

[연구논문]

# Cognitive Heterogeneity and Economic Voting: Does Political Sophistication Condition Economic Voting?

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Does political sophistication matter for economic voting? Does citizens' economic voting behavior vary according to their level of political sophistication? Some scholars (Campbell et al. 1960; Fiorina 1981; Delli Carpini and Keeter 1996; Gomez and Wilson 2001, 2003) argue that political sophistication affects political behavior including economic voting. Certainly, the level of political sophistication varies across voters: cognitive heterogeneity in the electorate (Delli Carpini and Keeter 1996). However, how political sophistication influences economic voting is controversial. One of the purposes of this research note is to examine the competing arguments regarding the question: Does political sophistication condition economic voting?

Economic voting is one of the most studied subjects in voting behavior (Lewis-Beck and Nadeau 2011). The basic idea of the economic voting theory is that voters vote for candidates according to

their economic evaluations (Lewis-Beck 1988; MacKuen, Erikson, and Stimson 1992). Simply speaking, citizens who positively evaluate economic conditions are more likely to vote for incumbent candidates/parties. If voters think that economic conditions are bad or worse, they tend to vote for challengers. While voting, some citizens focus on national economic conditions (sociotropic voting), and others rely on their evaluations of personal economic conditions (pocketbook/egocentric voting).

Political scientists argue that cognitive heterogeneity in the electorate matters for economic voting, but how cognitive heterogeneity affects economic voting is controversial. Some (e.g., Fiorina 1981; Mutz 1992; Krause 1997) argue that the less politically sophisticated tend to vote for candidates according to their pocketbook conditions while the more politically sophisticated vote for candidates according to their evaluations of the national economy. However, Gomez and Wilson (2001, 2003) insist that the more sophisticated vote their pocketbook conditions while the less sophisticated vote national economic conditions.

The contradictory arguments have not been rigorously tested even though they are important to understanding voting behavior in democracy. Unlike previous studies that generally divide voters into different groups according to the level of political knowledge and separately estimate the effects of economic evaluations on vote choice, this study utilizes interaction models and estimate the conditional effects of political sophistication on economic voting. From the results of this study, we can grasp the influence of political knowledge on political behavior more comprehensively

Does cognitive heterogeneity matter for economic voting? If cognitive heterogeneity influences economic voting, how does political sophistication condition economic voting? Do the effects of sociotropic and pocketbook economic evaluations on vote choice vary according to the level of political sophistication? This study aims to address the questions and reveal the relationship between political sophistication and economic voting. Estimating the conditional effects of political sophistication on sociotropic and pocketbook voting, this study examines the competing arguments. The following section introduces the competing arguments in detail.

## Political Sophistication and Economic Voting

Political scientists (e.g., Iyengar and Kinder 1987; Zaller 1992; Delli Carpini and Keeter 1996) indicate that political sophistication is a significant variable explaining politics. Certainly, political sophistication varies across individuals. Some are politically more knowledgeable than others. For instance, the more educated tend to show higher political knowledge (Delli Carpini and Keeter 1996).<sup>1)</sup> As Delli Carpini and Keeter (1996, 1) state, scholars have believed that “democracy functions best when its citizens are politically informed” because citizens directly and indirectly participate in policy making in democracy. Politically knowledgeable citizens can elect better representatives who can make better policies.

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1) What explains political sophistication is an interesting and important topic. However, this study focuses on whether or not political sophistication affects political behavior: economic voting.

Beyond the normative argument, Zaller (1992) contends that political knowledge affects political behavior. For instance, politically sophisticated individuals are less likely to be affected by incoming information because they tend to have stronger predispositions even though they generally receive more political information. Druckman and Nelson (2003), on the contrary, show that politically knowledgeable citizens are more likely to be “framed” by incoming information because political sophisticates better can facilitate incoming frames. According to previous empirical studies (e.g., Iyengar and Kinder 1987; Zaller 1992; Druckman and Nelson 2003), how political sophistication influences political behavior is somewhat controversial.

Debates around the effects of political sophistication on political behavior are also observed in economic voting. Scholars (e.g., Fiorina 1981; Gomez and Wilson 2001) are interested in whether or not political sophistication influences sociotropic and pocketbook economic voting. As mentioned previously, economic voting is related to attributing responsibility for economic conditions to (incumbent) candidates (democratic accountability). For instance, sociotropic voters reward or punish incumbent candidates according to their evaluations of the national economy. In theory, sociotropic voters tend to think that government is responsible for national economic conditions. Stressing government responsibility for the national economy implies that government policies affect national economic conditions. Certainly, incumbent candidates are responsible for government policies (at least in part).<sup>2)</sup> Thus, sociotropic voting is based on the assumption that voters connect national economic conditions to

government policies (Gomez and Wilson 2001).

Sociotropic voting requires of voters at least two conditions. In order to reward or punish incumbent candidates according to their evaluations of national economic conditions, first, citizens need to grasp current/past economic conditions. Second, voters should be able to understand how incumbent candidates or their policies affected national economic conditions. Political sophistication can influence these two conditions.

Some scholars (e.g., Fiorina 1981; Mutz 1992; Delli Carpini and Keeter 1996; Goren 1997) argue that sociotropic voting is prominent among the politically sophisticated. According to them, politically sophisticated voters understand the fact that government policies are designed for the national economy rather than citizens' personal economic conditions. In other words, even though the national economy is prosperous, some individuals' economic conditions can be unfortunate. Also, political sophisticates generally better understand how government policies affect the national economy.

The politically less sophisticated, in contrast, tend to vote for candidates according to their pocketbook conditions. Politically less sophisticated voters generally do not understand the connections between government policies and national economic conditions. (And?) they are generally ignorant about national economic conditions

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2) It is important to note that the clarity of government responsibility positively affects economic voting (Powell and Whitten 1993). For instance, if one party holds both the executive and legislative branches in presidential systems, it may be less controversial that incumbent presidential candidates are more responsible for policy failures/successes compared to incumbent presidential candidates under divided governments.

compared to political sophisticates. Hence, politically less sophisticated voters tend to use their pocketbook conditions as an information shortcut to evaluate the national economy. For instance, when their pocketbook conditions are bad, they tend to regard that national economic conditions are also bad like theirs.

Unlike the conventional arguments, however, Gomez and Wilson (2001, 2003) insist that political sophisticates tend to vote for candidates according to their pocketbook conditions while the less sophisticated are more likely to vote for candidates according to their evaluations of national economic conditions. According to Gomez and Wilson (2001, 2003), pocketbook voting requires more political information/knowledge than sociotropic voting.

Connecting government policies to national economic conditions, sociotropic voters reward or punish incumbent candidates. Likewise, according to Gomez and Wilson (2001), pocketbook voting requires connecting government policies to personal economic conditions (rather than just using pocketbook conditions as an information shortcut). Certainly, government policies can affect personal economic conditions. Government policies influence national economic conditions, which in turn can affect personal economic conditions. In order to vote for candidates according to their personal economic conditions, voters need to understand both of the connections between economic policies and national economic conditions and between national economic conditions and personal economic conditions.

According to the conventional argument that political sophisticates vote the national economy, sociotropic voting requires a certain level of political and economic knowledge/information. However, Kinder

and Kiewiet (1981) argue that sociotropic voting does not necessarily require citizens to be well informed about national political and economic conditions. In particular, during election campaigns, information about national economic conditions is nearly ubiquitous. Voters relatively easily obtain information about national economic conditions from various sources such as mass media. Furthermore, candidates frequently debate about economic policies and national economic conditions. That is, it is relatively straightforward for voters to link national economic conditions to government policies during election campaigns.

Gomez and Wilson (2001, 2003) test their arguments that pocketbook voting is significantly observed among the politically knowledgeable while the politically less knowledgeable tend to vote for candidates according to their evaluations of national economic conditions. Gomez and Wilson (2001, 2003) classify voters into different groups according to the level of their political knowledge and analyze their vote choice in the 1992 and 1996 presidential elections to test the hypotheses. Their regression results generally support the arguments.

Godbout and Bélanger (2007), however, criticize that Gomez and Wilson's studies have some flaws. In theory, they contend that even the politically less sophisticated can link government economic policies to their personal economic conditions. If the less sophisticated can understand the relationships between government policies and macro economic conditions, they also can associate their personal economic situations with national economic conditions.

In methodology, Godbout and Bélanger (2007) criticize that their

findings are not valid when incumbent presidents are not running for reelection. Also, they criticize that measuring vote choice as an intention is problematic. Instead of measuring vote choice as a voting intention, they measure vote choice as a reported vote by utilizing the post-election survey questions in the American National Election Studies (ANES).

Godbout and Bélanger's (2007) criticisms are informative. However, some of the criticisms are invalid. In particular, their methodological criticisms are controversial. Economic voting is basically about attributing responsibility for economic conditions to incumbent candidates. Hence, if current presidents are not running for reelection, it may be difficult to observe economic voting itself because of the clarity of government responsibility (Powell and Whitten 1993).

Measuring vote choice by utilizing post-election questions is also controversial. Previous studies (e.g., Wright 1990; Atkeson 1999; Burden 2000) generally reveal that survey respondents tend to over-report their choice: supporting winners. Hence, instead of post-election survey items, pre-election survey items are used more widely to measure vote choice since Campbell et al. (1960).

Beyond the debates, this research indicates that both Gomez and Wilson (2001) and Godbout and Bélanger (2007) apply an inappropriate method to test their arguments. They divide survey respondents into four groups according to the level of political knowledge. Then, they separately estimate and compare the effects of economic evaluations on vote choice from the four groups. This approach is inappropriate for estimating conditional effects. Rather, using interaction models is a proper way of examining conditional

effects (Brambor, Clark, and Golder 2005).

If we divide observations into different groups according to a conditional variable and estimate the effects of independent variables, it theoretically means that all independent variables are interacted with the conditional variable. Certainly, the estimates are likely to be biased. Unlike prior research (Gomez and Wilson 2001, 2003; Godbout and Bélanger 2007), this study examines the conditional effects of political sophistication on economic voting by utilizing interaction models. The following section details the methods and variables this study utilizes.

## Study Design

To test the theories introduced in the previous section, this study analyzes individual vote choice in the 1992, 1996, and 2004 U.S. presidential elections. The ANES data are used for regression analyses. According to the regression results in this study, voters' evaluations of economic conditions significantly explain individual vote choice in the three elections. Except the latest election,<sup>3)</sup> the elections are the most recent elections that incumbent presidents (George H.W. Bush, Bill Clinton, and George W. Bush) ran for reelection.

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3) The ANES data for the 2012 presidential election are not yet available.

## Variables and Data

The dependent variable of this research is individual vote choice. Vote choice is treated as a dichotomous variable because economic voting is about attributing economic failure/success to government. That is, if respondents intend to vote for incumbent candidates, this intention is coded as 1. On the other hand, if respondents intend to vote for challengers, it is coded as 0. This study measures vote intention as vote choice, which is included in the pre-election surveys of the ANES.<sup>4)</sup>

According to the economic voting theory, citizens tend to vote for candidates according to their economic evaluations. Hence, voters' evaluations of economic conditions are the main independent variables in this research. Specifically, in pocketbook voting, the independent variable is voters' evaluations of personal economic conditions. In sociotropic voting, the independent variable is voters' evaluations of national economic conditions.

This study measures economic evaluations as retrospection, not prospecting because economic voting is theoretically about government accountability.<sup>5)</sup> The ANES surveys ask respondents to evaluate changes in the national economy and their personal

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4) As mentioned previously, survey respondents tend to over-report their vote choice in post-election surveys (Wright 1990; Atkeson 1999; Burden 2000). Hence, this study analyzes the pre-election vote choice items in the ANES.

5) Prospective evaluations may be important and useful in particular to study presidential support/popularity (MacKuen, Erikson, and Stimson 1992). However, studying vote choice by utilizing survey data, it is difficult to differentiate between the effects of prospective evaluations on vote choice and voters' projection.

economic conditions retrospectively. The ANES classifies the evaluations into five categories, and this study codes them orderly: much better = 4, somewhat better = 3, about the same = 2, somewhat worse = 1, much worse = 0. According to the economic voting theory, the economic evaluation variables are positively associated with the dependent variable: voting for incumbent candidates.

In the cognitive heterogeneity theory, political sophistication is a conditional variable influencing economic voting. To measure political sophistication, this study counts correct answers to the questions about political facts in the ANES surveys. This measure of political knowledge is widely used and supported by scholars as a proper indicator to measure political sophistication (Zaller 1992; Jacoby 1995; Delli Carpini and Keeter 1993; Gomez and Wilson 2001; Godbout and Bélanger 2007).

The 1992 ANES survey includes six questions about identifying political figures and two questions about answering the majority party in Senate and the House. In the 1996 ANES survey, thirteen questions are selected to measure political sophistication. Four questions are identifying political figures, two questions are recalling the names of candidates who run for the House of Representatives, two questions are answering the majority party in Senate and the House, and four questions are identifying major news network anchors' names. In the 2004 ANES survey, this study selects six questions to measure political sophistication: four questions about identifying political figures and two questions about answering the majority party in Senate and the House. Political sophistication is

coded as the number of correct answers. Hence, higher values in this variable mean better political knowledge.

Even though citizens tend to vote for candidates according to their evaluations of economic conditions, economic voting is not the only theory that explains individual vote choice. Voters often cast ballots according to their policy preferences: issue/policy voting (Page and Brody 1972; Lewis and King 1999). Hence, this study controls the effects of voters' policy preferences on vote choice.

In order to consider issue voting, this study measures the distances between voters' issue positions and incumbent candidates' issue positions perceived by voters.<sup>6)</sup> According to the issue voting theory, voters will vote for the candidate who shares the most similar issue preferences with them. In this study, three issues (social spending, defense spending, and racial issue) are selected. According to the issue voting theory, the distance is negatively related to the dependent variable (Enelow and Hinich 1984). If voters perceive that incumbent candidates' issue positions are away from their issue positions compared to challengers' issue positions, they are less likely to vote for incumbent candidates.

The ANES surveys include questions about social and welfare spending in 1992, 1996, and 2004. The ANES asks respondents about their issue positions (range from 1 to 7) and candidates' issue

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6) Unlike the conventional argument of issue voting, Rabinowitz and MacDonald (1989) maintain that direction matters rather than proximity when citizens consider issues to vote. However, Lewis and King (1999) show that it is very difficult to verify the direction and proximity models in issue voting with statistical methods and empirical data. This study follows the conventional manner of testing issue voting.

positions (range from 1 to 7). The issue position distance variable is calculated by measuring the difference in the absolute distances between voters' issue positions and their perceptions of incumbent candidates' issue positions and between voters' issue positions and their perceptions of major challengers' issue positions.<sup>7)</sup> As the difference increases, voters are less likely to vote for incumbent candidates.

Respondents' racial attitudes and their perceptions of candidates' racial attitudes are included in the 1996 and 2004 ANES. However, in 1992 the ANES does not include questions about respondents' perceptions of candidates' racial attitudes. Hence, in the 1992 election, the racial attitude variable means respondents' attitudes toward racial issues. In this variable, larger values mean more conservative attitudes (agree with the statement that blacks should help themselves).

Besides the variables, this study includes partisan, socioeconomic, and demographic variables in the following models. They are voters' partisanship, ideology, education, income, gender, age, race, and region. Partisanship and ideology are measured by utilizing the 7 point scale summary items in the ANES (0=strong Republican/conservative to 7=strong Democrat/liberal). The education variable ranges from 0 (8th grade or lower) to 6 (advanced degree). Income is measured by using the family income questions in the ANES. Age is measured as year. Gender, race, and region are coded as a dichotomous variable (male = 1, female = 0. whites = 1,

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7) Issue Position Difference = |Voter's Position - Incumbent Candidate's Position| - |Voter's Position - Challenger's Position|

otherwise = 0. the south = 1, otherwise = 0).

## Models and Methods

The dependent variable is individual vote choice in this study. Because this variable is dichotomous (1=vote for incumbent candidates, 0=vote for challengers), the Probit model is used to test the cognitive heterogeneity theory. The cognitive heterogeneity theory is that political sophistication conditions the effects of economic evaluations on the probability of voting for incumbent candidates. To examine the conditional effects of political sophistication, this study applies interaction models. A baseline model is introduced below:

*Baseline Model :*

$$\begin{aligned} \text{Vote Choice}_i = & \beta_0 + \beta_1 \text{Sociotropic Evaluation}_i \\ & + \beta_2 \text{Pocketbook Evaluation}_i \\ & + \beta_3 \text{Political Sophistication}_i \\ & + \beta_j \text{Control Variables} + \epsilon_i \end{aligned}$$

This model does not include any interaction variables. This model will show whether or not economic voting is present in the three elections. The following model is to estimate the conditional effects of political sophistication on economic voting.

*Cognitive Heterogeneity Model :*

$$\begin{aligned} \text{Vote Choice}_i = & \alpha_0 + \alpha_1 \text{Sociotropic Evaluation}_i \\ & + \alpha_2 \text{Pocketbook Evaluation}_i \\ & + \alpha_3 \text{Political Knowledge}_i \\ & + \alpha_{13} \text{Socio}_i^* \text{PK}_i + \alpha_{23} \text{Pocket}_i^* \text{PK} \\ & + \alpha_j \text{Control Variables}_i + u_i \end{aligned}$$

In this model the economic evaluation (“Socio” and “Pocket”) variables are interacted with the political knowledge (PK) variable. From these interactions, we can observe whether or not political sophistication conditions economic voting. If it conditions, the results also will illustrate how political sophistication influences sociotropic and pocketbook economic voting.

As Brambor, Clark, and Golder (2005) point out, interaction effects are difficult to comprehend only by reading regression coefficients. Even though interaction terms are statistically insignificant, for instance, it does not necessarily mean that there is no conditional effect. For instance, we can assume a simple Probit model:

$$E[y|x_1, x_2, X] = \Phi(\beta_1 x_1 + \beta_2 x_2 + \beta_{12} x_1 x_2 + X\beta) = \Phi(\bullet).$$

In this model, the interaction effect is:

$$\frac{\partial^2 \Phi(\bullet)}{\partial x_1 \partial x_2} = \beta_{12} \Phi'(\bullet) + (\beta_1 + \beta_{12} x_2)(\beta_2 + \beta_{12} x_1) \Phi''(\bullet).$$

If the interaction term ( $\beta_{12}$ ) is zero, the interaction effect will be  $\beta_1\beta_2\Phi''(\cdot)$ . In other words, even though the interaction term is not statistically significant, it does not necessarily mean that conditional effects are equal to zero or statistically insignificant. As Brambor, Clark, and Golder (2005) suggest, this study uses statistical simulations to examine the conditional effects.<sup>8)</sup> Since regression coefficients from the Probit model do not have substantial meanings, this study presents marginal effects from the Probit regression. The following section introduces the regression and simulation results.

## Statistical Results

Table 1 contains the Probit regression results based on the baseline model. The table presents marginal effects and standard errors in parentheses. Also, the table shows the probability changes in the dependent variable (voting for incumbent candidates) from the minimum values to the maximum values of the independent variables.<sup>9)</sup>

According to the results in Table 1, voters' sociotropic economic evaluations significantly explain their vote choice in the 1992, 1996, and 2004 presidential elections. For instance, if other conditions are equal and a voter changes his/her evaluations of the national economy from "Much Worse" to "Much Better" in the 1992 election, his/her probability of voting for George H.W. Bush increases about

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8) In simulations, the control variables are set at their means. For more information about simulations, please see Brambor, Clark, and Golder (2005).

9) The other variables' values are set at their means.

30 percent. The effects of voters' evaluations of the national economy are even larger in the 1996 and 2004 elections. The sizes of the "Min-Max" effects are .51 and .46 in 1996 and 2004. The results are generally consistent with prior economic voting studies (e.g., Gomez and Wilson 2001; Lewis-Beck and Nadeau 2011).

Table 1. Economic Voting in the 1992, 1996, and 2004 Presidential Elections

Variables	1992		1996		2004	
	Marginal	Min-Max	Marginal	Min-Max	Marginal	Min-Max
Sociotropic	.06** (.01)	.30	.13** (.03)	.51	.12** (.04)	.46
Pocketbook	.04** (.01)	.18	.03 (.02)	.13	-.00 (.04)	-.02
Partisanship	.10** (.01)	.58	-.17** (.01)	-.81	.20** (.02)	.87
Ideology	.02* (.01)	.16	-.05** (.01)	-.32	.06* (.03)	.35
Social Spending	-.05** (.01)	.62	-.07** (.01)	.93	-.12** (.02)	.94
Defense Spending	-.05 (.01)	.67	.00 (.01)	.22	-.02 (.01)	.32
Racial Issue	.00 (.01)	-.02	-.05** (.01)	.57	-.05** (.02)	.62
Education	.01 (.01)	.08	-.01 (.01)	-.11	-.06** (.02)	-.40
Income	.00 (.00)	.09	.00 (.00)	.07	.00 (.00)	.17
Gender	-.09** (.03)	-.09	.03 (.05)	.03	-.25** (.08)	-.25
Age	.002** (.001)	.17	.00 (.00)	.06	.00 (.00)	.21

Variables	1992		1996		2004	
	Marginal	Min-Max	Marginal	Min-Max	Marginal	Min-Max
Race	.04 (.05)	.04	-.22** (.06)	-.22	.08 (.09)	.08
Region	-.03 (.03)	-.03	-.00 (.05)	-.00	.11 (.09)	.11
Constant	-3.02** (.36)		1.56 (.33)		-2.52** (.53)	
N	1032		939		519	
Pseudo R2	.53		.61		.72	
Log-Likelihood	-305.94		-251.10		-97.71	
% of Reduction in Error	62.82		75.30		81.56	

Note: The number in the table are marginal effects and standard errors (in parentheses). Statistical significance: \*\* < .05, \* < .10.

Unlike the sociotropic variable, the pocketbook variable shows inconsistent results across the three elections in Table 1. In the 1992 presidential election, voters' pocketbook evaluations significantly affect their vote choice. If a voter changes his/her evaluations of personal economic conditions from the lowest to the highest, his/her probability of voting for the incumbent candidate increases about 18 percent in the 1992 election. However, voters' evaluations of their pocketbook conditions do not significantly explain their vote choice in the 1996 and 2004 presidential elections. Prior research (e.g., Lewis-Beck and Paldam 2000; MacKuen, Erikson, and Stimson 1992) also shows that the U.S. citizens do not vote personal economic conditions in general.<sup>10)</sup>

Since Campbell et al. (1960), party identification is considered as one of the most important variables explaining individual vote choice in the U.S. Expectedly, the party identification variable shows statistical significance. The probability changes by switching partisanship are dramatic in all three elections. For instance, the probability of voting for George W. Bush increases about 87 percent if one switches his/her party identification from “Strong Democrat” to “Strong Republican” (and vice versa) in the 2004 election. Alongside with partisan voting, ideological voting is also observed in the three elections.

Issue variables except the defense spending variable generally significantly explain the dependent variable.<sup>11)</sup> As the distances between voters’ issue positions and incumbent candidates’ issue positions relatively become wider, the probability of voting for incumbent candidates tends to decrease in all three elections.

The results in Table 1 show that the baseline model is comparable with prior economic voting literature (e.g., Lewis-Beck and Paldam 2000; Gomez and Wilson 2001; Lewis-Beck and Nadeau 2011). Based on this model, the cognitive heterogeneity model is tested, and the test results are introduced in the following section.

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10) In the 1992 election, the economy was a hot-button issue. The Clinton camp primed the issue of the economy including pocketbook conditions, which was successful eventually according to the election results and the results in Table 1. According to prior research (e.g., Hetherington 1996), voters seemed to underestimate national economic conditions in the 1992 election, which also contributed to Bush’s failure.

11) Note that in the 1992 election, the racial issue variable is only based on respondents’ attitudes toward racial issues because of lack of data.

## Cognitive Heterogeneity Model

Does political knowledge condition economic voting? If it does, how does political knowledge condition economic voting? Table 2, Figure 1, and Figure 2 offer some answers to the questions. Table 2 contains the Probit regression results from the cognitive heterogeneity model. Major control variables show statistical significance and expected signs in Table 2, which are quite comparable with the results in Table 1.

Table 2. Economic Voting and Political Sophistication

Variables	1992	1996	2004
	Marginal	Marginal	Marginal
Sociotropic	.06 (.03)	.12** (.05)	.11 (.10)
Pocketbook	.01 (.02)	-.01 (.04)	.04 (.08)
Political Knowledge	-.03* (.01)	-.01 (.02)	-.02 (.07)
Sociotropic*P.K.	.00 (.00)	.00 (.00)	.00 (.02)
Pocketbook*P.K.	.00 (.00)	.00 (.00)	-.02 (.02)
Partisanship	.10** (.01)	-.17** (.01)	.20** (.03)
Ideology	.02** (.01)	-.05** (.01)	.09** (.04)
Social Spending	-.05** (.01)	-.07** (.01)	-.12** (.02)
Defense Spending	-.06** (.01)	-.00 (.01)	-.01 (.01)
Racial Issue	-.00 (.01)	-.05** (.01)	-.06** (.02)

Variables	1992	1996	2004
	Marginal	Marginal	Marginal
Education	.01 (.01)	-.02 (.01)	-.01 (.03)
Income	.00 (.00)	.00 (.00)	.00 (.00)
Gender	-.08** (.03)	.03 (.05)	-.19** (.09)
Age	.002** (.001)	.00 (.00)	.00 (.00)
Race	.04 (.05)	-.22** (.06)	.09 (.10)
Region	-.03 (.03)	.00 (.05)	.10 (.10)
Constant	-2.77** (.40)	1.88** (.44)	-3.29 (.75)
N	1032	939	473
Pseudo R2	.53	.61	.73
Log-Likelihood	-303.78	-249.35	-86.83
% of Reduction in Error	62.53	76.02	83.47

Note: The number in the table are marginal effects and standard errors (in parentheses). Statistical significance: \*\* < .05, \* < .10.

In Table 2 the interaction variables do not show statistical significance. However, as explained in the previous section, it does not necessarily mean that there is no conditional effect of political knowledge on economic voting. According to statistical studies (Brambor, Clark, and Golder 2005; Ai and Norton 2003), conditional effects from interaction models can be better examined by utilizing graphical methods. This study uses statistical simulations to examine the conditional effects of political knowledge on sociotropic and pocketbook voting (Brambor, Clark, and Golder 2005). Figure 1 and

Figure 2 contain the simulation results.

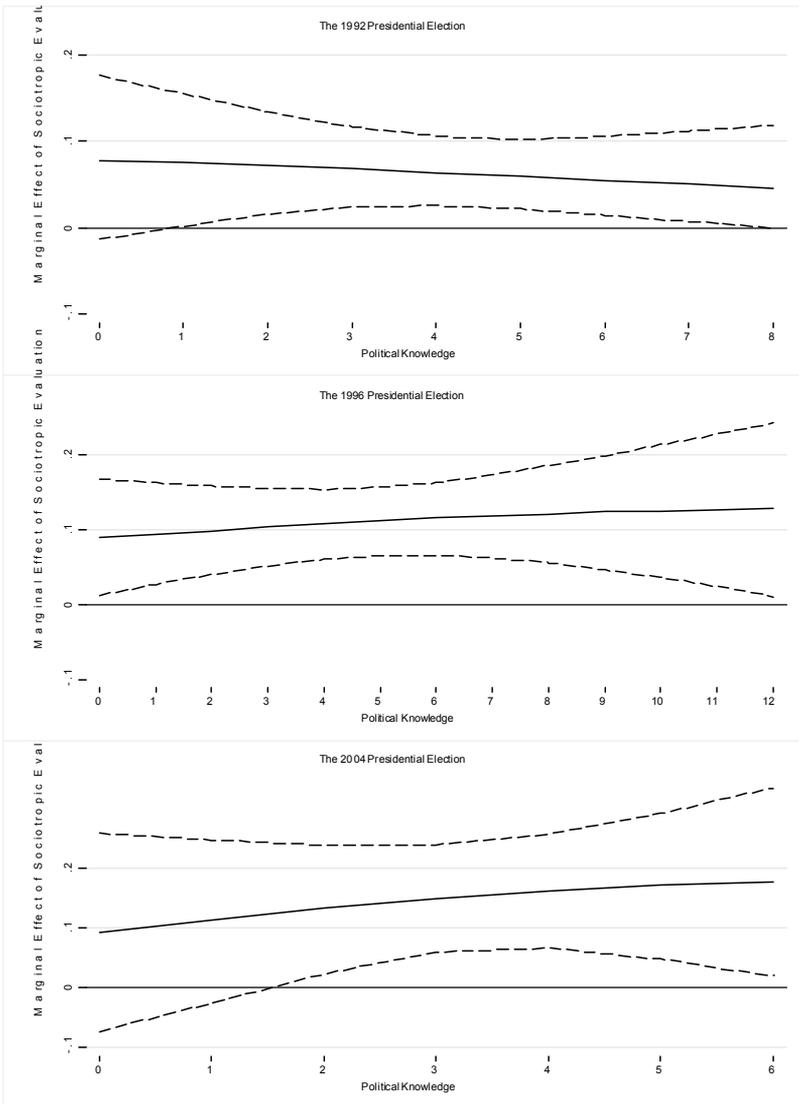


Figure 1. Political Knowledge and Sociotropic Voting

Figure 1 shows how political knowledge conditions the effects of sociotropic evaluations on vote choice. The figure contains three panels. The top, middle, and bottom panels illustrate the conditional effects of political knowledge on sociotropic voting in the 1992, 1996, and 2004 elections. In each panel, the X axis represents the level of political knowledge, and the Y axis denotes the marginal effects of sociotropic economic evaluations on vote choice. The solid line in each panel illustrates changes in the marginal effects, and the dashed lines represent the 95 percent confidence interval of the effects.<sup>12)</sup>

According to the results of Figure 1, the marginal effects of sociotropic evaluations change as the level of political knowledge increases, and the effects are statistically significant in general. However, the directions of the conditional effects are inconsistent across the three elections. In the 1996 and 2004 elections, the marginal effects of sociotropic evaluations on vote choice tend to increase as the level of political knowledge increases. The effects are statistically significant overall. That is, voters tend to rely more on their sociotropic evaluations as their political knowledge increases. However, in the 1992 election, the effects tend to decrease as political knowledge increases.

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12) The dashed lines are curved. This is partially because more observations are located in the middle level of political knowledge.

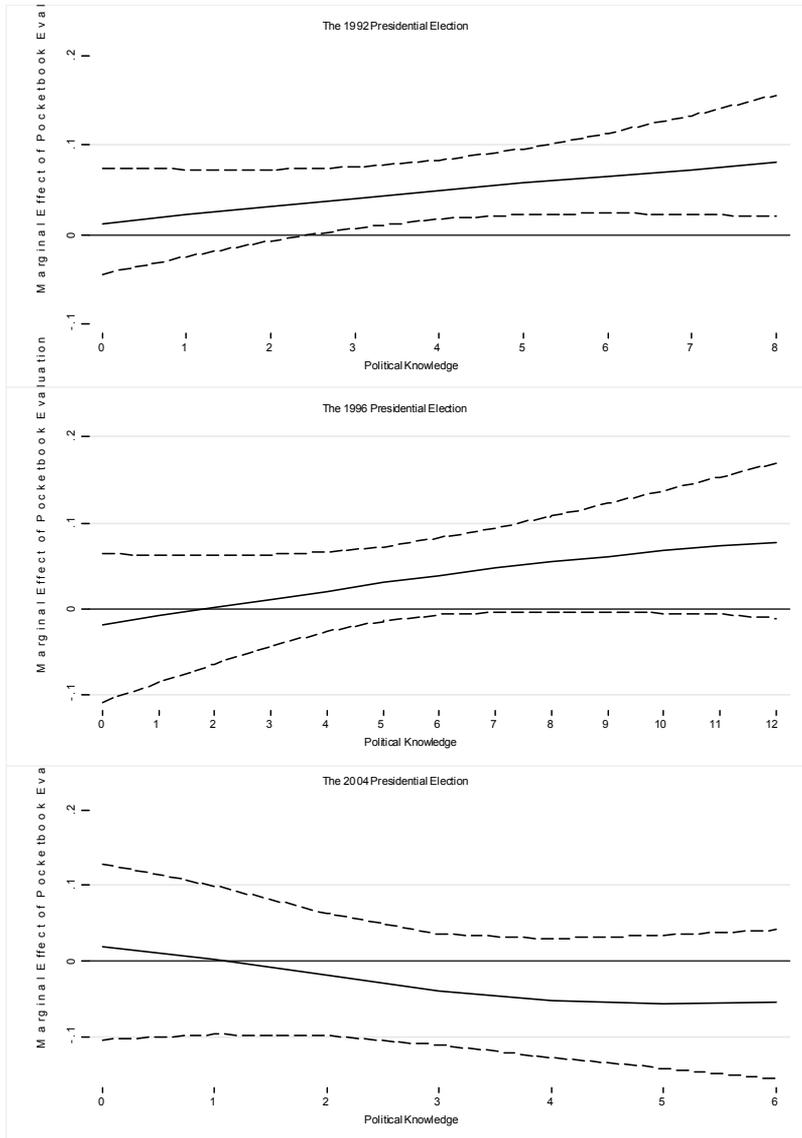


Figure 2. Political Knowledge and Pocketbook Voting

The simulation results in the top panel support Gomez and Wilson's argument (2001, 2003) that political knowledge negatively conditions sociotropic voting. However, according to the middle and bottom panels, political knowledge positively conditions sociotropic voting, which is comparable with the conventional argument that sociotropic voting is more prominent among political sophisticates (e.g., Fiorina 1981; Mutz 1992; Delli Carpini and Keeter 1996; Goren 1997). In sum, it is difficult to assert how political knowledge conditions sociotropic voting even though it is certain that political knowledge influences the effects of sociotropic evaluations on vote choice.

While Figure 1 portrays the relationship between political knowledge and sociotropic voting, Figure 2 illustrates how political knowledge conditions pocketbook voting. Figure 2 does not provide a clear picture of the relationship between pocketbook voting and political knowledge. The directions of conditional effects of political knowledge on pocketbook voting are inconsistent across the three elections, and the effects are generally insignificant.

In the 1992 election (the top panel), the marginal effects of pocketbook evaluations on vote choice increase as the level of political knowledge increases. The effects are significant in general. The results in this panel support Gomez and Wilson's argument (2003, 2007) that the politically knowledgeable tend to vote for candidates according to their evaluations of personal economic conditions. The pattern is also observed in the 1996 election. However, the effects are not statistically significant in 1996.

In contrast to the top and middle panels, the bottom panel shows

that political knowledge negatively conditions pocketbook voting. Conventionally, scholars (e.g., Fiorina 1981; Mutz 1992; Delli Carpini and Keeter 1996; Goren 1997) speculate that the politically less sophisticated are more likely to vote for candidates according to their personal economic conditions. However, like the middle panel, the effects are not statistically significant in the bottom panel.

The middle and bottom panels show that the effects of egocentric evaluations are statistically insignificant. That is, political knowledge is not a significant variable explaining pocketbook voting. This may be caused by the fact that pocketbook voting is not significantly observed in the 1996 and 2004 elections. Note the fact that pocketbook evaluations significantly influence vote choice in the 1992 election.<sup>13)</sup> In sum, it is difficult to assert that political knowledge significantly conditions pocketbook voting. Furthermore, according to the results in Figure 1 and Figure 2, political knowledge is not a consistent variable that influences economic voting.

## Conclusion

One of the main purposes of this research note is to examine whether or not political sophistication conditions economic voting. Unlike previous studies (e.g., Gomez and Wilson 2001, 2003; Godbout and Bélanger 2007), this study examines competing arguments around the effects of political sophistication on economic

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13) Also, note that sociotropic voting is observed in all three elections, and political knowledge conditions sociotropic voting in the elections.

voting by utilizing interaction models and statistical simulations.

Conventionally, scholars (e.g., Fiorina 1981; Delli Carpini and Keeter 1996) argue that political sophisticates tend to vote for candidates according to their evaluations of the national economy. In contrast, the politically less sophisticated are more likely to rely on their pocketbook evaluations when they vote for candidates. However, Gomez and Wilson (2001, 2003) contend that political sophisticates vote pocketbook conditions while the politically less sophisticated vote for candidates according to their evaluations of the national economy. To examine the competing arguments, this study analyzes individual vote choice in the 1992, 1996, and 2004 U.S. presidential elections.

The empirical results in this study are mixed. Regarding sociotropic voting, political knowledge generally significantly conditions the effects of sociotropic economic evaluations on vote choice. As their level of political knowledge increases, voters tend to rely more on their evaluations of national economic conditions in the 1996 and 2004. However, the opposite pattern is observed in the 1992 election. That is, voters tend to rely more on their sociotropic evaluations as their level of political knowledge decreases in the 1992 election.

The inconsistent results are more prominent in pocketbook voting. Only in the 1992 election, political knowledge significantly conditions pocketbook voting. In this election, political sophisticates tend to vote for candidates according to their personal economic conditions. However, in the 1996 and 2004 elections, political knowledge does not significantly affect pocketbook voting. Also, the directions of the effects vary across the three elections.

In sum, the empirical results in this study illustrate that political knowledge significantly conditions sociotropic voting. However, how political sophistication conditions sociotropic voting is not entirely clear. Regarding pocketbook voting, the conditional effects of political sophistication on vote choice are more controversial. According to the results, political sophistication is not a stable variable explaining economic voting. If political sophistication is not a stable variable explaining the variation, there may be other stable variables that explain the variation. The next step of this study will be searching the variables that explain the variation in economic voting.

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## Abstract

# **Cognitive Heterogeneity and Economic Voting: Does Political Sophistication Condition Economic Voting?**

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This research examines the influence of political sophistication on economic voting. Whether or not political sophistication affects economic voting is controversial. Empirical studies show mixed evidence regarding the topic. This study points out that methodological approaches in previous empirical studies could cause the mixed results. By analyzing data from the 1992, 1996, and 2008 presidential elections in the United States with interaction models, this study reveals that political sophistication conditions sociotropic economic voting. However, the conditional effects vary across the three elections. In contrast, political sophistication does not condition pocketbook voting in general.

## **Key Words**

Economic voting, sociotropic voting, egocentric voting, cognitive heterogeneity, political sophistication, political knowledge