Making Sense of the Noise in Personal Financial Evaluations: Reconsidering the Evidence of Pocketbook Economic Voting

Harvey D. Palmer
Department of Political Science
University of Mississippi
hpalmer@olemiss.edu

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Abstract

While few students of voting behavior doubt the electoral relevance of the economy, a perplexing dichotomy exists between aggregate-level and individual-level evidence of economic voting. More specifically, the general lack of convincing individual-level evidence of pocketbook voting has led to theoretical debate about the nature of the causal process underlying aggregate-level models of economic voting. This debate ranges from arguments that voters largely ignore their personal finances and focus instead on national economic conditions (e.g., Kiewiet 1983) to claims that individual-level analyses of economic voting are plagued by measurement error and hence do not demonstrate the absence of a pocketbook relationship (e.g., Kramer 1983).

The present essay addresses this debate by reconsidering the individual-level evidence of pocketbook voting. My statistical analysis improves upon previous research (e.g., Markus 1988, 1992) by applying superior methods and a novel approach to modeling the measurement error in survey evaluations of personal financial situation. More specifically, it applies three versions of the two-stage conditional maximum likelihood estimator developed by Rivers and Vuong (1989). Each version adopts a different theoretical perspective on the nature of measurement error in economic evaluations. Also, two of the applications adapt the Rivers-Vuong method in a novel manner to account for "distinct" correlated (systematic) measurement error.

Using ANES data from 1956-1996, my statistical analysis reveals that retrospective and prospective pocketbook concerns influence voting in American presidential elections. Accounting for measurement error strengthens the pocketbook voting relationship with the strongest effects occurring under the assumption of systematic error due to partisan rationalization and life-cycle effects as theorized by Kramer (1983). Furthermore, my analysis suggests that Markus (1988) understated the electoral importance of pocketbook considerations relative to sociotropic evaluations, which further validates Kramer's (1983) theory concerning the nature of pocketbook economic assessments.

Introduction

The economic voting literature provides some of the strongest evidence of policy-motivated voting. Some of this research characterizes economic voters as forward-looking and highly sophisticated (e.g., MacKuen, Erickson, and Stimson 1992; Alesina, Londregan, and Rosenthal 1993). Despite focusing on national economic performance, these sophisticated economic voters are ultimately interested in their personal financial well-being (Suzuki and Chappell 1996). However, this image of the policy-motivated economic voter has been criticized as unrealistic. Some research questions whether economic voters are truly forward-looking, contending instead that much, if not all, of the evidence of prospective economic voting is actually evidence of retrospective voting in disguise (Clarke and Stewart 1994; Norpoth 1996). Similarly, the poor performance of individual-level models of economic voting, especially compared to their aggregate-level counterparts, casts doubt on the extent of voter sophistication and whether pocketbook concerns actually underlie the economic voting relationship (e.g., Kiewiet 1983).

In this essay, I reconsider the individual-level evidence of economic voting. More specifically, I extend and improve upon the research of Markus (1988, 1992) that demonstrates the existence of "pocketbook" (or egocentric) voting at the individual level. In response to Kramer's (1983) argument that measurement error plagues individual-level models of economic voting, Markus employed an instrumental-variables approach to purge measurement error from evaluations of personal financial situation (PFS). Using this purged measure in an individual-level model estimated with ANES data, he found evidence of retrospective pocketbook voting in American presidential elections for 1956-1988.

My analysis extends and improves upon Markus' analysis in several ways. First, I apply an estimation method proposed by Rivers and Vuong (1988) rather than the traditional instrumental-variables approach adopted by Markus. This method accounts for measurement error in a more general manner and incorporates a direct test of the hypothesis that PFS evaluations are endogenous. Accounting for the "noise" in measures of economic evaluations has recently received considerable scholarly attention (e.g., Hetherington 1996; Wlezien, Franklin, and Twiggs 1997; Duch, Palmer, and Anderson 2000).

Second, I relax Markus' assumption that the measurement error in PFS evaluations is random. Kramer's (1983) original argument suggests that the measurement error is systematic rather than random, since it claims that only government-induced changes in personal finances should matter and that all remaining individual-level variation constitutes “noise”. A similar perspective on systematic measurement error is that PFS evaluations are contaminated by partisan rationalization—members of the incumbent party are more optimistic about the economy while members of the opposing party are more negative (Wlezien, Franklin, and Twiggs 1997). My analysis compares models estimated with three different specifications of the measurement error: random (as adopted by Markus), systematic according to Kramer’s argument, and systematic due to life-cycle effects and partisan rationalization alone.

Finally, I investigate the existence of heterogeneity in the evidence of pocketbook voting. Markus estimates a single pooled model of retrospective pocketbook voting in presidential elections. My analysis considers whether the estimated pocketbook relationship varies over time and with political sophistication. My analysis also investigates whether a prospective pocketbook relationship exists, consistent with aggregate-level models that assume rather sophisticated and forward-looking behavior on the part of voters (e.g., MacKuen, Erickson, and Stimson 1992).

Using ANES data from 1956-1996, my statistical analysis reveals that both retrospective and prospective pocketbook concerns influence voting in American presidential elections. Accounting for measurement error strengthens the pocketbook voting relationship with the strongest effects occurring when specifying the measurement error as systematic, consistent with Kramer’s (1983). Furthermore, my analysis indicates that Markus (1988) understated the electoral importance of pocketbook concerns relative to sociotropic evaluations by assuming that the measurement error in pocketbook assessments is purely random. This finding further validates Kramer’s (1983) theory concerning the nature of pocketbook assessments. Finally, I find considerable heterogeneity in pocketbook voting including some intriguing variation over time and differences in the effects of retrospective and prospective assessments. Additionally, the evidence of pocketbook voting proves strongest among political sophisticates.

Sophistication of Economic Voters

Extensive empirical research has produced a dichotomy in the evidence of economic voting. Using aggregate-level data, numerous studies have established the existence of a statistical relationship between economic conditions and political support for the incumbent government (e.g. Kramer 1971; MacKuen, Erickson and Stimson 1992; Powell and Whitten 1993; Palmer and Whitten 1999). On the basis of the macro-level evidence alone there is little reason to doubt the relevance of economic voting. Individual-level studies using survey data, however, have produced only mixed evidence that voters consider economic conditions when evaluating the incumbent (e.g., Fiorina 1978, 1981; Kinder and Kiewiet 1979, 1981; Lewis-Beck 1988). Moreover, the strongest survey evidence of economic voting suggests that voters primarily care about the condition of the national economy not their personal financial situation (e.g., Kiewiet 1983). This finding contradicts the egocentric theory posited by early macro-level research that national economic indicators matter because they are correlated with personal financial circumstances.[1]

The micro-macro dichotomy in economic voting research has broader relevance since it reflects a similar dichotomy in research on voter sophistication. Individual-level survey research has demonstrated that the public in general has low levels of political sophistication, lacking much knowledge of and interest in politics (e.g., Neuman 1986; Smith 1989). Commenting on this survey evidence, Converse (1970) characterized citizens as having non-attitudes. Due to citizens' low sophistication, survey measures of political preferences are often characterized as "noisy," containing considerable variation that is meaningless (i.e., independent of policy concerns).

This characterization of voter sophistication is largely consistent with the image of economic voters implied by individual-level analyses of economic voting. At their least sophisticated, economic voters are myopic and evaluate the incumbent government in a retrospective manner. They decide whether to reward or punish the incumbent on the basis of national economic conditions with little, if any, consideration of possible implications for future government policy and their own financial welfare (e.g., Norpoth 1996). MacKuen, Erickson and Stimson (1992) refer to such economic voters as "peasants." This image emphasizes the rational ignorance of economic voters due to the non-pivotal nature of voting in national

[1] Some scholars have proposed less direct links between national economic conditions and personal finances. In response to the altruistic implications of his results, Kiewiet (1983) suggests that voters care about their future real income, which they assume is more likely to grow under a government that has successfully managed the national economy (also see Suzuki and Chappell 1996). Similarly, formal political economy models of the government often assume that national economic growth is an indicator of government competence (e.g., Alesina, Londregan, and Rosenthal 1993).

elections and the trivial effect that elections generally have on the everyday lives of average citizens (e.g., Schumpeter 1950; Buchanan 1954). These characteristics make voting an expressive rather than instrumental act (Brennan and Buchanan 1984), so there is little reason for voters to engage in sophisticated comparisons of future policy outcomes under governments controlled by different parties.

This image of the unsophisticated economic voter is also consistent with research that finds that people vote and form policy preferences on the basis of symbolic attitudes, such as ideology and group membership, rather than self-interest (Sears et al. 1980; Brady and Sniderman 1985; Sniderman, Brody and Tetlock 1991). According to the "symbolic politics" perspective, the state of the economy serves as a heuristic that simplifies voting decisions for the largely uninformed and uninterested public.[2] In turn, evaluations of the national economy and personal finances are noisy perceptions influenced as much by partisanship, candidate evaluations and social status, as by objective economic conditions (Conover and Feldman 1986; Conover, Feldman and Knight 1987; Haller and Norpoth 1994; Wlezian, Franklin and Twiggs 1997; Duch, Palmer, and Anderson 2000).[3]

In contrast to individual-level analyses, macro-level findings tend to suggest that voters are well informed about the economy and make reasonably sophisticated voting decisions. At their most sophisticated, economic voters are policy-oriented and forward-looking. They make election decisions on the basis of the future implications that the policy positions of candidates or parties have for the national economy and their own personal welfare. These sophisticated economic voters not only employ past economic conditions and performance as information-economizing devices (Stigler 1973; Fiorina 1981; Alt and Chrystal 1983), but also incorporate current information when forming expectations about the incumbent's future performance.

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[2] Both proponents and opponents of the rational voter assumption presume the use of voting heuristics. They markedly differ, however, in their conceptions of the heuristics' role. The unsophisticated voter perspective treats partisanship and ideology as primarily psychological attachments and affective responses that influence electoral behavior due to voters' general apathy about politics (e.g., Campbell et al. 1960). In contrast, the sophisticated voter perspective conceives heuristics as information-economizing devices constructed from socioeconomic interests, policy positions and candidate evaluations, whose value is ultimately based on voter self-interest (e.g., Fiorina 1981; Enelow and Hinich 1984).

[3] This literature addresses the theoretical issues of whether economic evaluations are exogenous and whether self-interest drives economic voting. If voters are sophisticated, the economic voting relationship should satisfy these conditions.

MacKuen, Erickson and Stimson (1992) refer to such economic voters as "bankers." This image assumes that the mass public engages in rational expectations (Lucas and Sargent 1981; Alesina and Rosenthal 1989), or at least acts according to limited information rationality when making political decisions (Popkin 1991; Chrystal and Peel 1986). Hence, sophisticated economic voters consider the future consequences of present macroeconomic policies when choosing among candidates and parties (Chappell and Keech 1985). This image of the sophisticated voter is also consistent with the spatial voting model (Downs 1957; Enelow and Hinich 1984) and recent research on comprehensive political-economy models (Alesina, Londregan, and Rosenthal 1993; Freeman and Houser 1998).[4]

In this essay, I adopt a conception of voter sophistication that is less ambitious than "rational expectations" models but presumes more of the voter than traditional retrospective sociotropic models. I theorize that while some citizens may approximate rational expectations in their voting behavior, the majority of the public conforms to limited information rationality. My conception of voter sophistication is consistent with the claim that the average voter does not have sufficient incentive to thoroughly analyze the sources of macroeconomic performance and hence evaluates the incumbent government on the basis of information received from the mass media and opinion leaders.[5] Recent research demonstrates that the mass media shapes political discussion, public opinion and voting behavior (Bartels 1993; Mondak 1995; Hetherington 1996) and that uninformed voters can behave in a sophisticated manner using voting cues from informed voters (Lupia 1994).[6] There are limits, however, to how closely poorly informed voters can approximate "fully informed" behavior.[7] Hence, I do not believe that media

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[4] The research on comprehensive political-economy models has roots in the political business cycle literature. Initial political business cycle models implicitly assumed low sophistication among voters (e.g., Nordhaus 1975). A political business cycle can exist, however, in the presence of voter rationality, as demonstrated by Alesina (1987) and Rogoff (1990) who have developed alternative models that assume rational expectations. Suzuki (1992) even speculates that voter anticipation of incumbent behavior has produced a political cycle of growth expectations that induces governments to stimulate the economy in election years.

[5] MacKuen, Erickson and Stimson (1992) make a similar argument. For a critique of this argument when made in the context of justifying the rational-expectations assumption, see Clarke and Stewart (1994) and Norpoth (1996).

[6] Krause (1997) has shown, though, that economic news coverage does not influence the economic expectations of less sophisticated voters (i.e., those with less than a college degree).

[7] Note that insufficient incentive rather than insufficient intellect ultimately prevents citizens from conforming to rational expectations in their political behavior. The latter limitation is often

information is adequate to enable voters to act politically in accordance with rational expectations.

My conception of voter sophistication is generally consistent with empirical evidence of voter rationality. Previous research has largely failed in establishing that economic voters conform to rational expectations. Chappell and Keech (1985), Alesina and Rosenthal (1989), Suzuki (1991), Alesina, Londregan and Rosenthal (1993) all produce inconclusive results concerning the relative validity of rational versus naïve (or adaptive) specifications of economic voting.[8] Similarly, MacKuen, Erickson and Stimson's (1992) results have been questioned by Norpoth (1996) who claims that they demonstrate retrospective rather than prospective economic voting, and by Clarke and Stewart (1994) whose replication indicates that retrospective and prospective evaluations influence presidential approval equally.

This empirical evidence, however, is also consistent with less sophisticated images of the voter. Furthermore, the generally weak survey evidence of pocketbook economic voting leads one to question the extent of voter sophistication. Perhaps voters are not capable, even with the aid of cheap media information and voting heuristics, to evaluate the incumbent government according to their self-interest. Consistent with the "symbolic politics" perspective, affective responses rather than utilitarian considerations might account for sociotropic economic voting.

If limited information rationality accurately characterizes the sophistication of average voters, their self-interest should contribute to the economic voting relationship. In other words, the measurement error in evaluations of personal financial situation should constitute an empirical nuisance to finding evidence of pocketbook voting, as Kramer (1983) argues, rather than an indication that no causal relationship exists. Markus' (1988, 1992) research indicates that the measurement error is simply noise and that a pocketbook voting relationship exists

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raised as a critique of mathematical models and Feddersen and Pesendorfer (1999: 392) state the standard response "that mathematical models do not claim to capture the actual thought process of decision makers but aspire simply to predict behavior." This response, though, ignores the former limitation that voters do not have sufficient motivation to act in the strategic manner proposed by most mathematical models. Moreover, what distinguishes rational choice (mathematical) and public choice models of political behavior is often the emphasis placed on this limitation (e.g., see Austin-Smith 1989). Public choice models generally assume that rational ignorance is the optimal behavior (state) for voters. Hence, they focus on government failure and rent-seeking behavior. In contrast, rational choice models tend to minimize the effects of rational ignorance (e.g., Feddersen 1992).

[8] A notable exception here is Suzuki and Chappell (1996).

beneath it. The econometric analysis presented here attempts to strengthen the implications of Markus' research by demonstrating the extent to which evidence of pocketbook voting is not specific to a particular time period or to retrospective assessments and generalizes across specifications of the measurement error and voting for different elected offices.

Measurement Error and the Endogeneity of Economic Evaluations

Public ignorance about politics undermines representative democracy in two ways. First, non-attitudes indicate that voters lack well-defined policy preferences and cannot always identify their self-interests with respect to specific policies. Consequently, changes in voting behavior do not necessarily reflect shifts in mass opinion on policy issues, thereby weakening the link between elections and government policy-making. Second, to the extent that voters are uncertain about policy outcomes, they cannot accurately evaluate government performance. If uncertain voters form evaluations on the basis of subjective non-policy considerations, such as partisan attitudes, rather than relevant objective factors, citizens' evaluations of policy outcomes might change in the absence of meaningful changes in government policy.

Some recent research debates the relevance of non-attitudes and low levels of information by arguing that citizens can employ heuristics to behave as if fully informed when voting (e.g., McKelvey and Ordeshook 1985, 1986; Lupia and McCubbins 1998). Other studies argue that heuristics enable citizens to infer their own preferences on specific policies (Brady and Sniderman 1985; Conover and Feldman 1989; Sniderman, Brody, and Tetlock 1991; Miller, Wlezien, and Hildreth 1991).[9] In essence, such research credits heuristics with the ability to severely limit the influence of subjective considerations and random fluctuations on public attitudes about government policy and performance.

Similarly, a widely accepted explanation for the inconsistency between aggregate-level and individual-level findings in research on public opinion and representation is the high degree of "noise" or random variation associated with survey data (Converse 1990; Page and Shapiro 1992; Stimson, MacKuen, and Erikson 1995). According to this explanation, voters as individuals are unsophisticated and hold inconsistent policy opinions but in aggregate are rational since their average policy opinions vary systematically with their collective interests.

[9] Bartels (1996) provides an excellent review of the research on the electoral relevance of political information.

Thus, evidence that government policy responds to aggregate shifts in public opinion demonstrates the effectiveness of democratic representation despite the existence of noisy opinions and non-attitudes at the individual level.

Bartels (1996) demonstrates, however, that voters' decision calculus differs with their level of information. Bartels finds that poorly informed voters do not behave as if they were fully informed. Rather, actual and "fully informed" vote probabilities for American presidential elections from 1972-1992, in which low-cost cues and voting heuristics were presumably abundant, differ by ten percentage points, on average. The fact that this informational difference is systematic—favoring incumbent presidents and Democratic candidates—rather than random implies that aggregate outcomes are unlikely to conform to the "complete information majority preferred alternative," as suggested by Lupia (1992). Similarly, Hetherington (1996) demonstrates that American voters in 1992 evaluated the national economy differently depending on their level of media usage, though this result does not extend to the 1984 and 1988 presidential elections.[10] Consistent with Hetherington's 1992 results, Duch, Palmer, and Anderson (2000) present evidence that casts doubt on the objectivity and exogeneity of national economic evaluations. Using ANES data from 1980-1998, they demonstrate that retrospective and prospective evaluations of the national economy vary systematically with partisanship, political sophistication, media exposure, personal financial experiences, and demographic characteristics.

The research of Bartels, Hetherington, and Duch, Palmer, and Anderson reveals that public opinion varies systematically with subjective, non-policy considerations. But are evaluations of personal financial situation shaped by similar sources of "noisy" variation? As stated earlier, survey research has produced only mixed evidence of pocketbook economic voting at the individual level despite generally strong evidence of a statistical relationship at the aggregate level between objective economic conditions and election outcomes. This dichotomy poses a paradox since early studies attributed the aggregate-level relationship to egocentric economic voting by individuals (e.g., Kramer 1971). Kinder and Kiewiet (1979, 1981) contend, however, that sociotropic, rather than pocketbook, concerns drive economic voting (also see Kiewiet 1983). According to their argument, the public focuses on the welfare of the entire country rather than their personal finances when evaluating economic performance. This image of economic voters implies that they are either somewhat altruistic or not particularly sophisticated.[11]

Kramer (1983) offers a different explanation, however, arguing that the dichotomy in evidence is an artifact of measurement error that contaminates individual-level evaluations of personal financial situation. According to Kramer, only government-induced changes in personal finances matter to the economic voting relationship. Hence, other factors influencing personal income, such as life-cycle changes, state of health, and employment choices, represent sources of measurement error.

Adopting the general thrust of Kramer's argument, Markus (1988, 1992) estimates an individual-level economic voting model employing an instrumental-variables method to purge measurement error from evaluations of personal finances. Unlike Kramer, though, Markus does not try to extract government-induced changes in personal financial situation, choosing to include "politically irrelevant" factors, such as demographic characteristics, employment status and partisanship, in the set of instrumental variables. Essentially, Markus assumes that the measurement error is random while Kramer's argument suggests that it is actually systematic. As Markus (1988: 140) notes, a strict interpretation of Kramer's (1983) position would treat all cross-sectional variation in perceptions of national economic conditions as "perceptual noise" (Kramer's term, p. 104). Markus (1988: 141) debates, however, Kramer's premise that only government-induced changes in personal income are relevant to electoral politics, characterizing it as an "inaccurate depiction of reality" whose "plausibility is an empirical matter." Markus also suggests that we should expect to observe individual-level variation in objective assessments of economic performance due to differences in the emphasis placed on different economic indicators—unemployment versus inflation—and the credit attributed to the incumbent government for economic outcomes.[12]

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[10] In contrast to the standard "information" hypothesis, Hetherington (1996) argues that exposure to media information reduced the accuracy of voters' evaluations, making them more negative, contrary to positive economic indicators, and thereby contributing to George Bush's defeat.

[11] Another possibility is that sociotropic evaluations are proxies for evaluations of government competence (e.g., Palmer and Whitten 2000).

[12] Markus' argument here is not entirely inconsistent with the spirit of Kramer's characterization of economic evaluations. Adopting a less strict interpretation of Kramer's argument, socioeconomic differences in personal finances would matter to the extent that government

Kramer's theoretical argument suggests that additional sources of systematic variation in economic evaluations exist, beyond the informational differences identified by Hetherington (1996). Furthermore, Kramer (1983: 95) contends that "we are ultimately interested only in how real economic outcomes affect voting decisions and not in economic rhetoric or perceptual imagery." For the purposes of the present analysis, the crucial issue is whether a pocketbook economic voting relationship exists beneath the noise in evaluations of personal financial situation. A lesser issue is whether Markus' specification of the measurement error as random is superior to (i.e., a more accurate "depiction of reality" than) specifications that treat the measurement error as systematic, either on the basis of Kramer's theoretical argument or a partisan rationalization argument.

New Evidence of Pocketbook Voting

In order to reconsider the evidence of pocketbook economic voting, I estimated models of voting for the incumbent party in presidential elections. The dependent variables in these models are dichotomous with 1 denoting a vote for the incumbent party. Given the dichotomous nature of the dependent variables, probit analysis is superior to linear regression. See Greene (1997: 874-9) for a detailed formal exposition of this method.

Following Kramer (1983) and Markus (1988, 1992), I suspect that evaluations of personal financial situation (PFS) contain measurement error and hence should be treated as endogenous. In turn, I apply an estimation method proposed by Rivers and Vuong (1988) for (recursive) simultaneous probit models.[13] This estimator is a two-stage conditional maximum likelihood (2SCML) estimator that applies directly to the case of random measurement error. I also adapt the Rivers-Vuong method, though, to address the case of systematic measurement error. The adaptation involves the construction of an *augmented residual* that includes both systematic and random components of measurement error.

In the present context, the underlying theoretical model is

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economic policies influence socioeconomic groups differently. Consistent with this perspective, research has shown that voters' respond differently to unemployment and inflation depending on their own ideology and that of the government (Hibbs 1982a, 1982b; Powell and Whitten 1993; Whitten and Palmer 1999).

[13] Note that another strength of my analysis is that the Rivers-Vuong method is designed specifically for probit models, while the instrumental variable method applied by Markus is designed for linear equations.

$$y = \delta PEcon + X\beta + \varepsilon ,$$

where y is incumbent vote, $PEcon$ is the latent (unobserved) government-induced change in personal financial situation, and ε is a stochastic error term with zero mean. Under the standard "errors in variables" model, $PEcon$ is observed with random measurement error as

$$PFS = PEcon + v ,$$

where v is a stochastic error term with zero mean. The problem with replacing $PEcon$ with PFS in the regression model, as follows

$$y = \delta PFS - \delta v + X\beta + \varepsilon ,$$

is that the estimate of δ is attenuated due to omitting v from the regression. The Rivers-Vuong method accounts for the random measurement error in PFS by first regressing PFS on a set of exogenous variables, Z. Then the method includes the least squares (LS) residuals from this first-stage regression as a control variable, $\hat{v} = Zg$, in the second-stage regression (along with PFS).

I have adapted the Rivers-Vuong method to account for the presence of "distinct" systematic (correlated) measurement error. The systematic measurement error is "distinct" in that its sources are specified by theory. More formally, $PEcon$ is now observed with random and systematic measurement error as

$$PFS = PEcon + w + v ,$$

where w captures the systematic measurement error and v is a stochastic error term with zero mean. The problem with replacing $PEcon$ with PFS in the regression model, as follows

$$y = \delta PFS - \delta(w + v) + X\beta + \varepsilon ,$$

is that the estimate of δ is attenuated due to omitting $(w + v)$ from the regression. My adaptation of the Rivers-Vuong method accounts for the random and systematic measurement error in PFS by first regressing PFS on a set of exogenous variables, $Z = Z_1 + Z_2$, where Z_1 accounts for government-induced changes in personal financial situation and Z_2 is the distinct sources of systematic measurement error. Then the adapted method uses the first-stage regression to construct "augmented" residuals equal to $Z_2 g_2 + \hat{v}$, where $\hat{w} = Z_2 g_2$ is an estimate of the distinct systematic measurement error. These augmented residuals are included as a control variable in the second-stage regression (along with PFS).

As formally specified above, the first step in the Rivers-Vuong method is to regress PFS evaluations on a set of exogenous explanatory variables in order to model the measurement error. I included the following regressors in this first-stage equation: partisanship, political sophistication, the product of partisanship and political sophistication, age in years, age squared, and binary indicators for race, union membership, employment status, occupation, income, education, region of residence, urbanization of residence location, rental household, marital status, sex, white southern native, and religion. This linear regression provides a means of estimating the measurement error.

How the estimate of the measurement error is calculated depends on what is assumed about its nature. Under the assumption of random measurement error (as adopted by Markus), this estimate is simply the least squares (LS) residuals. But if the measurement error is systematic rather than random, the method for estimating it depends on which exogenous variables in the first-stage regression are assumed to account for the systematic variation.

According to Kramer's (1983) argument, any variation in PFS evaluations not induced by government policies constitutes measurement error. A strict interpretation of this argument would treat all individual-level variation as measurement error based on the logic that government policies only induce changes in national economic conditions and thereby changes over time in the mean evaluation of personal financial situation. This interpretation, though, ignores the potential differential effects of government policies across occupation groups, regions, and industries. Additionally, government policies tend to have income distribution effects. Hence, I adopt a somewhat looser interpretation of Kramer's argument by defining the measurement error as *all* individual-level variation not captured by occupation, income, education, region, union membership, race, and employment status (except if directly associated with the life cycle, e.g., retirement and being a student).[14]

An alternative approach is to restrict the measurement error specification to systematic variation due to the partisan and life cycle contamination suggested by Kramer (1983). In other words, this approach assumes that the systematic measurement error is captured by the subset of

[14] Note that this definition includes random measurement error (captured by the first-stage residuals) as well as systematic measurement error.

exogenous variables in the first-stage equation that measure partisanship and life cycle changes. An important implication of this assumption is that the first-stage regression could be used to *purge* measurement error from evaluations of personal finances. In turn, this approach differs from a more direct application of Kramer's argument in that it presumes that all variation in PFS evaluations not attributable to partisan and life cycle factors is meaningful (even that captured by the first-stage residuals). From a theoretical perspective, this approach corresponds to a more "optimistic" image of public opinion in general and economic evaluations in particular. This image is more "optimistic" since it assumes that the extent of contamination and measurement error is more limited than that suggested by Converse (1970).

In my analysis below, I apply all three approaches in order to assess which specification of the measurement error is most appropriate. More formally, estimates of the measurement error were derived as follows for each specification:

Markus PFS Residual = *PFS Evaluation* $-\mathbf{x}'\mathbf{b}$,

Kramer PFS Residual = *PFS Evaluation* $-\mathbf{x}_1'\mathbf{b} - b_{27}\overline{A}ge - b_{28}\overline{A}ge^2$, and

Purged PFS Residual = $\mathbf{x}_2'\mathbf{b}$,

where $\mathbf{x}'\mathbf{b}$ is the fitted value from the first-stage LS regression, $\overline{A}ge$ and $\overline{A}ge^2$ are the sample means of age in years and age squared, and $\mathbf{x}_1$ and $\mathbf{x}_2$ are subsets of the exogenous variables in $\mathbf{x}$ as discussed above. More specifically, $\mathbf{x}_1$ includes *Black*, *Union*, *Unemployed*, *Laid Off*, *Professional*, *Clerical*, *Manual*, *Farmer*, *Lowest Income*, *Lower Middle Income*, *Upper Middle Income*, *Highest Income*, *Grade School*, *Some High School*, *Some College*, *College Graduate*, *Northeast*, *South*, *West*, *Urban*, and *Rural*. In contrast, $\mathbf{x}_2$ includes *Homemaker*, *Retired*, *Married*, *Female*, *Age*, *Age Squared*, *Disabled*, *Renter*, *Student*, *Partisanship*, and *Partisanship*Political Sophistication*.[15] Variable definitions are presented in the Statistical Appendix, while the results for the first-stage regressions are available upon request.

The second step in the Rivers-Vuong method is to include the estimate of the measurement error in the probit model of incumbent party voting, along with PFS evaluations. Essentially, the estimate obtained from the first-stage regression controls for the indirect effect of the measurement error on voting, which emerges as a consequence of the noisy measurement of PFS evaluations. Remember that the (attenuation) bias associated with random measurement error (i.e., errors in variables) constitutes omitted variable bias where the measurement error is the omitted variable. Consequently, controlling for the measurement error eliminates the bias. This intuition also applies to systematic measurement error, as demonstrated by Palmer (1999: chapter 4) in the context of linear regression.

Following Markus (1988), I estimated pooled models of incumbent party vote that control for sociotropic concerns. Markus includes percentage change in real disposable income (%CRDI) as a proxy for sociotropic concerns. I employ percentage change in real gross domestic product (%CRGDP) instead since I believe it is more independent of personal financial situation. While aggregate-level models often use %CRDI, that choice is generally dictated by the presumption that changes in real disposable income reflect pocketbook concerns (e.g., Tufte 1978). Given that aggregate-level measures are inherently less noisy than survey measures, I contend that %CRGDP is a more appropriate proxy than %CRDI for sociotropic concerns since it is less likely to "pick up" the pocketbook effects of PFS evaluations.

Table 1 presents pooled probit models of retrospective economic voting in presidential elections from 1956-1996.[16] Results are reported for a model specification that treats *Retrospective PFS* as exogenous (column 1) and for three different specifications of the 2SCML estimator (columns 2-4), which correspond to the three different assumptions about measurement error discussed above. Note that the Rivers-Vuong method incorporates a direct test of the null hypothesis that PFS evaluations are exogenous. The Wald test statistic equals the squared value of the t-statistic for the measurement error coefficient and has a $\chi^2[1]$ distribution.

[TABLE 1]

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[15] Note that these are the full regressor specifications. For elections prior to 1972, some of these variables (e.g., *Laid Off*) were excluded due to missing values.

[16] ANES respondents were excluded from the analysis if they did not report a vote (e.g., did not turnout to vote). Some empirical research only considers validated voters (e.g., Hetherington 1999) due to the fact that survey respondents tend to over-report turnout. I did not apply this approach here because the necessary data was not available for all ANES election studies, particularly 1992 and 1996. Given that the focus of analysis is pooled models, removal of non-validated reported voters from a subset of the election studies would unduly place greater weight on the behavior of respondents in studies that did not validate turnout.

The incumbent vote models also control for the effects of partisanship and demographic characteristics associated with the New-Deal coalition.[17] Partisanship ranges from –3 for strong Democrats to 3 for strong Republicans. Economic voting theory predicts that retrospective PFS evaluations should have a positive effect, while the expected effects of the control variables switch in direction depending on the party of the incumbent president. Due to the pooling of elections with different incumbent parties, variables with partisan rather than incumbent effects (e.g., *Partisanship, Black*) were interacted with *Incumbent Party* so that the direction of their effects switches with changes in the party that controls the Presidency. Among these variables, those expected to increase the likelihood of a Democratic vote should have a positive coefficient while those expected to increase the probability of a Republican vote should have a negative coefficient. The coding of the variables is discussed in further detail in the Statistical Appendix.

Probit estimates a non-linear relationship between the explanatory variables and the probability of the action/response occurring. Hence, I discuss the magnitudes of the estimated relationships with respect to "typical" voters. For the present analysis, I define typical voters as pure independents who hold neutral evaluations of their personal financial situation and do not have any of the demographic characteristics denoted by the binary explanatory variables (e.g., *White Southern Native*). Defined as such, typical voters have predicted probabilities of voting for the incumbent party that are very similar to the sample frequencies, so they are representative of the average voter.

The results in Table 1 indicate that the strongest evidence of pocketbook voting emerges when the measurement error is specified in a manner consistent with Kramer's (1983) theoretical argument. While the relative performance of the different 2SCML estimators does not provide a formal test, I speculate that it does reflect the relative merits of the different specifications. By definition, the *Residual* term or estimate of the measurement error does not add to the explanatory power of the model since it is simply the "noise" component of the stochastic measure of PFS evaluations. Hence, it contributes to the estimation by controlling for the spurious effect of measurement error, which attenuates the estimate of the "true" effect of PFS

[17] Due to insufficient variation, *Black* was excluded from the 1964 presidential voting model. In the 1964 study, all 94 black respondents who turned out voted for President Johnson.

evaluations.[18] This role accounts for its negative coefficient (given our theoretical expectation that the effect of PFS evaluations is positive) and suggests that a more appropriate specification of the measurement error should increase the strength of the estimated effect of PFS evaluations. On the basis of this logic, I interpret the results in Table 1 as evidence supporting Kramer's theoretical argument about the nature of the measurement error in evaluations of personal financial situation.

In presidential elections, pocketbook concerns (i.e., PFS evaluations) appear to matter as much or more than sociotropic concerns (i.e., percentage change in real GDP) once the measurement error has been properly taken into account. Furthermore, the results in Table 1 suggest that Markus (1988) understated the magnitude of pocketbook effects relative to sociotropic effects due to assuming that the measurement error in PFS evaluations is random rather than systematic.[19] Among typical voters, a one-category increase in *Retrospective PFS* produces a 24.2 percentage point increase in the predicted probability of an incumbent party vote under the Kramer-specification of measurement error.[20] In order to produce a probability increase at least as large as this, real GDP growth would have to increase by more than 8 percentage points. While the pocketbook effect is slightly smaller under the assumption that the measurement error is random, it is still considerable in magnitude. A one-category increase in *Retrospective PFS*, for instance, produces a 17.5 percentage point increase in the likelihood of an incumbent vote among typical voters. An equivalent increase due to sociotropic concerns would require a 5.5 percentage point increase in real GDP growth.

Heterogeneity in Pocketbook Voting

[18] In turn, the *Residual* term detracts from the estimation by introducing multicolinearity, which accounts for the slightly weaker statistical significance of the Kramer 2SCML estimate relative to the Exogenous estimate in Table 1.

[19] My use of percentage change in real GDP rather than percentage change in real disposable income might also contribute to this difference.

[20] This probability change is actually the average of the predicted probability changes for Republican and Democratic incumbents (24.6 and 23.8 percentage points, respectively). Due to the non-linear nature of probit, the magnitude of the probability change is contingent on the value of *Incumbent Party*. (It is also contingent on the values of the other regressors, but those equal zero for typical voters, as stated above.) When reporting probability changes for pooled models, I always use the average for the different values of *Incumbent Party*.

So far, my analysis has largely improved upon Markus' (1988) study by adopting a more general approach to accounting for measurement error in PFS evaluations. In this section, I extend Markus' study by considering whether *prospective* pocketbook concerns matter in American elections and whether the pocketbook voting relationship varies with political sophistication and over time. Characterizing this heterogeneity in pocketbook voting allows us to better understand the nature of the pocketbook voting relationship and the extent of voter sophistication.

Evidence of *retrospective* economic voting does not provide much validation for aggregate-level models that assume sophisticated behavior on the part of economic voters. Most formal political-economy models assume forward-looking behavior on the part of voters. Moreover, several recent aggregate-level time-series analyses have revealed evidence of prospective economic voting. Hence, I investigated whether the results in Table 1 generalize to prospective pocketbook assessments. Table 2 reports the core economic voting results for a probit analysis of presidential voting from 1956-1996. This analysis replicates that reported in Table 1 by replacing *Retrospective PFS* with *Prospective PFS*.

[TABLE 2]

Comparing across model specifications, the evidence of prospective economic voting in Table 2 reflects the evidence of retrospective economic voting in Table 1. As in Table 1, the strongest evidence of pocketbook voting emerges when the measurement error is specified in a manner consistent with Kramer's (1983) theoretical argument. However, the results in Table 2 suggest that prospective pocketbook effects are generally stronger than retrospective pocketbook effects in presidential elections. Under the Kramer specification of measurement error, for instance, a one-category increase in *Prospective PFS* increases the predicted probability of an incumbent party vote by 37.4 percentage points for typical voters.[21] These *individual-level* findings are largely consistent with the *aggregate-level* findings of Alesina, Londregan, and Rosenthal (1993) and provide some validation for formal modeling of the political-economy, which tends to focus on the relationship between presidential approval and the economy (e.g., Freeman and Houser 1998).

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[21] Note that a one-category increase in *Prospective PFS* might have no practical meaning in the presence of serious measurement error. The large 2SCML estimate for *Prospective PFS* and the highly significant Wald test statistic under the Kramer specification suggest that *Prospective PFS* contains substantial measurement error.

The probit results in Table 2 also provide individual-level evidence relating to the recent scholarly debate about whether economic voters behave in a prospective or retrospective manner. Consistent with the aggregate-level study of MacKuen, Erickson, and Stimson (1992) and contrary to the aggregate-level results of Norpoth (1996), I find evidence of prospective pocketbook voting in presidential elections. However, this individual-level evidence does not address Clarke and Stewart (1994) who show that MacKuen, Erickson, and Stimson (1992) failed to properly account for retrospective economic voting. Similarly, one could criticize the probit results in Table 2 on the grounds that the models fail to control for retrospective pocketbook concerns, and hence the evidence of prospective pocketbook voting may simply be evidence of retrospective pocketbook voting in disguise. To address this criticism, Table 3 replicates the probit analysis in Table 2 by including both *Retrospective PFS* and *Prospective PFS* in the models. 2SCML results are only reported for the Kramer and Purged specifications of the measurement error since these produced the strongest evidence of prospective pocketbook voting in Table 2.

[TABLE 3]

As a comparison of Tables 2 and 3 reveals, controlling for retrospective pocketbook concerns weakens the evidence of prospective pocketbook voting.[22] Prospective pocketbook concerns, however, still prove significant and have a stronger impact than retrospective pocketbook concerns under the Kramer specification of measurement error, which I contend is the most appropriate (as discussed above). Under the Kramer specification, for instance, a one-category increase in *Prospective PFS* increases the predicted probability of an incumbent party vote by 24.3 percentage points for typical voters. In contrast, the same increase in *Retrospective PFS* increases the likelihood of an incumbent party vote by 14.8 percentage points. In order to produce similar increases in the probability of an incumbent vote, real GDP growth would have to increase by 7.8 and 4.9 percentage points, respectively.

Another potential source of heterogeneity in the pocketbook voting relationship is political sophistication. I hold several theoretical expectations regarding how the pocketbook voting relationship varies with voter sophistication. First, to the extent that more sophisticated voters rely less on heuristics to form economic evaluations, I would expect the PFS evaluations

[22] In contrast, the evidence of retrospective pocketbook voting proves rather robust to the addition of prospective pocketbook concerns, as a comparison of Tables 1 and 3 shows.

of political sophisticates to contain less measurement error and hence exhibit greater exogeneity (i.e., produce smaller and less significant Wald test statistics of exogeneity). Similarly, Krause (1997) finds that voters' reliance on retrospective perceptual information when forming prospective economic evaluations declines with sophistication. An important implication of this expectation is that the evidence of pocketbook voting among political sophisticates should be less sensitive to the specification of the measurement error. Imposing the Kramer specification of measurement error, for instance, should not produce as much of an improvement in the evidence of pocketbook voting over a specification that treats PFS evaluations as exogenous.

Second, to the extent that more sophisticated voters are more forward-looking, I would expect greater prospective pocketbook voting among political sophisticates, particularly relative to the level of retrospective pocketbook voting. Consistent with Kramer's (1983) argument, however, the overall level of pocketbook voting—both prospective and retrospective—might be lower for political sophisticates since they are less likely to attribute their personal financial situation to political outcomes. This theoretical expectation is consistent with the argument that less sophisticated citizens are more likely to use their personal experiences as the basis for evaluating government policy outcomes. Conover, Feldman and Knight (1986: 583), for instance, contend that when evaluating the national economy, the "well-informed tend to ignore their own personal economic experiences while the uninformed draw heavily upon them" (also see Weatherford 1983). Rather than responding to pocketbook concerns, political sophisticates might place greater emphasis on national economic conditions since, according to Kramer (1983), these are more attributable to government policy. This expectation is largely consistent with the image of economic voters in political-economy models that assume rational expectations. Economic voters in these models ultimately seek to maximize their personal utility and financial welfare but pursue this goal by evaluating the incumbent on the basis of the national economy (e.g., Alesina, Londregan, and Rosenthal 1993; Suzuki and Chappell 1996).

Tables 4a and 4b report the core results from a probit analysis of economic voting in presidential elections among political sophisticates. Political sophisticates are defined as those respondents who have above average levels of information about politics and public affairs.[23]

[23] Luskin (1987) and Zaller (1992) advocate using responses to factual survey questions to construct political information scales. When such factual items are not available, Zaller (1992) recommends the use of an interviewer rating of the respondent's level of political information (i.e., the five-category evaluation made at the end of the ANES interview). Bartels (1996: 201)

The samples employed to estimate the probit models in Tables 4a and 4b are restricted to the 1968-1996 presidential elections due to the fact that an appropriate survey measure of political sophistication was not available prior to that time period. The probit models in Table 4a apply the regressor specifications used in Tables 1 and 2, while those in Table 4b apply the regressor specifications used in Table 3. The crucial difference between these tables is that Table 4b includes *Retrospective PFS* and *Prospective PFS* together in the model, while Table 4a includes them separately. As in Table 3, Table 4b only reports 2SCML results for the Kramer and Purged specifications of the measurement error since these produced the strongest evidence of prospective pocketbook voting in Table 4b.

[TABLES 4a & 4b]

Consistent with my theoretical expectations, the PFS evaluations of political sophisticates exhibit greater exogeneity, as demonstrated by a comparison of the t-statistics for the *Residual* coefficients in Tables 1, 2, and 4a.[24] Similarly, the Wald test statistics of exogeneity are substantially larger in Table 3 than in Table 4b. In the case of prospective concerns, the results in Tables 4a and 4b also indicate that the estimated pocketbook voting relationship is less sensitive to the specification of measurement error. Imposing the Kramer specification of measurement error, for instance, rather than assuming that personal financial situation evaluations are exogenous, does not change the *Prospective PFS* coefficient as much for sophisticated voters as it does for voters in general. This pattern is reflected in a comparison of columns 1 and 3 in Table 2 with their counterparts in the bottom half of Table 4a. Similarly, the *Prospective PFS* coefficient in Table 4b changes little with the assumption about measurement error imposed by the model (in contrast to Table 3).

Somewhat surprisingly, the evidence of prospective pocketbook voting is more tenuous for political sophisticates than for voters in general. This finding is most clearly demonstrated by

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argues convincingly that given the high reliability of the interviewer rating, it should be used instead of a scale constructed from factual items when comparisons are made across elections and the battery of factual items varies across surveys. In the analysis of economic voting presented here, those conditions hold.

[24] Note that the time period covered by Tables 1-3 is longer than that covered by Tables 4a and 4b (i.e., 1956-1996 versus 1968-1996) so differences in the results cannot be entirely attributed to differences in the political sophistication of the two samples. However, auxiliary probit analyses that replicate the models in Tables 1-3 for the 1968-1996 period (available upon request) show that the contrasting results highlighted below are largely attributable to differences in political sophistication rather than the incongruent time periods analyzed.

a comparison of Tables 3 and 4b. Under the Kramer specification of measurement error, prospective pocketbook concerns prove insignificant at the 10% level for political sophisticates but significant at the 0.1% level with an effect larger in magnitude than retrospective pocketbook concerns for voters in general. While the Exogenous and Purged specifications produce slightly larger *Prospective PFS* coefficients for political sophisticates, they have less statistical significance. In sum, the prospective pocketbook voting relationship among sophisticated voters appears to be weaker, or at least equivalent, in magnitude to that for voters in general.

Considered alone, this finding clearly contradicts aggregate-level political-economy models that assume sophisticated and forward-looking voting behavior. In other words, if individual-level evidence indicates that the most sophisticated voters do not engage in prospective economic voting, then how valid can aggregate-level models be that assume such behavior for the majority of voters? Tables 4a and 4b also indicate, however, that political sophisticates are more responsive to sociotropic economic concerns when evaluating presidential candidates from the incumbent party. According to the 2SCML-2 model (Kramer specification) in Table 4b, for instance, a one-percentage point increase in real GDP growth produces a 4.3 percentage point increase in the predicted probability of an incumbent party vote among political sophisticates. In contrast, the corresponding model in Table 3 predicts that the same increase in real GDP growth causes a 2.9 percentage point increases in the likelihood of an incumbent voter for the general electorate. This difference in the electoral importance of sociotropic concerns is consistent with images of sophisticated economic voters to the extent that it reflects greater adherence among political sophisticates to the reasoning that government policy has relatively little influence on personal finances so incumbents should be evaluated primarily on the national economy.

Finally, I propose to improve upon Markus' study by considering whether the evidence of pocketbook voting changes over time. Table 5a and 5b report the core results from a probit analysis of economic voting in four different subsets of presidential elections. Each model was estimated with a different subset of elections, but the subsets overlap so that respondents in some election studies are used to estimate as many as three models (e.g., 1972). I adopted this overlapping (moving average) approach in order to have sufficient cross-election variation to estimate the effect of sociotropic concerns (remember that *% Change in Real GDP* is constant across respondents in a particular survey). The probit models in Table 5a apply the 2SCML-2 regressor specifications in Tables 1 and 2, while that in Table 5b applies the 2SCML-2 regressor specification in Table 3. As above, the crucial difference between these tables is that Table 5b includes *Retrospective PFS* and *Prospective PFS* together in the model, while Table 5a includes them separately.

[TABLE 5a & 5b]

Table 5a reveals some interesting temporal trends in the effects of pocketbook concerns and partisanship. Figure 1 illustrates these effects for typical voters and a Republican president (incumbent). The estimated effects for partisanship and sociotropic concerns were calculated using the coefficients from the retrospective models (i.e., top half of Table 5a). Table 5b confirms that the temporal trends in Table 5a are not artifacts of the specification of the economic voting model.

[FIGURE 1]

As illustrated in Figure 1, the effect of retrospective pocketbook concerns in presidential elections exhibits an upward trend since 1964. One possible explanation for this trend is a shift in the domestic policy focus of presidential elections from social welfare and justice issues to the national economy. In contrast to retrospective evaluations, the electoral relevance of prospective evaluations of personal financial situation has decreased over time, particularly in the most recent period.[25] This trend might reflect the high levels of consumer confidence during the Reagan and Clinton presidencies. Perhaps this confidence is reflected in more optimistic evaluations of future personal finances, which did not translate into a congruent increase in electoral support. This is a question that warrants further study.

Figure 1 also indicates no apparent decline in partisanship. Partisanship exerts as much influence on presidential voting in 1980-1996 as in 1956-1972. Furthermore, partisanship has the greatest influence on presidential voting during the 1972-1988 period in which the highest rates of ticket splitting occurred. Again, Table 5b confirms that this pattern in the effect of

[25] Note that these temporal trends in retrospective and prospective pocketbook voting are also present in Table 5b, even though the overall statistical significance of the pocketbook effects is weaker when the model includes both retrospective and prospective concerns. Part of this reduction in significance might be due to the considerable multicolinearity between the *Retrospective PFS Residual* and *Prospective PFS Residual* variables, not to mention that among the *Residual* terms and *Retrospective PFS* and *Prospective PFS*. Given the smaller sample sizes, this multicolinearity might produce more noticeable reductions in estimation precision for the models in Table 5b than for those in Table 3.

partisanship is not an artifact of the specification of the economic voting model (note that the *Partisanship* coefficients are practically the same as those in Table 5a). While these findings are only suggestive, they tend to contradict the theoretical arguments of Burnham (1965, 1970) and Wattenberg (1991, 1994), which contend that fundamental changes in American politics have led to the decline of partisanship in the electorate and the rise of split-ticket voting and candidate-centered elections.

Discussion

The primary purpose of this essay is to address the dichotomy in economic voting research by reconsidering the individual-level evidence of pocketbook voting. Toward this end, my analysis extends and improves upon Markus' (1988) seminal study. A common explanation for the dichotomy in empirical evidence of economic voting is that individual-level survey data are plagued by measurement error. When the estimation method properly accounts for this measurement error, robust evidence of pocketbook voting emerges. An important theoretical implication of this core finding is that concerns about personal financial welfare underlie economic voting so that the validity of aggregate-level models, which largely focus on evaluations of the national economy, does not necessarily rest on altruistic or unsophisticated behavior on the part of voters.

My analysis demonstrates, though, that the individual-level evidence of pocketbook voting is sensitive to the specification of the measurement error. More specifically, I find that more pessimistic assumptions about the extent of measurement error—consistent with Kramer's (1983) theoretical argument—produce stronger, and arguably more precise, estimates of pocketbook voting. In turn, my analysis reveals that Markus' (1988) study understates the extent of pocketbook voting by adopting an agnostic approach of treating the measurement error as purely random. I also find, contrary to Markus (1988, 1992), that pocketbook concerns matter more than sociotropic concerns.

After establishing rather robust evidence of retrospective pocketbook voting in presidential elections, my analysis investigates whether pocketbook voting is also prospective in nature and whether the pocketbook voting relationship varies in meaningful ways with political sophistication and across elections. Investigating these sources of heterogeneity in the economic voting relationship led to several intriguing implications about the nature of pocketbook and sociotropic voting. I report convincing individual-level evidence of prospective pocketbook voting. Moreover, under the Kramer specification of measurement error, prospective pocketbook concerns have stronger effects that retrospective pocketbook concerns (though both exceed sociotropic concerns in importance). This finding lends individual-level empirical support to aggregate-level studies that report evidence of prospective behavior by economic voters (e.g., MacKuen, Erickson, and Stimson 1992). Unlike Norpoth (1996), I do not find that evidence of prospective economic voting is simply evidence of retrospective economic voting in disguise. From a broader theoretical perspective, this finding validates the image of the sophisticated, forward-looking economic voter adopted by many formal political-economy models (e.g., Alesina, Londregan, and Rosenthal 1993).

Finally, my analysis reveals that the relevance of sociotropic concerns relative to pocketbook concerns in presidential voting is greater among more sophisticated voters and has increased since 1964. While providing definitive explanations for these patterns is beyond the scope of the present essay (and warrants consideration in future research), I believe that they are broadly consistent with the changing nature of American politics. One of the major changes that have occurred in American politics since the 1960s has been the expansion of the mass media. To the extent that the media expansion has increased the availability of "cheap" information about the national economy, the greater electoral relevance of sociotropic concerns seems like a natural consequence of this change. If voters are actually better informed about national issues, they should rely on personal financial circumstances less and instead should focus on the national economy when evaluating the incumbent.

Recent research has emphasized the importance of heterogeneity in political behavior and attitudes, and this essay contributes to that literature. Whether the heterogeneity represents meaningful, policy-motivated differences in political behavior and preferences (Alvarez and Brehm 1995, 1997; Bartels 1996) or simply measurement error (Hetherington 1996; Krause 1997; Duch, Palmer, and Anderson 2000), characterizing the heterogeneity often allows for a better understanding of the underlying causal process. In the context of the present analysis, I find that the "noise" in survey measures constitutes a nuisance rather than the absence of meaningful economic evaluations. Modeling the noise accounts for individual-level differences in the content and formation of pocketbook assessments. Hence, once sense has been made of that noise, strong evidence of pocketbook voting emerges in both prospective and retrospective forms.

Statistical Appendix

The statistical analysis presented in this essay was conducted using survey data from the American National Election Studies. More specifically, I merged data from the 1948-1996 Cumulative Data File with some additional data that was only included in individual study files from 1956-1996 (e.g., the interviewer's evaluation of the respondent's general level of information about politics). See the codebook for the 1948-1996 Cumulative Data File for further detail on specific survey questions. The variables employed in my probit analysis of incumbent party voting in American presidential elections are defined in detail below.

Incumbent Party Presidential Vote is a binary indicator of the respondent's reported vote for the candidate of the party that held the Presidency at the time of the election. The incumbent party is Republican for the elections that occurred during the following time periods: 1956-1960, 1970-1976, and 1982-1992. The incumbent party is Democratic for the elections that occurred during the following time periods: 1962-1968, 1978-1980, and 1994-1996.

Retrospective Personal Financial Situation (PFS) measures respondents' evaluations of their current financial situation relative to the past. It ranges from –1 for "worse now" to 1 for "better now." For 1966-1996, the time horizon of the question employed to derive this measure was a single year (i.e., "Would you say that you and your family are better off or worse off financially than you were a year ago?"). Prior to 1966, the time horizon was longer (i.e., "During the last few years, has your financial situation been getting better, getting worse, or has it stayed the same?"). When this measure was used as an explanatory (RHS) variable, I coded missing values to 0 (i.e., "same") in order to avoid losing observations. When used as a dependent variable, observations with missing values were excluded from the analysis.

Prospective PFS measures respondents' expectations about their future financial situation relative to the present. It ranges from –1 for "worse then" to 1 for "better then." As with *Retrospective PFS*, missing value observations were coded to 0 when this measure was employed as an explanatory variable and excluded from the analysis when this measure was employed as a dependent variable.

Incumbent Party is coded 1 if the Democratic party is the incumbent and –1 if the Republican party is the incumbent. For the purpose of estimating pooled models, *Incumbent Party* is interacted with variables whose effects switch in direction depending on the party of the incumbent (e.g., *Partisanship*).

Partisanship is the traditional 7-point measure of partisan attachment. In my analysis, it is coded so that it ranges from –3 for strong Democrat to 3 for strong Republican. Apolitical responses and missing values were set to 0 in order to avoid losing observations.

White Southern Native is a binary variable denoting respondents who were born in the "political" South as defined by Key (1984 [1949]). The political South includes the following states: AL, AR, GA, FL, LA, MS, NC, SC, TN, TX, and VA.

Catholic and *Jewish* are self-explanatory binary indicators of the respondent's religion. *Black* is a binary indicator for African-American respondents. *Union* is a binary variable coded 1 for respondents who live in a "union household" (i.e., a member of their family belongs to a labor union).

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Table 1
Pooled Probit Models of Retrospective Economic Voting in Presidential Elections, 1956-1996

	Exogenous	2SCML-1	2SCML-2	2SCML-3
Retrospective PFS	.201** (11.46)	.463** (9.67)	.641** (10.28)	.208** (11.68)
Markus PFS Residual	~~~	-.300** (-5.89)	~~~	~~~
Kramer PFS Residual	~~~	~~~	-.476** (-7.37)	~~~
Purged PFS Residual	~~~	~~~	~~~	-.152 (-2.27)
% Change in Real GDP	.091** (13.18)	.083** (11.77)	.079** (11.27)	.094** (13.35)
Incumbent Party	-.257** (-12.54)	-.262** (-12.77)	-.278** (-13.40)	-.255** (-12.39)
Partisanship*Incumbent Party	-.436** (-62.01)	-.426** (-58.85)	-.439** (-62.08)	-.443** (-57.90)
White Southern Native*Incumbent Party	-.301** (-8.37)	-.289** (-8.04)	-.288** (-7.99)	-.303** (-8.43)
Catholic*Incumbent Party	.104** (3.39)	.102** (3.31)	.103** (3.34)	.101* (3.28)
Jewish*Incumbent Party	.638** (7.53)	.651** (7.65)	.669** (7.85)	.642** (7.57)
Black*Incumbent Party	1.005** (16.02)	.987** (15.73)	.977** (15.55)	1.003** (15.97)
Union*Incumbent Party	.118** (3.83)	.121** (3.90)	.117** (3.76)	.117** (3.80)
Constant	-.372** (-12.40)	-.38** (-12.49)	-.377** (-12.54)	-.532** (-6.95)
LR Test Statistic of Overall Model	6941.6**	6976.4**	6996.2**	6946.8**
% Predicted Correctly	80.8	80.6	80.7	80.5
% Error Reduction	60.3	60.0	60.1	59.8
Wald Test Statistic of Exogeneity	~~~	34.7**	54.3**	5.2
N	13638	13638	13638	13638

Note: Dependent variable is *Incumbent Party Presidential Vote*, coded 1 for ANES respondents who reported voting for the presidential candidate of the party that held the Presidency at the time of the election, and 0 otherwise. The model in the first column assumes that *Retrospective PFS* is exogenous. The models in the last three columns are 2SCML estimates derived with different assumptions about the measurement error. Error reduction is calculated with respect to the naïve model that everyone chooses the modal category. Coefficient t-statistics are reported in parentheses. *p<.01; **p<.001 (two-tailed t-tests)

Table 2

Pooled Probit Models of Prospective Economic Voting in Presidential Elections, 1956-1996

	Exogenous	**2SCML-1**	**2SCML-2**	**2SCML-3**
Prospective PFS	.140** (6.42)	.216** (3.94)	1.007** (10.40)	.161** (7.19)
Markus PFS Residual	~~~	-.089 (-1.51)	~~~	~~~
Kramer PFS Residual	~~~	~~~	-.907** (-9.20)	~~~
Purged PFS Residual	~~~	~~~	~~~	-.221** (-4.33)
% Change in Real GDP	.094** (13.66)	.092** (13.43)	.091** (13.27)	.093** (13.53)
Incumbent Party	-.251** (-12.28)	-.250** (-12.24)	-.236** (-11.50)	-.260** (-12.64)
Constant	-.387** (-12.83)	-.402** (-12.67)	-.609** (-15.67)	-.540** (-11.60)
LR Test Statistic of Overall Model	6850.8**	6853.1**	6936.4**	6869.7**
% Predicted Correctly	80.5	80.5	80.6	80.4
% Error Reduction	59.8	59.8	60.0	59.5
Wald Test Statistic of Exogeneity	~~~	2.3	84.6**	18.8**
N	13638	13638	13638	13638

Note: Dependent variable is *Incumbent Party Presidential Vote*. These models replicate the probit analysis presented in Table 1 by replacing *Retrospective PFS* with *Prospective PFS*. Only the coefficients for the core economic voting variables are reported; the remaining coefficients are available upon request. See notes to previous tables for further details. Coefficient t-statistics are reported in parentheses. *p<.01; **p<.001 (two-tailed t-tests)

Table 3
Pooled Probit Models of Retrospective and Prospective Economic Voting in Presidential Elections, 1956-1996

	Exogenous	**2SCML-2**	**2SCML-3**
Retrospective PFS	.184** (10.16)	.406** (5.41)	.190** (10.34)
Prospective PFS	.081** (3.60)	.652** (5.59)	.102** (4.42)
Kramer Retrospective PFS Residual	~~~	-.252* (-3.28)	~~~
Kramer Prospective PFS Residual	~~~	-.599** (-5.08)	~~~
Purged Retrospective PFS Residual	~~~	~~~	.147 (1.45)
Purged Prospective PFS Residual	~~~	~~~	-.352** (-4.57)
% Change in Real GDP	.090** (13.11)	.083** (11.67)	.085** (11.63)
Incumbent Party	-.257** (-12.52)	-.258** (-12.22)	-.274** (-13.00)
Constant	-.386** (-12.74)	-.534** (-12.78)	-.473** (-5.67)
LR Test Statistic of Overall Model	6954.6**	7031.9**	6984.2**
% Predicted Correctly	80.7	80.9	80.7
% Error Reduction	60.1	60.6	60.2
Wald Test Statistic of Exogeneity	~~~	77.3**	29.6**
N	13638	13638	13638

Note: Dependent variable is *Incumbent Party Presidential Vote*. These models extend the probit analyses presented in Tables 1 and 2 by including both *Retrospective PFS* and *Prospective PFS*. Only the coefficients for the core economic voting variables are reported; the remaining coefficients are available upon request. The Wald statistics test the joint null hypothesis that both *Residual* coefficients are zero. See notes to previous tables for further details. Coefficient t-statistics are reported in parentheses. *p<.01; **p<.001 (two-tailed t-tests)

Table 4a

Pooled Probit Models of Economic Voting in Presidential Elections among Political Sophisticates, 1968-1996

	Exogenous	2SCML-1	2SCML-2	2SCML-3
Retrospective Model				
Retrospective PFS	.202** (6.58)	.536** (5.92)	.695** (5.43)	.210** (6.65)
Markus PFS Residual	~~~	-.375** (-3.93)	~~~	~~~
Kramer PFS Residual	~~~	~~~	-.518** (-3.97)	~~~
Purged PFS Residual	~~~	~~~	~~~	-.134 (-1.09)
% Change in Real GDP	.161** (11.25)	.144** (9.65)	.144** (9.57)	.161** (11.24)
Partisanship	-.471** (-37.24)	-.454** (-34.21)	-.471** (-37.22)	-.477** (-34.15)
Incumbent Party	-.127** (-3.36)	-.142** (-3.75)	-.160** (-4.13)	-.131** (-3.45)
Constant	-.793** (-12.86)	-.775** (-12.52)	-.777** (-12.55)	-.922** (-6.88)
Prospective Model				
Prospective PFS	.180** (4.62)	.141 (1.33)	.601* (2.79)	.179** (4.41)
Markus PFS Residual	~~~	.044 (.40)	~~~	~~~
Kramer PFS Residual	~~~	~~~	-.431 (-1.99)	~~~
Purged PFS Residual	~~~	~~~	~~~	.016 (.14)
% Change in Real GDP	.164** (11.47)	.165** (11.32)	.162** (11.38)	.164** (11.07)
Partisanship	-.474** (-37.66)	-.475** (-36.75)	-.473** (-37.64)	-.473** (-36.77)
Incumbent Party	-.123* (-3.27)	-.123* (-3.27)	-.111* (-2.91)	-.121* (-3.08)
Constant	-.816** (-13.21)	-.810** (-12.69)	-.912** (-11.62)	-.808** (-9.51)

Note: Dependent variable is *Incumbent Party Presidential Vote*. The models above were estimated with the subsample of respondents who were evaluated as having above average levels of information about politics (this evaluation was not available prior to 1968). These models apply the same regressor specifications as in Tables 1 and 2. Only the coefficients for partisanship and the core economic voting variables are reported; the remaining coefficients are available upon request. See notes to previous tables for further details. Coefficient t-statistics are reported in parentheses. N=4673; *p<.01; **p<.001 (two-tailed t-tests)

Table 4b
Pooled Probit Models of Retrospective and Prospective Economic Voting in Presidential Elections among Political Sophisticates, 1968-1996

	Exogenous	**2SCML-2**	**2SCML-3**
Retrospective PFS	.176** (5.51)	.662** (4.63)	.185** (5.68)
Prospective PFS	.118* (2.90)	.137 (.57)	.126* (3.01)
Kramer Retrospective PFS Residual	~~~	-.511** (-3.50)	~~~
Kramer Prospective PFS Residual	~~~	-.020 (-.08)	~~~
Purged Retrospective PFS Residual	~~~	~~~	-.283 (-1.54)
Purged Prospective PFS Residual	~~~	~~~	.100 (.60)
% Change in Real GDP	.160** (11.15)	.143** (9.45)	.163** (10.50)
Incumbent Party	-.129** (-3.41)	-.160** (-3.99)	-.127* (-3.16)
Constant	-.811** (-13.06)	-.800** (-9.58)	-.480** (-33.78)
LR Test Statistic of Overall Model	2644.7**	2660.4**	2647.7**
% Predicted Correctly	82.6	82.8	82.7
% Error Reduction	64.3	64.7	64.5
Wald Test Statistic of Exogeneity	~~~	15.7**	3.0
N	4673	4673	4673

Note: Dependent variable is *Incumbent Party Presidential Vote*. These models extend the probit analyses presented in Tables 4a by including both *Retrospective PFS* and *Prospective PFS*. Only the coefficients for the core economic voting variables are reported; the remaining coefficients are available upon request. The Wald statistics test the joint null hypothesis that both *Residual* coefficients are zero. See notes to previous tables for further details. Coefficient t-statistics are reported in parentheses. *p<.01; **p<.001 (two-tailed t-tests)

Table 5a
Temporal Variation in Economic Voting in Presidential Elections, 1956-1996

	1956-1972	**1964-1980**	**1972-1988**	**1980-1996**
Retrospective Model				
Retrospective PFS	.530**	.365**	.444**	.554**
	(5.64)	(3.31)	(4.07)	(5.10)
Kramer PFS Residual	-.372**	-.223	-.279	-.385**
	(-3.78)	(-1.97)	(-2.51)	(-3.45)
% Change in Real GDP	.138**	.090**	.087**	.161**
	(9.20)	(6.94)	(4.42)	(12.72)
Partisanship	-.439**	-.408**	-.442**	-.484**
	(-39.70)	(-38.05)	(-41.28)	(-44.00)
Incumbent Party	-.576**	-.311**	-.240**	.005
	(-16.26)	(-9.55)	(-3.58)	(.15)
Constant	-.497**	-.364**	-.353**	-.702**
	(-6.71)	(-6.29)	(-6.16)	(-16.79)
Prospective Model				
Prospective PFS	1.205**	1.113**	.807**	.157
	(8.40)	(6.97)	(4.23)	(.85)
Kramer PFS Residual	-1.142**	-1.017**	-.636**	-.003
	(-7.79)	(-6.29)	(-3.30)	(-.02)
% Change in Real GDP	.150**	.061**	.097**	.185**
	(10.03)	(4.81)	(4.88)	(16.29)
Partisanship	-.444**	-.411**	-.445**	-.488**
	(-39.93)	(-38.16)	(-41.61)	(-44.73)
Incumbent Party	-.549**	-.338**	-.190*	.040
	(-16.07)	(-10.66)	(-2.68)	(1.17)
Constant	-.829**	-.446**	-.504**	-.767**
	(-9.26)	(-8.77)	(-7.34)	(-14.32)
N	5921	6067	6523	6369

Note: Dependent variable is *Incumbent Party Presidential Vote*. These pooled models were estimated with different overlapping subsets of the data (analogous to a moving average). Even though the models above include the same control variables as in Tables 1 and 2, only the coefficients for partisanship and the core economic voting variables are reported. The remaining coefficients are available upon request. See notes to previous tables for further details. Coefficient t-statistics are reported in parentheses. *p<.01; **p<.001 (two-tailed t-tests)

Table 5b
Temporal Variation in Economic Voting in Presidential Elections, 1956-1996

	1956-1972	1964-1980	1972-1988	1980-1996
Retrospective PFS	.068 (.57)	-.034 (-.27)	.300 (2.44)	.617** (5.24)
Prospective PFS	1.131** (6.19)	1.121** (5.99)	.566* (2.63)	-.247 (-1.24)
Kramer Retrospective PFS Residual	.079 (.65)	.159 (1.21)	-.161 (-1.29)	-.468** (-3.88)
Kramer Prospective PFS Residual	-1.106** (-6.01)	-1.064** (-5.65)	-.440 (-2.03)	.359 (1.77)
% Change in Real GDP	.147** (9.71)	.065** (4.82)	.093** (4.66)	.160** (12.57)
Partisanship	-.443** (-39.72)	-.411** (-38.07)	-.441** (-41.10)	-.483** (-43.89)
Incumbent Party	-.549** (-15.31)	-.333** (-10.13)	-.188* (-2.65)	-.011 (-.29)
Constant	-.810** (-9.00)	-.472** (-7.74)	-.458** (-6.23)	-.639** (-10.74)
LR Test Statistic of Overall Model	2962.2**	2853.1**	3334.0**	3760.5**
% Predicted Correctly	80.0	78.8	80.0	83.2
% Error Reduction	53.1	54.7	57.1	64.0
Wald Test Statistic of Exogeneity	49.7**	35.8**	10.2*	15.3**
N	5921	6067	6523	6369

Note: Dependent variable is *Incumbent Party Presidential Vote*. These pooled models were estimated with different overlapping subsets of the data (analogous to a moving average). Even though the models above include the same control variables as in Tables 1 and 2, only the coefficients for partisanship and the core economic voting variables are reported. The remaining coefficients are available upon request. The Wald statistics test the joint null hypothesis that both *Residual* coefficients are zero. See notes to previous tables for further details. Coefficient t-statistics are reported in parentheses. *p<.01; **p<.001 (two-tailed t-tests)

Figure 1: Estimated Effects of Partisanship and Economic Concerns on Presidential Voting