted by the reduced-form equations for respondents giving the appropriate designated response.

in the figure are statistically significant). Increasing the certainty of both those who said they were "not very certain" and those who said they were "pretty certain" to the "very certain" response results in a 12.8 percentage point increase in turnout in both 1996 and 2000. Given the relative consistency over the election years 1972–2000 of the effects of uncertainty on turnout, it is reasonable to expect that the effects of the shifts shown in Figure 4.5 would also be fairly consistent over these years. Hence, decreases in uncertainty may dramatically increase turnout in U.S. national elections.

It is also illuminating to consider the effects of changes in uncertainty and registration requirements on the percentage of the electorate that votes for each Presidential candidate. As Tables 4.17–4.24 show, the impact of reducing uncertainty on the election outcome varies from year to year. In five of the elections it would have increased the expected percentage of the electorate voting for the Democrat more than the change in the expected percentage of the electorate voting for the Republican or the expected percentage of the electorate voting for a third-party candidate. In three of the elections, (1972, 1980, and 1984), the exact opposite would have occurred, benefiting the Republican candidate over the others.

Overall, this demonstrates that there is a great deal of variability in which Presidential candidate benefits from decreasing uncertainty. For example, of the six elections with running incumbents, in three the advantage falls to the incumbent, while in the other three it falls to the major party challenger. In the two elections with no incumbent, reducing uncertainty benefits the Democratic candidate more than the Republican candidate.

These results contradict those of Bartels (1996). From his analysis of the impact of uncertainty on vote choice in U.S. Presidential elections (1972–1996) he concludes that Democrats and incumbents benefit most from an uninformed electorate. The difference between his results and those described here stems from the difference between his behavioral model and that advocated in Chapter 2. While Bartels ignores abstention and analyzes only candidate choice among voters, I analyze candidate choice and abstention simultaneously. Furthermore, while Bartels ignores the role of political preferences (as measured by ideology and partisan identification) I include

them in the model specification. As shown above, the results indicate that uncertainty strongly influences both turnout and vote choice.

The predicted effect on vote choice of eliminating registration requirement barriers is much more consistent, and biased, than that of reducing uncertainty. In seven of the eight elections (1972, 1976, 1980, 1984, 1988, 1996, and 2000) it increased the percentage of the electorate voting for the Democratic candidate more than the change for any other candidate competing for office.

Hence, while reducing uncertainty seems to benefit neither party systematically, reforming registration laws seems to bestow an advantage upon Democrats rather than Republicans. To study this more carefully, I calculate the change in the vote share of each candidate in each election due to the reduction of uncertainty and the elimination of registration barriers as simulated in Tables 4.17–4.24. The results of these calculations are shown in Table 4.25. Comparing the changes in vote shares in Table 4.25 to the actual vote shares shown in Table 3.1 indicates that two election results (in terms of both the popular and electoral vote) actually would have changed due to the elimination of the registration barriers: the 1972 election between McGovern and Nixon, and the 1984 election between Mondale and Reagan (note, that only the change in the 1984 election is statistically significant). In contrast, reducing uncertainty would not have changed the popular winner of any election – however, given the closeness of the 2000 election, it most likely would have changed the electoral college winner.

These results are actually quite surprising given the conclusions of Wolfinger and Rosenstone (1978, 1980) who analyze the effects of registration laws on turnout and conclude that eliminating these barriers would moderately increase turnout but would have no effect on the election outcome. In fact, Wolfinger and Rosenstone considered "the partisan consequences of registration law reform to be trivial." (p. 85) Yet Wolfinger and Rosenstone's results arise from a binary model of the decision to turnout or abstain that ignores political or partisan preferences and vote choice (in fact, as discussed above, the CPS data that they use does not measure any of these variables). Their conclusion regarding the effects of registration law reform is based

on a secondary application of the coefficient estimates from their binary statistical analysis on CPS data to NES data. In this way they simulate vote choice through the partisan identification of those that would turnout under registration law reform. Finding little difference in the partisan identification of those who would turnout with and without relaxed registration requirements, Wolfinger and Rosenstone conclude that election results would not change.

What is ignored in this analysis is the important role of ideology and strength of partisan attachment in determining both turnout and vote choice. Omitting these variables from the model that predicts turnout suggests that we should expect strong Republican identifiers who greatly prefer the Republican candidate to have the same rate of turnout and the same consistency of vote choice as independents who are relatively indifferent. This demonstrates that the strengths of the model of voting behavior described in Chapter 2 and analyzed in Chapter 4 are two-fold. Firstly, it is a model of the vote decision-making process that incorporates the simultaneous nature of the choice between turnout and abstention as well as among the candidates competing for election. Secondly, it may be used to accurately predict aggregate turnout and the vote share earned by each candidate. Thus, it leads to reliable conclusions about the effects of changes in citizens' information and institutional requirements on turnout and the election outcome.

The influence of uncertainty about the candidates differs from that of registration requirements in that it does not consistently benefit the candidate of one major party to the detriment of that of the other major party. That this is true is shown by the results in Tables 4.17–4.24, which demonstrate that reducing uncertainty would have increased the percentage of people voting for candidates of both parties across the eight elections studied. The reason for the difference in these effects is most likely due to the persuasive nature of political information. Reducing uncertainty may well induce voters to vote for a candidate whom they otherwise would not prefer as they learn more about the political stands of that candidate. In contrast, reducing institutional barriers to voting is likely to increase turnout among those who face high costs of voting (those with low socioeconomic status) who, as DeNardo (1980) and

Radcliff (1994) have shown, are more likely to identify with Democratic candidates.

This indicates that it may be easier to increase turnout by implementing policies that aim to decrease uncertainty rather than policies that aim to decrease registration barriers. Not only is the impact of uncertainty on turnout sizeable, it is also less biased in terms of its partisan effect than the impact of registration barriers. As shown by the debate surrounding the NVRA, partisan incentives can make voter registration reform quite difficult to implement. In 1993 the NVRA passed Congress along a fairly standard party-line vote.[6] In 1994 California Governor Pete Wilson (a Republican) initiated a federal law suit in a failed attempt to avoid implementing the law. More recently, in 2001 Arizona Congressman Bob Stump (a Republican) introduced a bill into the House of Representatives to repeal the NVRA. Clearly, Republicans have incentives to quash registration reform while Democrats have incentives to push for registration reform.

Given the controversy and difficulty of formulating policies that increase turnout, it is natural to wonder if such efforts are worthwhile. The results of this analysis show that increasing turnout would have changed the outcomes of at least one of the past eight elections. Moreover, increasing turnout by reducing uncertainty necessitates expanding the electorate's amount of political information. In this way, politicians and candidates may be held more accountable to their campaign promises and the decisions they make while in office.

[6]The NVRA was passed by the House of Representatives on a 259 to 164 vote: 238 Democrats and 20 Republicans voting yes and 14 Democrats and 150 Republicans voting no. It was then passed by the Senate on a 62 to 36 vote: 56 Democrats and 6 Republicans voting yes and 36 Republicans voting no.

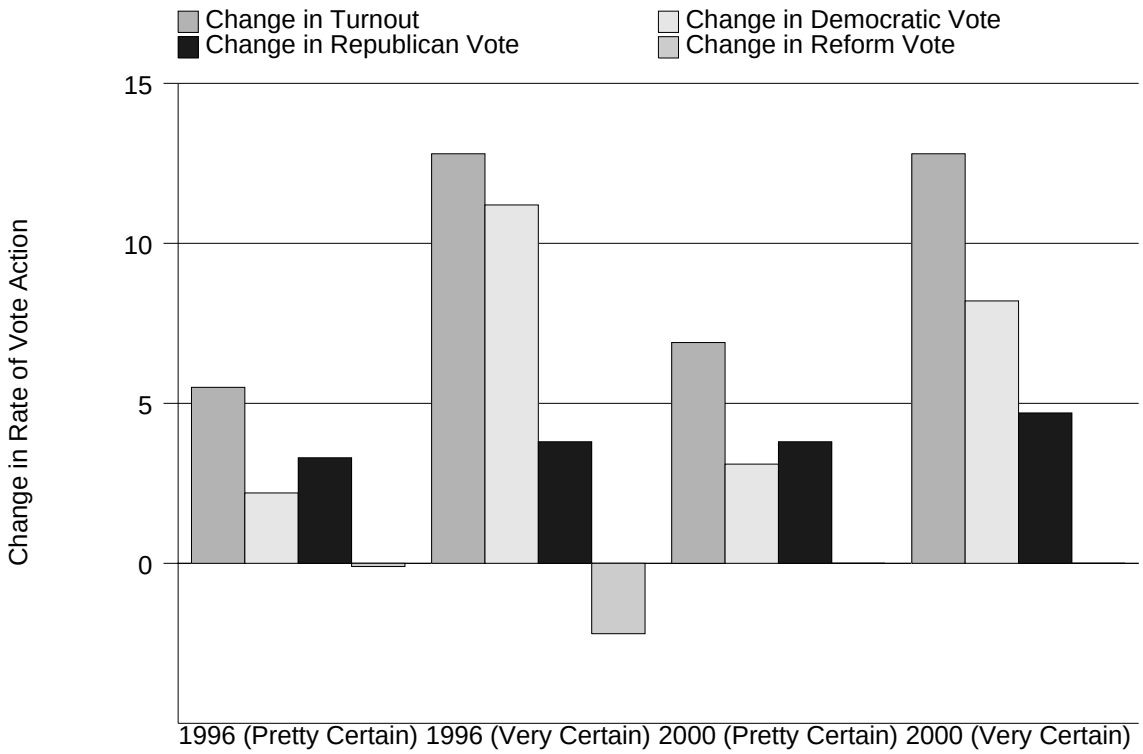

Figure 4.5: The Effects of Reductions in Uncertainty on Turnout and Candidate Support

Table 4.25: Reduction of Barriers to Voting and Change in Candidate Vote Shares

Counterfactual Simulations				
Election Year and Candidate	Reduction of Uncertainty		Reduction of Registration Barriers	
1972				
McGovern	-0.6	(1.3)	+15.6	(15.2)
Nixon	+0.6	(1.3)	-15.6	(15.2)
1976				
Carter	+0.3	(0.6)	+11.4**	(5.2)
Ford	-0.3	(0.6)	-11.4**	(5.2)
1980				
Carter	-2.2	(3.1)	+7.2	(8.1)
Anderson	+2.4	(2.7)	-5.9**	(2.6)
Reagan	-0.1	(2.9)	-1.3	(8.2)
1984				
Mondale	-3.2	(4.3)	+26.2**	(9.0)
Reagan	+3.2	(4.3)	-26.2**	(9.0)
1988				
Dukakis	+2.1	(2.1)	+4.8	(5.7)
Bush	-2.1	(2.1)	-4.8	(5.7)
1992				
Clinton	+0.2	(2.1)	-2.1	(6.9)
Perot	+1.2	(2.0)	+0.2	(6.8)
Bush	-1.4	(2.2)	+1.9	(7.0)
1996				
Clinton	+1.6	(7.4)	+4.4	(4.8)
Perot	-2.5	(3.1)	+0.8	(3.2)
Dole	+0.8	(6.7)	-5.2	(3.9)
2000				
Gore	+0.2	(5.8)	+0.3	(4.5)
Bush	-0.2	(5.8)	-0.3	(4.5)

Note: Simulations based on conditional multinomial logit estimates in Tables 4.1 - 4.8.
* indicates a ρ=.10 level of statistical significance
** indicates a ρ=.05 level of statistical significance, two tailed tests.

Chapter 5 Composition of the Electorate

An important aspect of the democratic process is the nature of the people that make up the voting public. As described earlier, elected politicians face obvious incentives to enact policies that increase their chances of being reelected to public office. This entails supporting and promoting legislation that satisfies the political demands of a majority of their electorate. Groups of citizens that do not vote or do not often vote are for this reason not included in the set that politicians care about. Thus, the effects of changes in uncertainty and the voter registration system on the composition of the voting population are an important means by which to evaluate their usefulness. Accordingly, in this chapter I change the focus of my analysis to study not simply aggregate turnout, but turnout among different segments of the American electorate.

Wolfinger and Rosenstone (1978, 1980), as discussed in Chapter 4, found that increasing turnout by registration law reform would have very little effect on election outcomes. The reason for this, they argued, is "although making it easier for people to register would increase turnout, it would have a very small impact on the demographic characteristics of voters." (1980, p. 83) In this way, aggregated political preferences and election results would also remain relatively unchanged.

Somewhat surprisingly, Wolfinger and Rosenstone also showed that, "the most striking variations in the effects of registration reform would be among people at different levels of education. Liberalizing registration provisions would have by far the greatest impact on the least educated and relatively little effect on well-educated people." (1980, p. 79) They estimated that turnout would increase by 13.2 percentage points among people with fewer than five years of school and only 2.8 percentage points among people with postgraduate schooling, thus suggesting that registration reform could broaden the voting population in some respects.

Yet even this modest result was subsequently revealed to be incorrect. Nagler (1991) demonstrated that the normal cumulative distribution function (cdf) in the

binary probit model imposes a restrictive relationship between the independent and dependent variables. An often unrecognized aspect of this relationship is the possible presence of interactions between the independent variables that influence the dependent variable probabilities. Education, as a costs of voting measure, is strongly predictive of turnout. Individuals with low education in the CPS data collection have a nearly .5 predicted probability of turnout. As .5 is at the steepest part of the cumulative normal distribution function, any uniform decrease in the cost of voting (such as due to registration law reform) would have a disproportionately large effect on the estimated probability of such individuals turning out to vote. By controlling for these interactions, Nagler (1991) concludes that registration reform does not increase turnout more among those with less education.

The conditional multinomial logit used in this analysis is unlikely to be plagued by interactions as severe as those encountered by Wolfinger and Rosenstone. The reason for this is that the individual probabilities are distributed differently with the joint logistic distribution function. Nonetheless, to be sure that potential interactions do not generate misleading conclusions, I incorporate interactions like those suggested by Nagler into the models used to produce the results presented below. These interactions are between the variables of interest: the barriers to turnout (uncertainty and the registration deadline) that are manipulated and the demographic features that describe important aspects of the eligible electorate.

The two elections analyzed in this chapter are the 1972 and 2000 elections. These are the earliest and the most recent in the series I analyze and as such allow a wide comparison of the influences on turnout across years. I do not elect to run this model on all eight elections because given the extensive analysis in the last chapter the trends in the impact of these variables on turnout over the years has been established. For both 1972 and 2000 I include interactions that allow me to accurately analyze the effects of changes in uncertainty and the registration deadline on turnout broken down by individuals' income and racial status.

These variables are of particular interest given that they have been shown (Verba, Schlozman and Brady (1995)) to have a strong impact upon political preferences and

vote choice. Nonetheless, race in of itself, has no theorized relationship with the vote decision that is not captured by the variables already included in the model. However, as race is most likely correlated with these variables, it is included in the interaction specifications. By doing this, I hope to show how policies may effect the composition of the electorate using counterfactual simulations.

As in the last chapter, the first-stage estimates that predict uncertainty about each candidate are presented in Tables A.9–A.10 in the appendix. Generally, they provide support for the theory that uncertainty is caused by individual costs of information which are correlated with education, income and news exposure. They also provide evidence that the relationship between uncertainty and the vote decision is endogenous, as they indicate that voters in the elections analyzed engage in selective information processing. The second-stage estimates are presented here in Tables 5.1–5.2. For both elections they are fairly similar to the results shown in Tables 4.1–4.8 in the last chapter. The partisan identification and ideological categorization variables support the theorized role of ideological proximity, the costs of voting variables indicate that respondents are less likely to turnout the higher their costs and the candidate uncertainty measures have a strong, negative effect on turnout and vote choice.

The coefficients on the interaction terms are somewhat more difficult to interpret. As shown by Nagler (1991), they control the correlations between variables and the nonlinear cumulative distribution function. Hence, their impact is fairly indecipherable from the tables of estimates shown. For 1972, the only statistically significant estimates belong to the non-white interactions. The registration deadline interactions are differing signs for each candidate, whereas the uncertainty interactions are both positive. Nonetheless, the actual effects on turnout are unclear and will only be resolved by first differences or counterfactual simulations. For 2000, the interactions between uncertainty and income levels of \$25,000–\$50,000 and \$50,000–\$75,000 for the Republican candidate are negative and statistically significant. The interactions between the registration deadline and an income level of \$50,000–\$75,000 for the Democratic candidate, and non-white for the Republican candidate, are positive and

negative, respectively, as well as statistically significant.

Table 5.1: 1972 Vote Decision

Conditional Multinomial Logit Results

Variable	Choice Specific	McGovern Vote	Nixon Vote
Candidate Uncertainty	-0.54** (0.25)		
Constant		-2.12** (0.81)	-1.84** (0.87)
Ideology		0.72** (0.25)	-0.09 (0.25)
Weak Partisan I.D.		0.69** (0.16)	-0.34** (0.14)
Strong Partisan I.D.		1.39** (0.19)	-0.77** (0.18)
Age		2.03** (0.60)	3.35** (0.52)
Education			
HS Degree		0.57** (0.22)	0.42** (0.18)
Some College		0.54** (0.22)	0.26 (0.25)
BA Degree		0.66 (0.42)	0.25 (0.38)
Family Income			
$5K-$9K		0.15 (0.73)	0.06 (0.60)
$9K-$15K		1.19 (0.82)	0.75 (0.67)
$15K+		0.24 (1.11)	1.05 (1.01)
DMV Registration		0.78 (0.50)	0.33 (0.52)
Registration Deadline		-0.04 (0.04)	-0.03 (0.04)
Sqrt Registration Deadline		0.06 (0.26)	-0.10 (0.29)
Registration Deadline Interactions			
(Reg. Dead.)*($5K-$9K)		0.01 (0.03)	0.02 (0.02)
(Reg. Dead.)*($9K-$15K)		-0.03 (0.03)	0.01 (0.02)
(Reg. Dead.)*($15K+)		0.02 (0.04)	0.02 (0.03)
(Reg. Dead.)*(nonwhite)		0.03** (0.01)	-0.03** (0.01)
Candidate Uncertainty			
(Uncertainty)*($5K-$9K)		0.05 (0.22)	0.07 (0.20)
(Uncertainty)*($9K-$15K)		-0.08 (0.21)	0.05 (0.20)
(Uncertainty)*($15K+)		0.11 (0.24)	0.22 (0.23)
(Uncertainty)*(nonwhite)		0.28** (0.14)	0.33* (0.17)
log-likelihood	-1583.4		
observations	2015		

Note: (Abstention coefficients normalized to zero).
Entries are maximum likelihood estimates
with associated standard errors in parenthesis.
* indicates a ρ=.10 level of statistical significance, two tailed test.
** indicates a ρ=.05 level of statistical significance, two tailed test.

Table 5.2: 2000 Vote Decision

2000 Conditional Multinomial Logit Results

Variable	Choice Specific	Gore Vote	Bush Vote
Candidate Uncertainty	-1.44** (0.67)		
Constant		-3.41** (1.02)	-4.09** (1.22)
Ideology		0.47** (0.13)	-0.49** (0.15)
Weak Partisan I.D.		1.22** (0.26)	-0.57** (0.25)
Strong Partisan I.D.		1.56** (0.28)	-0.86** (0.37)
Age		2.48** (0.74)	2.87** (0.91)
Education			
HS Degree		0.27 (0.37)	-0.53 (0.57)
Some College		0.35 (0.41)	-0.85 (0.68)
BA Degree		1.15** (0.49)	-1.27 (0.78)
Family Income			
$25K-$50K		-0.04 (1.34)	-3.05* (1.73)
$50K-$75K		-1.06 (1.39)	-1.91 (1.90)
$75K+		-0.97 (1.51)	-1.73 (1.83)
TV News		-0.38 (0.31)	-1.22** (0.36)
Newspaper		0.36 (0.25)	0.34 (0.25)
TV Campaign Programs		0.19 (0.31)	0.09 (0.36)
Registration Deadline		-0.03 (0.06)	0.03 (0.06)
Sqrt Registration Deadline		-0.46 (0.31)	-0.23 (0.33)
Registration Deadline Interactions			
(Reg. Dead.)*($25K-$50K)		0.02 (0.04)	0.03 (0.04)
(Reg. Dead.)*($50K-$75K)		0.07* (0.04)	-0.01 (0.05)
(Reg. Dead.)*($75K+)		0.04 (0.04)	0.02 (0.04)
(Reg. Dead.)*(nonwhite)		0.03 (0.02)	-0.06** (0.03)
Candidate Uncertainty			
(Uncertainty)*($25K-$50K)		0.11 (0.64)	-1.18* (0.62)
(Uncertainty)*($50K-$75K)		-0.17 (0.61)	-1.16* (0.63)
(Uncertainty)*($75K+)		-0.09 (0.63)	-0.87 (0.68)
(Uncertainty)*(nonwhite)		0.23 (0.35)	-0.16 (0.28)
log-likelihood	-779.6		
observations	1250		

Note: (Abstention coefficients normalized to zero).
Entries are maximum likelihood estimates
with associated standard errors in parenthesis.
* indicates a ρ=.10 level of statistical significance, two tailed test.
** indicates a ρ=.05 level of statistical significance, two tailed test.

5.1 Counterfactual Simulations

The results of the counterfactual simulations based on the analysis shown in Tables 5.1–5.2 are shown below in Tables 5.3–5.4. Each table demonstrates the predicted aggregate change in the percent of the population that abstains, votes for one candidate or votes for the other candidate. To evaluate the composition of the voting population, these changes are broken down by race and family income.

For both years, reducing uncertainty has a more powerful impact on the composition of the voting population than eliminating the registration deadline. In 1972 it would have increased turnout among those in the lowest quartile of family income by 14.2 percentage points more than the increase in turnout among those in the highest income quartile. In 2000, it would have increased turnout among those in the lowest quartile by 10.1 percentage points more than the increase in turnout among those in the highest income quartile. The changes broken down by race are not as dramatic; in 1972 reducing uncertainty would have increased turnout among non-whites by 7.1 percentage points and among whites by 8.6 percentage points, while in 2000 it would have increased turnout among non-whites by 8.6 percentage points and among whites by 7.9 percentage points. As shown in the table, these changes are not statistically significantly different from one another.

The effect of registration law reform is not as consistent. In 1972, eliminating registration deadlines would have increased turnout most among those with low-income. The expected increase in turnout among those in the lowest quartile of family income would have been 9.2 percentage points more than that of those in the highest income quartile. However, these changes are not statistically significant. In 2000, eliminating registration deadlines would have increased turnout by 14.8 percentage points among individuals in the lowest income quartile and would have had no statistically significant effect on all others. The expected difference between those in the lowest and highest income quartiles in 2000 is 14.0 percentage points. Broken down by race, the effects in both years are quite weak, and not statistically significant.

Table 5.3: Reduction of Barriers to Voting and Change in 1972 Turnout and Vote Choice by Income and Race

	Counterfactual Simulations		
	Abstention	McGovern Vote	Nixon Vote
Baseline Prediction	29.6** (1.1)	24.7** (1.0)	45.7** (1.3)
Uncertainty			
Family Income			
$5K or less	-15.6** (4.5)	+5.4** (1.8)	+10.3** (3.1)
$5K-$9K	-10.6** (2.2)	+3.8** (1.8)	+6.8** (2.2)
$9-$15K	-5.8** (1.3)	+2.4** (0.9)	+3.4** (1.4)
$15K+	-1.4 (1.0)	+0.8 (0.8)	+0.6 (1.1)
Race			
White	-8.6** (3.2)	+2.8 (3.0)	+5.8** (2.3)
Nonwhite	-7.1** (1.5)	+6.0** (0.8)	+1.1 (1.4)
Registration Deadline			
Family Income			
$5K or less	-9.8 (10.9)	+1.4 (8.0)	+8.3 (11.2)
$5K-$9K	-2.8 (10.9)	+3.1 (8.2)	-0.3 (9.6)
$9-$15K	-10.1 (8.3)	+17.1* (9.8)	-7.0 (10.1)
$15K+	-0.6 (10.9)	-1.1 (8.4)	+1.7 (11.6)
Race			
White	-6.7 (11.0)	+8.2 (8.9)	-1.6 (8.6)
Nonwhite	-3.6 (8.1)	-10.3 (6.7)	+13.9 (8.9)

Note: Simulations based on conditional multinomial logit estimates in Table 5.1 .
* indicates a ρ=.10 level of statistical significance, two tailed test.
** indicates a ρ=.05 level of statistical significance, two tailed test.

Table 5.4: Reduction of Barriers to Voting and Change in 2000 Turnout and Vote Choice by Income and Race

	Counterfactual Simulations		
	Abstention	Gore Vote	Bush Vote
Baseline Prediction	25.7** (1.3)	39.9** (1.3)	34.4** (1.3)
Uncertainty			
Family Income			
$25K or less	-12.7** (5.6)	+4.8 (4.1)	+7.9** (3.7)
$25K-$50K	-9.3** (3.9)	+1.6 (5.5)	+7.7 (5.6)
$50-$75K	-6.6** (2.7)	+0.7 (6.3)	+5.9 (6.4)
$75K+	-2.6 (2.9)	+0.9 (5.2)	+1.8 (6.3)
Race			
White	-7.9** (2.6)	+1.4 (4.3)	+6.5 (4.8)
Nonwhite	-8.6* (4.6)	+4.9 (6.0)	+3.7 (3.6)
Registration Deadline			
Family Income			
$25K or less	-14.8* (8.8)	+12.6 (8.9)	+2.2 (7.4)
$25K-$50K	-3.8 (6.3)	+8.9 (5.8)	-5.1 (4.6)
$50-$75K	-1.1 (6.5)	-10.5 (7.2)	+11.6 (7.6)
$75K+	-0.8 (4.9)	+2.9 (6.5)	-2.1 (6.0)
Race			
White	-4.9 (3.8)	+7.3* (4.2)	-2.4 (3.5)
Nonwhite	-7.6 (7.0)	-8.3 (8.3)	+15.9** (7.7)

Note: Simulations based on conditional multinomial logit estimates in Table 5.2 .
* indicates a ρ=.10 level of statistical significance, two tailed test.
** indicates a ρ=.05 level of statistical significance, two tailed test.

Hence, while the results regarding uncertainty are consistent and easily interpretable, the results regarding registration reform are somewhat weaker and more complex. In all, they indicate that reducing institutional barriers is likely to increase turnout among those with less income more than among those with more income. However, the consistency and the magnitude of this difference is unlikely to be as great as that caused by reductions in uncertainty. This fact is demonstrated more clearly in Figures 5.1–5.2, which show turnout and the changes in turnout due to reducing informational and institutional barriers for 1972 and 2000.

In each of the two figures the solid line shows the baseline rate of turnout, the broken line shows the predicted rate of turnout if registration barriers were eliminated, and the dotted line shows the rate of turnout if uncertainty were reduced.[1] Reducing uncertainty raises turnout among those with low income much more strongly than among those with high income. In contrast, the effects of eliminating the registration deadline are much less dramatic. However, in both years the increase is fairly substantial among those with low income.

This conflicts with the conclusions of both Nagler (1991) and Wolfinger and Rosenstone (1980). Although both sets of researchers analyzed 1972 data, the predictions here are clear in that they show registration reform would be expected both to increase turnout among individuals with low income as well as to benefit the Democratic Presidential candidate. One difference between these studies is the choice of election data. The results presented here most definitely benefit from my focus on multiple elections rather than simply one election in that general trends are more easily noticeable. Yet the more important difference is in the model of the vote decision on which the analysis is based. Recognizing the simultaneous choice between abstention and voting for one or another candidate enables the results presented here to be both

[1]For 1972 this is accomplished by replacing the uncertainty of those who do not place the candidate on the ideology scale and have a predicted level of uncertainty less than the average of those who do place the candidates on the ideology scale, with the average predicted level of uncertainty of those who place the candidate on the ideology scale. For 2000, this is accomplished by replacing the uncertainty of those who report being "not very certain" about a candidate and have a predicted level of uncertainty less than the average of those who report being "pretty certain" or "very certain," with the average predicted level of uncertainty of those who are "pretty certain" or "very certain."

more realistic and more accurate than those of the simple binary model used by Nagler (1991) and Wolfinger and Rosenstone (1980) that ignores the role of candidate choice.

As in Chapter 4, I attempt a more intuitive simulation using the direct uncertainty measure. Figure 5.3 thus shows the change in turnout by income in 2000 due not only to eliminating the registration deadline (the dotted line), and shifting those respondents who are "not very certain" to "pretty certain" (the broken, dotted line), and both those respondents who are "not very certain" and "pretty certain" to "very certain" (the broken line), but also to completely eliminating uncertainty (the solid line). This is done by shifting all respondents to the uncertainty level of the least uncertain respondent. While unrealistic, this exercise demonstrates the powerful impact of uncertainty.

As Figure 5.3 makes obvious, all of the reductions in uncertainty lead to sizeable increases in expected turnout, with the shift of the "not very certain" to "pretty certain" being the slightest and the complete elimination of uncertainty being the greatest. Moreover, each shift in uncertainty increases the representativeness of the voting population more than the reform of registration requirements. Although the change due to eliminating the registration deadline is obviously greater for those with low income than those with high income, it is nevertheless relatively flat when compared with the changes due to reducing uncertainty.

In sum, while registration law reform can be expected to increase voting among those who are traditionally least likely to turnout, the benefits of lowering uncertainty appear to be of greater magnitude. The results of this chapter demonstrate that reducing uncertainty may both substantially increase the overall rate of turnout in U.S. elections as well as lead to a voting population that more adequately represents the political preferences of the general population. Although policies that can accomplish this are less obvious than policies that can reduce institutional barriers to turnout, the potential rewards are such that it seems worthwhile to explore means of increasing the electorate's level of political information.

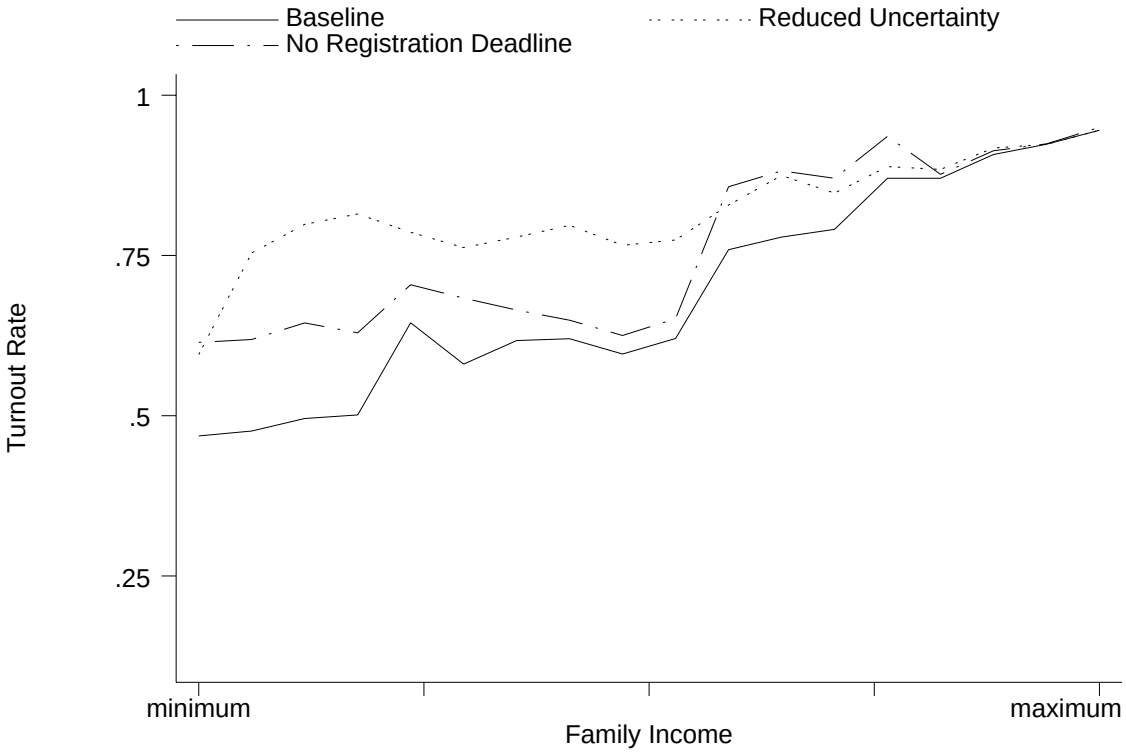

Figure 5.1: The Effects of Uncertainty on 1972 Turnout by Income

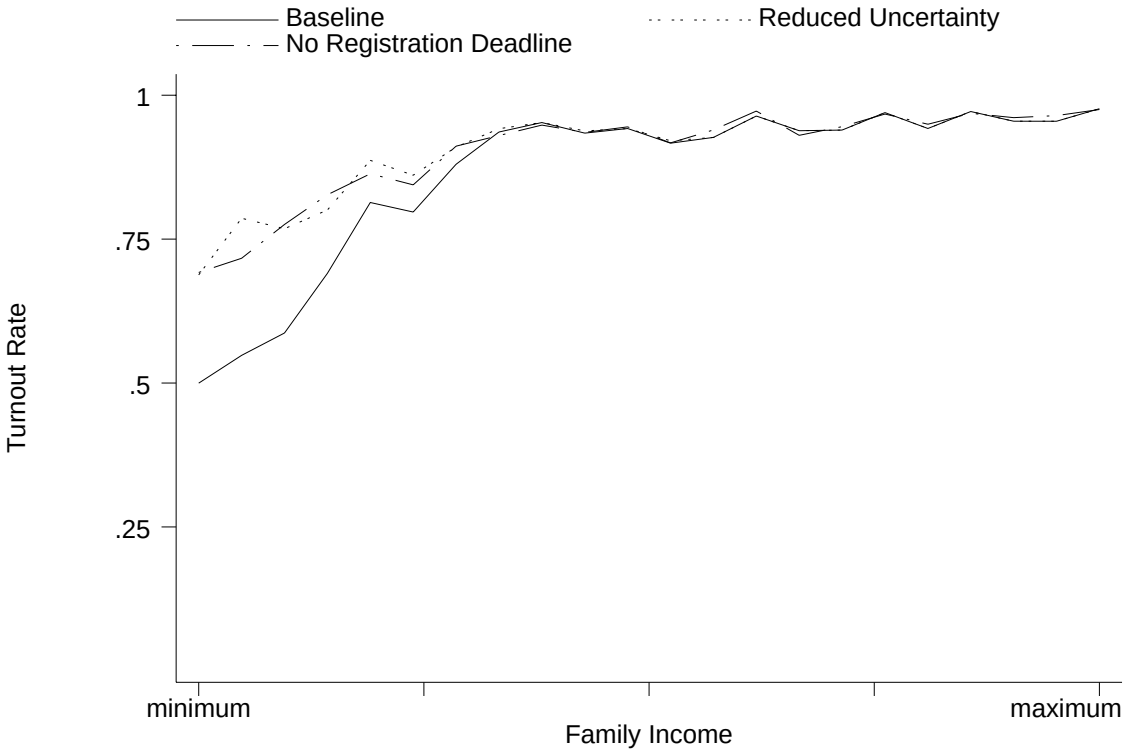

Figure 5.2: The Effects of Uncertainty on 2000 Turnout by Income

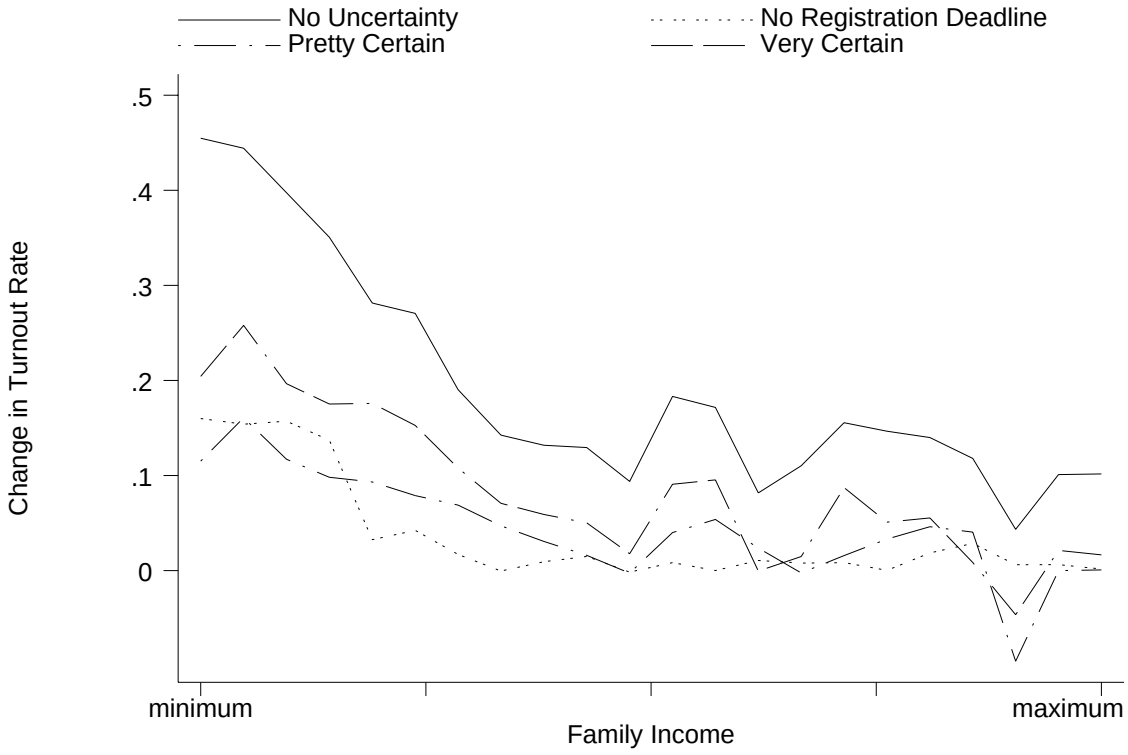

Figure 5.3: Change in 2000 Turnout Due to Reductions in Barriers by Income

Chapter 6 Conclusion

The results of this analysis demonstrate that both information and institutions strongly influence the individual's decision to turnout and vote. In U.S. Presidential elections between 1972 and 2000, reducing the electorate's uncertainty about the candidates would have increased the rate of turnout by an average of 9.2 percentage points. Eliminating registration deadlines and instituting DMV registration would have increased turnout in the same elections by a lower average of 6.0 percentage points.

Although it is not intuitively surprising that uncertainty about each candidate reduces turnout, it is a fact that has not previously been tested scientifically and proven to be true. Alvarez (1997) and Bartels (1986) showed by rigorous analysis that uncertainty about a candidate decreases the likelihood that voters will vote for that particular candidate. Palfrey and Poole (1987) showed by using a composite information index that individuals are more likely to turnout the higher their general level of information. Formal research involving candidate competition, however, has shown that candidates may be ambiguous only if voters have a risk-seeking vote utility function.

The analysis I have presented in this study connects these empirical results by demonstrating the powerful impact of candidate-specific information. Not only does uncertainty about a candidate decrease the individual's likelihood of turning out to vote, it also decreases her likelihood of voting for the candidate for whom she is uncertain relative to her likelihood of voting for an opposing candidate. Furthermore, it shows that uncertainty detracts from voting and thus that voters are most certainly not risk-seeking. Although imperfect information and costs of voting indicate that candidates need not purposefully be ambiguous to generate uncertainty, these results together with those of Franklin (1991) regarding the role of candidate campaign decisions in determining uncertainty suggest that candidate strategy and citizen uncertainty are worthy of future empirical and formal research.

One aspect of citizen uncertainty shown here that indicates its significance is the bias it generates in turnout across individuals of different social and economic status. The results detailed in Chapter 5 demonstrate that reducing uncertainty causes turnout among those with less income to increase. This is of particular importance because such individuals are traditionally unlikely to vote. For this reason, politicians face few incentives to enact legislation that benefits non-whites and low-income citizens. By reducing uncertainty, the voting population may be more representative of the general population, and therefore such inequalities in policy-making may be vanquished.

The results in Chapter 5 also show that registration law reform may increase turnout among those with less income, albeit not as dramatically as the increase due to reducing uncertainty. This contradicts the well-established conclusions of Nagler (1991) and Wolfinger and Rosenstone (1980), who show that registration law reform would have little effect upon the make up of the electorate. Although my analysis benefits from its use of eight elections rather than just one election (like Nagler (1991) and Wolfinger and Rosenstone (1980)), the most likely reason for this difference is in the assumptions about the model of the individual's vote decision. Nagler (1991) and Wolfinger and Rosenstone (1980) assume the decision is binary (to vote or abstain) – ignoring the role of candidate choice. The analysis I present in this study incorporates the simultaneous decision to vote for one or another candidate as well as to turnout or abstain. In this way, I obtain accurate estimates of the influence of registration requirements on turnout and abstention.

Moreover, I am able to precisely estimate the effects of such changes on the election outcome. Because Wolfinger and Rosenstone (1980) used a binary model of turnout, their estimates of the election outcome rely on a rather adhoc secondary analysis. I find that registration law reform would have been expected to benefit the Democratic candidate in seven of the eight elections analyzed and the Republican candidate in only one of the elections analyzed. More importantly, I find that this reform would have been expected to change the outcome of one election (that in 1984) in favor of the Democratic candidate, Walter Mondale. Again, this differs from Wolfinger

and Rosenstone (1980), who found that election outcomes should not be expected to change.

However, I demonstrate that the stylized fact that higher turnout always benefits Democrats (as shown by DeNardo(1980) and Radcliff (1994)) is incorrect. Rather, it seems that the means by which turnout is increased relates strongly to its effect on the election outcome. Reducing uncertainty about the candidates increases turnout but benefits different candidates by election. In four elections it advantaged the Democrat, in two elections it advantaged the Republican and in two elections it advantaged the third-party candidate.

Most likely, the reason for this difference lies in the persuasive nature of information versus registration institutions. Gaining information about a candidate (thereby reducing uncertainty) may well cause an individual to vote for that candidate when previously she would have preferred another. In contrast, lowering registration barriers may prompt low income individuals to turnout while not influencing their political preferences. As the Democratic party traditionally appeals to such individuals, registration law reform is likely to benefit Democratic candidates.

These results indicate that policy makers who hope to increase turnout among minorities and those with less income may prefer policies that reduce uncertainty to those that reduce registration barriers. Not only would policies reducing uncertainty promote a well-informed citizenry, they have the potential to increase turnout much more than policies that reform institutions. Furthermore, because such policies are unlikely to systematically benefit one party at the expense of the other, they may be expected to encounter much more bipartisan support than those that reduce the registration deadline.

Yet while these results show the potential effects on turnout and the election outcome of decreasing uncertainty and registration deadlines, this analysis makes no effort to measure the efficiency of such decreases. This is not the goal of this study, which aims only to show the relative influence of these factors on turnout. Based on this, future research may delve further into the costs and benefits of policies that increase the availability of political information, institute DMV registration or reduce

the length of state registration deadlines.

The magnitude of the impact of uncertainty on turnout shown by these results makes research on ways to reduce uncertainty potentially very rewarding. One of the most important aspects of such analysis entails gauging the size of the decrease in uncertainty caused by exposure to different sorts of information sources as well as the costs of making such sources widely available. One pertinent issue to resolve is the strength of the impact of relatively objective sources such as local news and media, candidate statements published by the local registrar of voters and bipartisan awareness activists (like Project Vote Smart), against that of relatively non-objective sources such as party and candidate campaign advertisements and statements as well as public endorsements by prominent individuals or interest groups.

Research into the efficiency of reducing the registration deadline is also potentially quite rewarding. This study would be made easier by the fact that many states already operate under a variety of registration deadlines (for example North Dakota allows voters to register on election day.) In January, 2001, the state of California reduced its registration deadline from 29 to 15 days before an election. Although this eases registration restrictions, it creates other problems including confusion at polling places because the names of some late registrants do not appear on the voter rosters and potential confusion among late registrants because they are not sent voter pamphlets or sample ballots.[1]

This indicates that all of the effects of policies aimed at increasing turnout should be carefully considered and evaluated. The magnitude of the effects on turnout of uncertainty and registration laws shown by the results of this analysis indicate that pursuing reductions in these factors may be quite rewarding. Not only would reducing uncertainty and registration deadlines increase turnout among the electorate, it would expand the voting population so as to make it more representative of the general population. In this way, increasing political information and knowledge of political candidates would serve to make elected officials more accountable to American citizens for the decisions they make in public office.

[1] This is discussed in Rabin (2001).

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Appendix A Appendix

A.1 Chapter 2, Proofs

A.1.1 Assumptions

Let S denote the set of all candidates. Then, $\forall j \in S$, the eligible voter's utility is given by

$$\begin{aligned} u_{ij} &= \alpha_j p_{ij} - \beta\sigma_{ij}^2 - \gamma c_i \\ u_{i\emptyset} &= 0 \end{aligned}$$

where $\alpha, \beta, \gamma > 0$ and

$$\begin{aligned} p_{ij} &= \text{ideological proximity of individual } i \text{ to candidate } j \\ \sigma_{ij} &= \text{individual } i\text{'s uncertainty about candidate } j \\ c_i &= \text{cost of voting for individual } i \end{aligned}$$

and the vote decision is given by[1]

$$v_i = \arg\max_{j \in S, \emptyset} u_{ij}.$$

There exists a continuum of eligible voters whose characteristics are distributed as follows.

[1]For simplicity I ignore any ties in voter utility. With a continuum of voters and finite set S this restriction is without loss of generality.

$$\begin{aligned} \forall j &\in S,\ p_{ij} \sim F_{1j}(-\infty, 0) \\ \forall j &\in S,\ \sigma_{ij}^2 \sim F_{2j}(0, \infty) \\ & c_i \sim F_3(-\infty, \infty) \end{aligned}$$

where all F's are cumulative distribution functions (cdf's) and have full support. F_3 is independent of F_{1j} for all j.

In what follows I represent the vector of individual uncertainty about candidate j with σ_j^2, the vector of individual uncertainty for all candidates with σ^2, and the vector of individual costs of voting with c.

A.1.2 Definitions

Electorate Uncertainty: Let the electorate's uncertainty about candidate j be σ_j^2. The level of uncertainty $\sigma_j'^2$ represents a decrease in the electorate's uncertainty if there exists a $\psi < 1$ such that $\forall i$, $\sigma_{ij}'^2 \leq \psi \sigma_{ij}^2$.

Cost of Voting: Let the cost of voting by the electorate be c. The cost vector c' represents a decrease in costs if there exists a $\psi < 1$ such that $\forall i$, $c_i' \leq \psi c_i$.

A.1.3 Proof

There exists a cdf G_j for all j such that $u_{ij} \sim G_j(-\infty, \infty)$ with full support. Define $T_j = \{i | \arg\max_{l \in S} u_{il} = j\}$ where T_j is the set of eligible voters for whom candidate j is the most preferred. Therefore, there exists a $\hat{G}_j$ for all j such that $\{u_{ij} | i \in T_j\} \sim \hat{G}_j(-\infty, \infty)$ with full support, and $VS_j = \int_0^\infty \hat{g}_j(x)\, dx = 1 - \hat{G}_j(0)$ is the vote share for candidate j and $\hat{g}_j$ is the pdf corresponding to $\hat{G}_j$.

Hypothesis 1:

Suppose the electorate's uncertainty about candidate j reduces to $\sigma_j'^2$. As $\frac{\partial u_{ij}}{\partial \sigma_{ij}^2} = -\beta < 0$, there exists a cdf $\hat{G}_j'$ such that $\left\{u_{ij}' | i \in T_j(\sigma^2)\right\} \sim \hat{G}_j'(-\infty, \infty)$ with full support such that $\hat{G}_j'(x) < \hat{G}_j(x)$ for all $x \in \Re$. Therefore, turnout must increase

within the group of eligible voters that most preferred candidate j before the change in uncertainty. As $\frac{\partial u_{il}}{\partial \sigma_{ij}^2} = 0$ for all $l \neq j$, turnout in all T_l must not decrease. Finally, as this derivation is independent of σ_{-i}, the hypothesis must be true.

Hypothesis 2:

Suppose again that uncertainty about candidate j decreases to $\sigma_j'^2$. As $\frac{\partial u_{ij}}{\partial \sigma_{ij}^2} < 0$ and $\frac{\partial u_{il}}{\partial \sigma_{ij}^2} = 0$ if $l \neq j$, $i \in T_j(\sigma^2) \Rightarrow i \in T_j\left(\sigma_j'^2\right)$, and for $l, m \neq j$, $i \in T_l(\sigma^2) \Rightarrow i \notin T_m\left(\sigma_j'^2\right)$. Therefore, by Hypothesis 1, $VS_j(\sigma'^2) > VS_j(\sigma^2)$ and $VS_l(\sigma'^2) \leq VS_l(\sigma^2)$ if $l \neq j$.

Hypothesis 3:

Suppose costs in the electorate decrease to c'. As $\frac{\partial u_{ij}}{\partial c_i} = -\gamma < 0$ for all i, j, it must be that $V_i(c) \neq \emptyset \Rightarrow V_i(c') \neq \emptyset$. Further, for each j, there exists a cdf $\hat{G}_j'$ satisfying $\{u_{ij} | i \in T_j(c)\} \sim \hat{G}_j'(-\infty, \infty)$ with full support, such that $\hat{G}_j'(x) < \hat{G}_j(x)$ for all $x \in \Re$. Consequently, turnout in $T_j(c)$ must increase and, thus, turnout in the entire electorate must increase.

A.2 Chapter 3, First-Stage Estimates

The estimates shown in Tables A.1–A.6 predict uncertainty about the candidates with binary logit models. The dependent variable in these models is coded a 1 if the respondent does not place the candidate on the ideology scale and a 0 if the respondent does place the candidate on the ideology scale. In this way, the models are able to predict the Bartels measure of individual uncertainty. The models shown in Tables A.7–A.8 differ from those just discussed in that they predict uncertainty about the candidates with ordered logit models. The dependent variable for these years codes the response to the direct question regarding certainty about candidate placement with a 3 for "not very certain," a 2 for "pretty certain," and a 1 for "very certain."

As the reduced-form of the system of Equations (3.1) shown in Section 3.2, these models contain the same set of variables that influence the vote decision: direction and strength of partisan attachment, ideological categorization, education, family income, age, the registration deadline, whether or not the state has DMV registration as well as newspaper, television news and television campaign coverage attention. The one difference in coding pertains to the variables measuring ideological categorization and strength and direction of partisan attachment. Rather than use the scales employed in the final model I elect here to create indicator variables that denote with a 1 or a 0 whether or not one is a weak Democrat, a strong Democrat, a weak Republican, a strong Republican, a liberal, or a conservative. I do this so as to accurately measure the combined effects of party tactics and strategic information gathering on citizen uncertainty.

I include a couple of variables that do not appear in the vote decision model. One of these is an indicator variable denoting whether or not the individual watched any or all of the televised Presidential candidate debates. This variable does not appear in the NES data collections for the years 1972, 1988 and 1992. Hence, it does not appear in my analysis of those years. For the years that it does appear it is coded a 1 (meaning the respondent watched a debate) for between 68.6% and 83.9% of the

survey sample. It is included in the model of uncertainty but not the vote decision because I expect it to influence specifically the electorate's information about the candidates rather than their general information about other aspects of the election.

I also include a set of variables indicating the respondent's vote choice as well as the timing of her vote decision. These are sets of interaction variables that code for each candidate whether or not the respondent decided to vote for him before the convention, during the convention or after the convention. These variables provide a test of the theory of selective information processing as the theory implies that the earlier an individual decides to vote for a candidate the less uncertain she is likely to be for that candidate relative to the other candidates competing for office. This is due to the fact that after making her decision she continues to gather and process information only about that candidate for whom she has decided to vote.

Generally, the results of these models provide strong support for the theory that costs of information determine the electorate's uncertainty about political candidates. In particular, the coefficients on the variables measuring education and family income are often both negative and statistically significant, and never both positive and statistically significant. However, the results regarding the effect of age are surprising in that approximately half of the coefficients on this variable (scattered across elections) are positive and statistically significant. This indicates that while older individuals have more experience with elections and voting, they may benefit only in terms of the mechanics of voting (for example, where and when to register and vote) and not in terms of their information about the candidates competing for office.

Somewhat less consistent are the coefficients on the variables measuring media/news attention. In two elections (1984 and 1988) the variable indicating that the respondent reads a newspaper has a positive and statistically significant coefficient for the Democratic candidate. Although this is much more the exception than the general trend, it nonetheless runs counter to expectation. Most likely it indicates that newspapers ran stories transmitting conflicting or noisy signals of the candidate's ideological location.

Not surprisingly, the variables measuring registration requirements generally have

little or no effect on uncertainty. In six of the eight elections that I analyze the coefficients on these variables are statistically insignificant. In the other two elections the coefficient on the variable indicating DMV registration (for Nixon in 1972 and Perot in 1992) is negative and significant. This may bolster the argument (albeit slightly) for endogeneity between uncertainty and vote choice as it suggests that individuals facing low registration requirements pay more attention to information about the candidates and are less uncertain about their ideological locations.

The effects of ideology are extremely consistent: for each candidate in each election individuals who categorize themselves as being either liberal or conservative are significantly less uncertain than those who categorize themselves as moderate. Having relatively extreme ideologies, such individuals are likely to be more interested in politics and elections than those with middle-of-the-road ideologies. Conversely, the effects of strength of partisan attachment are much less uniform. Most often the effects are insignificant, however in a few instances they are the sign and significance that are indicative of the inseparable effects of party tactics and strategic information gathering. For example, in the 1984 election strong Democrats and strong Republicans were significantly less likely to be uncertain about their own party's candidates. Likewise, in 1992 strong Republicans were less likely to be uncertain about the Republican candidate. Unfortunately, whether these trends are caused by strategic information gathering or party strategy cannot in this analysis be disentangled, as both may lead to the estimates just described.

It is much easier to identify the cause of the trends in coefficients on the vote timing variables. In the 1980–2000 results many of the coefficients are statistically significant in the direction that supports the theory of selective information processing. For Anderson and Reagan (1980), Reagan (1984), Dukakis (1988), Clinton (1992), Perot (1992), Dole (1996), Gore (2000), and Bush (2000) the pattern indicates that individuals who decide to vote for a candidate early in the campaign are much less likely to be uncertain about that candidate relative to all others, including individuals who decide to vote late in the campaign for the same candidate.

As this discussion has attempted to show, taken as a whole, the results of the

estimation shown in Tables A.1–A.8 provide evidence for a couple of theories. Firstly, uncertainty is determined by costs of information. The less access one has to reliable sources of information about the candidates, the more difficult it is for one to process information and the more likely one is to be uncertain. Secondly, uncertainty and vote choice are very likely to be endogenous. Not only has this analysis shown us it is probable that voters engage in strategic information gathering, it has also shown us it is quite probable that voters engage in selective information processing. Thus, these results both ensure a more accurate estimation of the final model as well as indicate important aspects of the electorate's uncertainty.

Table A.1: Uncertainty about 1972 Presidential Candidates

Binary Logit Estimates

	McGovern Uncertainty		Nixon Uncertainty	
Constant	0.86*	(0.48)	0.59	(0.49)
Weak Democrat	-0.25*	(0.15)	-0.18	(0.16)
Weak Republican	0.03	(0.20)	-0.11	(0.21)
Strong Democrat	-0.39*	(0.21)	-0.37*	(0.21)
Strong Republican	-0.16	(0.23)	0.05	(0.24)
Liberal	-3.27**	(0.27)	-3.67**	(0.34)
Conservative	-2.65**	(0.18)	-3.41**	(0.26)
HS Degree	-0.46**	(0.16)	-0.38**	(0.17)
Some College	-1.05**	(0.16)	-1.02**	(0.17)
BA Degree	-1.73**	(0.28)	-1.55**	(0.31)
$5-$9K Income	-0.06	(0.17)	-0.06	(0.18)
$9-$15K Income	-0.50**	(0.17)	-0.48**	(0.18)
$15K+ Income	-0.76**	(0.20)	-0.92**	(0.21)
Age	0.81**	(0.39)	0.75*	(0.40)
Vote Decision Timing				
McGovern				
Before Convention	-0.35	(0.23)	-0.20	(0.24)
During Convention	-0.45	(0.37)	-0.47	(0.39)
After Convention	-0.39	(0.27)	0.02	(0.27)
Nixon				
Before Convention	-0.68**	(0.17)	-0.73**	(0.18)
During Convention	-0.74**	(0.24)	-1.01**	(0.26)
After Convention	-0.61**	(0.21)	-0.57**	(0.22)
DMV Registration	-0.45	(0.32)	-0.66*	(0.34)
Registration Deadline	-0.02	(0.02)	-0.02	(0.02)
Sqrt Registration Deadline	0.17	(0.18)	0.22	(0.19)
Log-Likelihood	-860.9		-789.6	
Observations	2025		2025	

Entries are maximum likelihood estimates
with associated standard errors in parenthesis.
* indicates a $\rho = .10$ level of statistical significance.
** indicates a $\rho = .05$ level of statistical significance.

Table A.2: Uncertainty about 1976 Presidential Candidates

Binary Logit Estimates

	Carter Uncertainty		Ford Uncertainty	
Constant	2.01**	(0.39)	2.09**	(0.41)
Weak Democrat	-0.22	(0.18)	-0.15	(0.18)
Weak Republican	-0.10	(0.21)	0.00	(0.22)
Strong Democrat	-0.33	(0.22)	-0.23	(0.23)
Strong Republican	0.01	(0.31)	0.24	(0.34)
Liberal	-3.42**	(0.32)	-3.91**	(0.38)
Conservative	-2.63**	(0.20)	-3.19**	(0.24)
HS Degree	-0.32*	(0.17)	-0.32*	(0.17)
Some College	-1.29**	(0.22)	-1.27**	(0.23)
BA Degree	-1.76**	(0.29)	-1.86**	(0.32)
$6-$12K Income	-0.39**	(0.19)	-0.26	(0.20)
$12-$20K Income	-0.84**	(0.20)	-0.94**	(0.21)
$20K+ Income	-1.03**	(0.23)	-1.13**	(0.25)
Age	1.39**	(0.45)	1.12*	(0.48)
Debate	-0.39*	(0.21)	-0.55**	(0.22)
TV Campaign Programs	0.11	(0.25)	0.14	(0.26)
TV News	-0.32**	(0.15)	-0.31*	(0.16)
Newspaper	-0.59**	(0.15)	-0.65**	(0.16)
Vote Decision Timing				
Carter				
Before Convention	-0.22	(0.23)	0.06	(0.24)
During Convention	-0.73**	(0.31)	-0.73**	(0.32)
After Convention	-0.08	(0.24)	0.07	(0.25)
Ford				
Before Convention	-0.32	(0.24)	-0.42	(0.26)
During Convention	-0.24	(0.29)	-0.51	(0.32)
After Convention	-0.75**	(0.30)	-0.67**	(0.31)
DMV Registration	-0.06	(0.22)	-0.19	(0.23)
Registration Deadline	0.02	(0.03)	0.01	(0.03)
Sqrt Registration Deadline	-0.14	(0.16)	-0.04	(0.17)
Log-Likelihood	-704.6		-645.7	
Observations	1714		1715	

Entries are maximum likelihood estimates
with associated standard errors in parenthesis.
* indicates a $\rho = .10$ level of statistical significance.
** indicates a $\rho = .05$ level of statistical significance.

Table A.3: Uncertainty about 1980 Presidential Candidates

Binary Logit Estimates

	Carter Uncertainty		Anderson Uncertainty		Reagan Uncertainty	
Constant	1.60**	(0.44)	1.99**	(0.44)	1.69**	(0.44)
Weak Democrat	-0.07	(0.18)	0.10	(0.18)	-0.11	(0.18)
Weak Republican	-0.08	(0.22)	0.14	(0.21)	-0.33	(0.23)
Strong Democrat	-0.31	(0.23)	0.21	(0.23)	-0.32	(0.23)
Strong Republican	-0.49*	(0.29)	-0.43	(0.28)	-0.44	(0.30)
Liberal	-0.66**	(0.18)	-0.74**	(0.18)	-0.70**	(0.19)
Conservative	-0.67**	(0.16)	-0.64**	(0.16)	-0.58**	(0.16)
HS Degree	-0.56**	(0.18)	-0.49**	(0.19)	-0.62**	(0.18)
Some College	-1.41**	(0.22)	-1.36**	(0.22)	-1.45**	(0.22)
BA Degree	-2.08**	(0.28)	-2.11**	(0.26)	-2.23**	(0.29)
$10-$20K Income	-0.16	(0.19)	-0.19	(0.19)	-0.30	(0.19)
$20-$30K Income	-0.49**	(0.23)	-0.68**	(0.20)	-0.54**	(0.20)
$30K+ Income	-0.61**	(0.23)	-0.58**	(0.22)	-0.91**	(0.23)
Age	-0.09	(0.43)	0.42	(0.43)	-0.38	(0.44)
Debate	-0.06	(0.16)	-0.16	(0.16)	-0.06	(0.16)
TV Campaign Programs	-0.56**	(0.21)	-0.64**	(0.21)	-0.33	(0.21)
TV News	-0.02	(0.15)	-0.21	(0.15)	-0.03	(0.16)
Newspaper	-0.38**	(0.15)	-0.34**	(0.15)	-0.30**	(0.15)
Vote Decision Timing						
Carter						
Before Convention	-0.11	(0.23)	0.07	(0.23)	0.07	(0.23)
During Convention	-0.93**	(0.41)	-1.04**	(0.38)	-0.75*	(0.39)
After Convention	-0.01	(0.34)	0.19	(0.34)	0.09	(0.34)
Anderson						
Before Convention	-0.96	(0.67)	-1.06*	(0.62)	-1.49*	(0.79)
During Convention	0.06	(0.89)	-0.32	(0.89)	0.04	(0.90)
After Convention	0.16	(0.47)	-0.83*	(0.50)	-0.26	(0.51)
Reagan						
Before Convention	-0.19	(0.22)	-0.16	(0.21)	-0.45**	(0.23)
During Convention	-0.74**	(0.31)	-0.54*	(0.28)	-1.08**	(0.34)
After Convention	-0.39	(0.32)	-0.19	(0.31)	-0.58*	(0.33)
DMV Registration	0.02	(0.21)	-0.40	(0.43)	-0.05	(0.22)
Registration Deadline	-0.02	(0.04)	0.03	(0.04)	0.03	(0.04)
Sqrt Registration Deadline	0.21	(0.22)	-0.05	(0.21)	-0.06	(0.22)
Log-Likelihood	-656.0		-662.3		-638.3	
Observations	1197		1196		1196	

Entries are maximum likelihood estimates
with associated standard errors in parenthesis.
* indicates a $\rho = .10$ level of statistical significance.
** indicates a $\rho = .05$ level of statistical significance.

Table A.4: Uncertainty about 1984 Presidential Candidates

Binary Logit Estimates

	Mondale Uncertainty		Reagan Uncertainty	
Constant	-1.12*	(0.64)	-1.42*	(0.76)
Weak Democrat	-0.06	(0.29)	-0.03	(0.32)
Weak Republican	-0.08	(0.31)	-0.22	(0.39)
Strong Democrat	-0.62*	(0.35)	0.02	(0.34)
Strong Republican	-0.50	(0.39)	-1.41*	(0.75)
Liberal	-1.13**	(0.32)	-1.64**	(0.38)
Conservative	-0.48**	(0.23)	-0.75**	(0.26)
HS Degree	-0.17	(0.26)	-0.34	(0.28)
Some College	-1.09**	(0.37)	-1.18**	(0.40)
BA Degree	-1.02**	(0.44)	-1.92**	(0.65)
$10-$22K Income	0.07	(0.26)	-0.26	(0.29)
$22-$35K Income	-0.77**	(0.33)	-0.43	(0.34)
$35K+ Income	-0.75**	(0.36)	-0.89**	(0.42)
Age	1.92**	(0.65)	0.77	(0.71)
Debate	-0.14	(0.27)	0.37	(0.32)
TV Campaign Programs	-0.62**	(0.30)	-0.76**	(0.34)
TV News	-0.11	(0.23)	0.15	(0.25)
Newspaper	0.49**	(0.23)	-0.36	(0.25)
Vote Decision Timing				
Mondale				
Before Convention	-0.08	(0.34)	0.16	(0.35)
During Convention	-0.55	(0.56)	-0.27	(0.53)
After Convention	-0.27	(0.51)	0.20	(0.46)
Reagan				
Before Convention	-0.06	(0.30)	-0.86**	(0.42)
During Convention	0.17	(0.40)	0.02	(0.48)
After Convention	0.03	(0.40)	-0.14	(0.45)
DMV Registration	-0.34	(0.40)	-0.45	(0.45)
Registration Deadline	0.08	(0.05)	0.01	(0.06)
Sqrt Registration Deadline	-0.41	(0.31)	0.06	(0.36)
Log-Likelihood	-354.5		-283.2	
Observations	1509		1508	

Entries are maximum likelihood estimates
with associated standard errors in parenthesis.
* indicates a $\rho = .10$ level of statistical significance.
** indicates a $\rho = .05$ level of statistical significance.

Table A.5: Uncertainty about 1988 Presidential Candidates

Binary Logit Estimates

	Dukakis Uncertainty		Bush Uncertainty	
Constant	0.98**	(0.43)	1.38**	(0.44)
Weak Democrat	-0.22	(0.19)	-0.01	(0.20)
Weak Republican	0.08	(0.21)	-0.15	(0.23)
Strong Democrat	-0.33	(0.21)	-0.04	(0.22)
Strong Republican	-0.85**	(0.29)	-0.83**	(0.33)
Liberal	-2.13**	(0.19)	-2.34**	(0.20)
Conservative	-1.97**	(0.16)	-1.99**	(0.16)
HS Degree	-0.31*	(0.17)	-0.28	(0.18)
Some College	-0.90**	(0.22)	-1.09**	(0.24)
BA Degree	-1.04**	(0.26)	-1.37**	(0.29)
$12-$25K Income	0.03	(0.16)	-0.09	(0.17)
$25-$40K Income	-0.40*	(0.22)	-0.48**	(0.24)
$40K+ Income	-0.58**	(0.23)	-0.29	(0.24)
Age	1.03**	(0.40)	0.41	(0.43)
TV News	-0.55**	(0.14)	-0.72**	(0.15)
Newspaper	0.40**	(0.15)	-0.18	(0.15)
Vote Decision Timing				
Dukakis				
Before Convention	-0.54*	(0.28)	-0.32	(0.28)
During Convention	-0.80**	(0.30)	-0.33	(0.29)
After Convention	-0.57*	(0.34)	-0.31	(0.33)
Bush				
Before Convention	-0.14	(0.28)	-0.36	(0.32)
During Convention	-0.52*	(0.30)	-1.30**	(0.42)
After Convention	0.01	(0.26)	-0.22	(0.29)
DMV Registration	0.12	(0.18)	0.01	(0.19)
Registration Deadline	-0.06	(0.03)	-0.05	(0.03)
Sqrt Registration Deadline	0.34	(0.21)	0.25	(0.21)
Log-Likelihood	-714.8		-650.3	
Observations	1771		1771	

Entries are maximum likelihood estimates
with associated standard errors in parenthesis.
* indicates a $\rho = .10$ level of statistical significance.
** indicates a $\rho = .05$ level of statistical significance.

Table A.6: Uncertainty about 1992 Presidential Candidates

Binary Logit Estimates

	Clinton Uncertainty		Perot Uncertainty		Bush Uncertainty	
Constant	1.13**	(0.52)	0.95**	(0.41)	1.94**	(0.53)
Weak Democrat	0.29	(0.23)	0.30*	(0.17)	0.18	(0.25)
Weak Republican	0.26	(0.25)	0.12	(0.19)	-0.07	(0.29)
Strong Democrat	-0.05	(0.27)	0.13	(0.19)	0.19	(0.26)
Strong Republican	-0.33	(0.35)	-0.31	(0.24)	-1.06**	(0.49)
Liberal	-2.40**	(0.23)	-1.66**	(0.18)	-2.66**	(0.26)
Conservative	-2.20**	(0.19)	-1.35**	(0.16)	-1.94**	(0.19)
HS Degree	-0.02	(0.21)	-0.12	(0.17)	-0.43**	(0.22)
Some College	-0.39	(0.26)	-0.44**	(0.20)	-0.65**	(0.27)
BA Degree	-0.91**	(0.35)	-0.53**	(0.22)	-1.56**	(0.41)
$13-$30K Income	-0.40**	(0.20)	-0.43**	(0.16)	-0.63**	(0.22)
$30-$50K Income	-0.72**	(0.25)	-0.78**	(0.18)	-0.77**	(0.27)
$50K+ Income	-0.91**	(0.29)	-0.68**	(0.20)	-0.61**	(0.30)
Age	1.52**	(0.46)	1.31**	(0.35)	0.66	(0.49)
TV Campaign Programs	-0.58**	(0.22)	-0.48**	(0.18)	-0.77**	(0.23)
TV News	-0.33*	(0.18)	-0.22*	(0.13)	-0.08	(0.19)
Newspaper	-0.42**	(0.18)	-0.12	(0.13)	-0.55**	(0.19)
Vote Decision Timing						
Clinton						
Before Convention	-0.91**	(0.32)	-0.17	(0.21)	-0.10	(0.30)
During Convention	-0.77**	(0.37)	0.04	(0.23)	0.09	(0.35)
After Convention	-0.61*	(0.35)	-0.27	(0.24)	-0.02	(0.34)
Perot						
Before Convention	-0.78	(0.66)	-1.50**	(0.62)	-0.93	(0.78)
During Convention	0.30	(1.11)				
After Convention	-0.21	(0.42)	-0.52	(0.33)	-0.09	(0.45)
Bush						
Before Convention	-0.03	(0.29)	-0.04	(0.21)	-0.49	(0.36)
During Convention	0.40	(0.49)	-0.01	(0.39)	0.49	(0.59)
After Convention	0.32	(0.42)	-0.23	(0.34)	-0.06	(0.53)
DMV Registration	-0.25	(0.17)	-0.21*	(0.12)	-0.27	(0.18)
Registration Deadline	0.04	(0.04)	0.04	(0.03)	0.02	(0.04)
Sqrt Registration Deadline	-0.30	(0.27)	-0.22	(0.20)	-0.23	(0.27)
Log-Likelihood	-535.1		-893.5		-472.9	
Observations	1847		1832		1835	

Entries are maximum likelihood estimates
with associated standard errors in parenthesis.
* indicates a $\rho = .10$ level of statistical significance.
** indicates a $\rho = .05$ level of statistical significance.

Table A.7: Uncertainty about 1996 Presidential Candidates

Ordered Logit Estimates

	Clinton Uncertainty		Perot Uncertainty		Dole Uncertainty	
Weak Democrat	0.48**	(0.15)	0.37**	(0.16)	0.38**	(0.15)
Weak Republican	0.31*	(0.17)	-0.10	(0.17)	-0.18	(0.17)
Strong Democrat	-0.06	(0.17)	0.17	(0.18)	-0.04	(0.18)
Strong Republican	-0.74**	(0.22)	-0.18	(0.21)	-0.67**	(0.21)
Liberal	-1.00**	(0.19)	-0.56**	(0.20)	-1.19**	(0.20)
Conservative	-0.90**	(0.18)	-0.59**	(0.19)	-0.77**	(0.19)
HS Degree	-0.20	(0.19)	-0.29	(0.20)	-0.01	(0.19)
Some College	-0.35*	(0.20)	-0.54**	(0.21)	-0.60**	(0.20)
BA Degree	-0.19	(0.21)	-0.37*	(0.22)	-0.46**	(0.21)
$15-$30K Income	-0.06	(0.16)	-0.14	(0.17)	-0.35**	(0.17)
$30-$50K Income	-0.04	(0.16)	-0.20	(0.17)	-0.44**	(0.17)
$50K+ Income	-0.11	(0.17)	-0.30*	(0.17)	-0.35**	(0.17)
Age	0.40	(0.36)	0.24	(0.37)	0.48	(0.36)
Debate	-0.30**	(0.13)	0.01	(0.13)	-0.18	(0.13)
TV Campaign Programs	-0.26*	(0.14)	-0.27*	(0.14)	-0.35**	(0.14)
TV News	-0.16	(0.12)	-0.04	(0.12)	-0.21*	(0.12)
Newspaper	-0.17	(0.12)	-0.16	(0.12)	-0.18	(0.12)
Vote Decision Timing						
Clinton						
Before Convention	-0.78**	(0.20)	0.03	(0.20)	-0.59**	(0.20)
During Convention	-1.17**	(0.28)	0.05	(0.27)	-0.71**	(0.27)
After Convention	-0.43	(0.28)	0.36	(0.29)	-0.92**	(0.28)
Perot						
Before Convention	0.02	(0.42)	-0.42	(0.41)	-0.10	(0.44)
During Convention	0.20	(0.81)	-0.37	(0.76)	0.19	(0.81)
After Convention	0.59	(0.53)	-0.13	(0.50)	0.45	(0.55)
Dole						
Before Convention	0.37**	(0.16)	-0.16	(0.17)	0.62**	(0.16)
During Convention	-0.31	(0.24)	0.21	(0.26)	-0.46*	(0.25)
After Convention	0.03	(0.21)	0.38	(0.23)	0.34	(0.22)
Registration Deadline	0.01	(0.03)	-0.01	(0.03)	0.01	(0.03)
Sqrt Registration Deadline	-0.10	(0.16)	0.03	(0.16)	-0.08	(0.16)
Cut 1	-2.89	(0.36)	-3.00	(0.37)	-3.51	(0.37)
Cut 2	-0.58	(0.35)	-1.17	(0.36)	-1.28	(0.36)
Log-Likelihood	-1324.3		-1296.0		-1317.0	
Observations	1356		1356		1356	

Entries are maximum likelihood estimates
with associated standard errors in parenthesis.
* indicates a $\rho = .10$ level of statistical significance.
** indicates a $\rho = .05$ level of statistical significance.

Table A.8: Uncertainty about 2000 Presidential Candidates

Ordered Logit Estimates

	Gore Uncertainty		Bush Uncertainty	
Weak Democrat	0.28*	(0.17)	0.32*	(0.18)
Weak Republican	0.46**	(0.19)	0.25	(0.18)
Strong Democrat	-0.22	(0.17)	0.01	(0.17)
Strong Republican	-0.39**	(0.20)	-0.45**	(0.20)
Liberal	-0.84**	(0.18)	-1.12**	(0.19)
Conservative	-1.05**	(0.18)	-0.98**	(0.18)
HS Degree	0.05	(0.22)	-0.45*	(0.23)
Some College	-0.32	(0.22)	-0.75**	(0.23)
BA Degree	-0.51**	(0.23)	-1.23**	(0.24)
$25-$50K Income	-0.05	(0.15)	0.03	(0.16)
$50-$75K Income	-0.07	(0.17)	-0.04	(0.17)
$75K+ Income	-0.27	(0.18)	-0.05	(0.18)
Age	0.41	(0.36)	0.58	(0.37)
Debate	-0.32**	(0.13)	-0.47**	(0.13)
TV Campaign Programs	-0.19	(0.17)	-0.09	(0.17)
TV News	-0.35**	(0.12)	-0.48**	(0.12)
Newspaper	-0.16	(0.12)	-0.05	(0.12)
Vote Decision Timing				
Gore				
Before Convention	-0.22	(0.17)	-0.01	(0.17)
During Convention	-0.40	(0.31)	-0.18	(0.31)
After Convention	-0.39**	(0.19)	-0.23	(0.20)
Bush				
Before Convention	-0.81**	(0.18)	-0.53**	(0.18)
During Convention	-0.18	(0.30)	-0.55*	(0.29)
After Convention	-0.18	(0.22)	-0.62**	(0.21)
Registration Deadline	0.02	(0.03)	0.08	(0.15)
Sqrt Registration Deadline	-0.08	(0.15)	-0.01	(0.03)
Cut 1	-3.07	(0.37)	-3.61	(0.38)
Cut 2	-0.86	(0.36)	-1.36	(0.37)
Log-Likelihood	-1252.3		-1230.4	
Observations	1281		1277	

Entries are maximum likelihood estimates
with associated standard errors in parenthesis.
* indicates a $\rho = .10$ level of statistical significance.
** indicates a $\rho = .05$ level of statistical significance.

A.3 Chapter 4, First-Stage Estimates

The models presented in Tables A.9–A.10 are first-stage estimates that predict uncertainty about the analysis of turnout by income and race. As described in Chapter 5, these models differ from those in Chapter 4 in that they include interaction terms that enable them to accurately estimate the effects of changes in uncertainty and registration requirements on the rate of turnout across various economic and racial groups. Accordingly, these models are specified identically to those in Tables A.1–A.8 with the exception that they include interactions between the registration deadline and family income.

As expected, the estimates shown here are quite similar to those shown in Tables A.1 and A.8. Nearly all of the variables are both the sign and significance discussed in the appendix to Chapter 4. The interaction terms are insignificant with the exception of one on the non-white interaction term for Nixon in the 1972 analysis. This suggests that non-whites in states with lengthy registration deadlines may be more likely to be uncertain than others. Given the hypothesized endogeneity between uncertainty and the vote decision, this result is not surprising as it indicates that those who are not likely to vote are more uncertain about both Presidential candidates. In all, the first-stage results shown here support the theory that uncertainty is caused by high costs of information and that it is endogenous with vote choice.

Table A.9: Uncertainty about 1972 Presidential Candidates

Binary Logit Estimates

	McGovern Uncertainty		Nixon Uncertainty	
Constant	0.66	(0.58)	0.87**	(0.38)
Weak Democrat	-0.29*	(0.16)	-0.22	(0.16)
Weak Republican	0.03	(0.20)	-0.10	(0.21)
Strong Democrat	-0.45**	(0.21)	-0.42*	(0.22)
Strong Republican	-0.17	(0.23)	0.05	(0.24)
Liberal	-3.30**	(0.27)	-3.72**	(0.34)
Conservative	-2.65**	(0.19)	-3.41**	(0.26)
HS Degree	-0.45**	(0.16)	-0.36**	(0.17)
Some College	-1.05**	(0.16)	-1.02**	(0.17)
BA Degree	-1.75**	(0.29)	-1.57**	(0.31)
$5-$9K Income	0.16	(0.53)	0.18	(0.54)
$9-$15K Income	-0.18	(0.53)	-0.61	(0.55)
$15K+ Income	-1.09*	(0.68)	-1.05	(0.72)
Age	0.90**	(0.39)	0.87**	(0.41)
Vote Decision Timing				
McGovern				
Before Convention	-0.39	(0.24)	-0.24	(0.24)
During Convention	-0.52	(0.38)	-0.56	(0.40)
After Convention	-0.45*	(0.27)	-0.03	(0.28)
Nixon				
Before Convention	-0.66**	(0.17)	-0.72**	(0.18)
During Convention	-0.64**	(0.24)	-0.97**	(0.26)
After Convention	-0.59**	(0.21)	-0.54**	(0.22)
DMV Registration	-0.44	(0.31)	-0.64*	(0.34)
Registration Deadline	-0.02	(0.03)	-0.03	(0.03)
Sqrt Registration Deadline	0.22	(0.18)	0.25	(0.19)
Registration Deadline Interactions				
(Reg. Dead.)*($5K-$9K)	-0.01	(0.02)	-0.01	(0.02)
(Reg. Dead.)*($9K-$15K)	-0.01	(0.02)	0.01	(0.02)
(Reg. Dead.)*($15K+)	0.01	(0.02)	0.01	(0.02)
(Reg. Dead.)*(nonwhite)	0.01	(0.01)	0.02**	(0.01)
Log-Likelihood	-858.0		-786.4	
Observations	2025		2025	

Entries are maximum likelihood estimates
with associated standard errors in parenthesis.
* indicates a $\rho = .10$ level of statistical significance.
** indicates a $\rho = .05$ level of statistical significance.

Table A.10: Uncertainty about 2000 Presidential Candidates

Ordered Logit Estimates				
	Gore Uncertainty		Bush Uncertainty	
Weak Democrat	0.28	(0.17)	0.32*	(0.18)
Weak Republican	0.48**	(0.19)	0.23	(0.18)
Strong Democrat	-0.23	(0.17)	0.04	(0.17)
Strong Republican	-0.41**	(0.20)	-0.47**	(0.20)
Liberal	-0.83**	(0.18)	-1.12**	(0.19)
Conservative	-1.04**	(0.18)	-0.98**	(0.18)
HS Degree	0.02	(0.22)	-0.49**	(0.23)
Some College	-0.34	(0.22)	-0.79**	(0.23)
BA Degree	-0.53**	(0.22)	-1.28**	(0.24)
$25-$50K Income	-0.28	(0.39)	-0.60	(0.40)
$50-$75K Income	-0.58	(0.42)	-0.34	(0.42)
$75K+ Income	-0.75*	(0.43)	-0.45	(0.43)
Age	0.42	(0.37)	0.47	(0.38)
Debate	-0.32**	(0.13)	-0.47**	(0.13)
TV Campaign Programs	-0.20	(0.17)	-0.09	(0.17)
TV News	-0.36**	(0.12)	-0.48**	(0.12)
Newspaper	-0.15	(0.12)	-0.05	(0.12)
Vote Decision Timing				
Gore				
Before Convention	-0.23	(0.17)	-0.00	(0.17)
During Convention	-0.41	(0.31)	-0.18	(0.31)
After Convention	-0.39**	(0.19)	-0.24	(0.20)
Bush				
Before Convention	-0.79**	(0.18)	-0.54**	(0.18)
During Convention	-0.17	(0.30)	-0.56*	(0.29)
After Convention	-0.17	(0.22)	-0.64**	(0.22)
Registration Deadline	0.01	(0.03)	-0.02	(0.03)
Sqrt Registration Deadline	-0.10	(0.15)	0.06	(0.15)
Registration Deadline Interactions				
(Reg. Dead.)*($25K-$50K)	0.01	(0.02)	0.03	(0.02)
(Reg. Dead.)*($50K-$75K)	0.02	(0.02)	0.01	(0.02)
(Reg. Dead.)*($75K+)	0.02	(0.02)	0.02	(0.02)
(Reg. Dead.)*(nonwhite)	0.00	(0.01)	-0.01	(0.01)
Cut 1	-3.41	(0.47)	-4.11	(0.48)
Cut 2	-1.19	(0.46)	-1.85	(0.47)
Log-Likelihood	-1250.8		-1227.8	
Observations	1281		1277	

Entries are maximum likelihood estimates
with associated standard errors in parenthesis.
* indicates a $\rho = .10$ level of statistical significance.
** indicates a $\rho = .05$ level of statistical significance.