The paradox of voting

When we move . . . away from the private concerns of the family and the business office into those regions of national and international affairs that lack a direct and unmistakable link with those private concerns, individual volition, command of facts and method of inference soon cease to fulfill the requirements of the classical doctrine. What strikes me most of all and seems to me to be the core of the trouble is the fact that the sense of reality is so completely lost. Normally, the great political questions take their place in the psychic economy of the typical citizen with those leisure-hour interests that have not attained the rank of hobbies, and with the subjects of irresponsible conversation. These things seem so far off; they are not at all like a business proposition; dangers may not materialize at all and if they should they may not prove so very serious; one feels oneself to be moving in a fictitious world.

The reduced sense of reality accounts not only for a reduced sense of responsibility but also for the absence of effective volition. One has one's phrases, of course, and one's wishes and daydreams and grumbles; especially, one has one's likes and dislikes. But ordinarily they do not amount to what we call a will – the psychic counterpart of purposeful responsible action. In fact, for the private citizen musing over national affairs there is no scope for such a will and no task at which it could develop. He is a member of an unworkable committee, the committee of the whole nation, and this is why he expends less disciplined effort on mastering a political problem than he expends on a game of bridge. . . .

Thus the typical citizen drops down to a lower level of mental performance as soon as he enters the political field. He argues and analyzes in a way which he would readily recognize as infantile within the sphere of his real interests. He becomes a primitive again. His thinking becomes associative and affective. And this entails two further consequences and ominous significance.

First, even if there were no political groups trying to influence him, the typical citizen would in political matters tend to yield to extra-rational or irrational prejudice and impulse. . . . Moreover, simply because he is not "all there," he will relax his usual moral standards as well and occasionally give in to dark urges which the conditions of private life help him to repress. But as to the wisdom or rationality of his inferences and conclusions, it may be just as bad if he gives in to a burst of generous indignation. This will make it still more difficult for him to see things in their correct proportions or even to see more than one aspect of one thing at a time. Hence, if for once he does emerge from his usual vagueness and does display the definite will postulated by the classical doctrine of democracy, he is as likely

as not to become still more unintelligent and irresponsible than he usually is. At certain junctures, this may prove fatal to his nation.

Joseph Schumpeter

The Americans . . . are fond of explaining all the actions of their lives by the principle of self-interest rightly understood; they show with complacency how an enlightened regard for themselves constantly prompts them to assist one another and inclines them willingly to sacrifice a portion of their time and property to the welfare of the state. In this respect . . . they frequently fail to do themselves justice; for in the United States as well as elsewhere people are sometimes seen to give way to those disinterested and spontaneous impulses that are natural to man; but the Americans seldom admit that they yield to emotions of this kind; they are more anxious to do honor to their philosophy than to themselves.

Alexis de Tocqueville

The distinguishing characteristic of public choice is the assumption that individuals in the political arena as in the marketplace behave rationally and in their own self-interest. We have examined models of candidate competition based on this assumption, but as yet have said little about the key actor in the political drama, the individual voter. This chapter fills that void.

14.1   The rational voter hypothesis

14.1.1   *Expected utility maximization*

The rational voter hypothesis was first developed by Downs (1957, chs. 11–14) and later was elaborated by Tullock (1967a, pp. 110–14) and Riker and Ordeshook (1968, 1973). In deciding between two parties or candidates, the voter envisages the different "streams of utility" to be derived from the policies promised by each candidate. The voter calculates the expected utility from each candidate's victory, and naturally votes for the candidate whose policies promise the highest utility. Thus, voting is a purely instrumental act in the theory of rational voting. One votes to bring about the victory of one's preferred candidate. The benefit from voting is the difference in expected utilities from the policies of these two candidates. Call this difference B.

Of course, it is unlikely that one's vote decides the outcome of the election. One's vote has an impact on the outcome only when (1) the votes of all other voters are evenly split between the two candidates, or (2) one's preferred candidate would lose by one vote if one did not vote. Call the probabilities of these two events occurring P_1 and P_2, respectively. If one's preferred candidate has a 50/50 chance of eventually winning should the first election end in a draw, then the probability that a single individual's vote will be instrumental in bringing about the victory of the voter's preferred candidate is $P = P_1 + (1/2)P_2$. The expected benefits from voting are PB.

P has been calculated in several ways. Under one approach, each voter can be viewed as picking a ball out of a bag in which p fraction of the balls are labeled

candidate 1 and $(1 - p)$ are labeled candidate 2. Each voter is assumed to have a prior as to what p is. If there are N voters and N is odd, then P_1 for any one voter is simply the probability that exactly one half of the remaining $(N - 1)$ voters would pick a ball labeled candidate 1 and the remaining one half would pick a ball labeled candidate 2, given this voter's prior p. P then becomes

$$P = \frac{3e^{-2(N-1)(p-\frac{1}{2})^2}}{2\sqrt{2\pi(N-1)}}. \tag{14.1}$$

P declines as N increases, and as p diverts from $1/2$.[1] Even when $p = 1/2$, however, the probability that a single vote will decide the election is but 0.00006, when there are 100,000,000 voters.[2] If there were some cost, C, to voting, then the expected benefits from one's preferred candidate's victory would have to be large indeed to make the voter's calculus produce an expected utility gain from voting $(PB - C > 0)$.

The above approach can be criticized on the grounds that it implies that there is an infinitesimal probability that *all* voters would pick a ball labeled candidate 1 and candidate 2 would receive zero votes. Voters do not decide how to vote by picking balls out of hats. On election day, it is more reasonable to assume that *all* voters are committed to voting for either candidate 1 or candidate 2. Each voter has some prior, p, of the fraction of the population of potential voters who are committed to candidate 1, based perhaps on preelection polls. The rational voter knows, however, that this p is measured with error. Thus, in deciding whether to vote, a rational voter must calculate the probability that her vote will make or break a tie, given p, and the inaccuracy with which it is estimated. This probability is inversely related to $\sqrt{Np(1 - p)}$, the standard deviation of the estimated number of people voting for candidate 1, and thus also becomes infinitesimal as N becomes large.[3]

Several people have noted that the probability of being run over by a car going to or returning from the polls is similar to the probability of casting the decisive vote.[4] If being run over is worse than having one's preferred candidate lose, then this potential cost of voting alone would exceed the potential gain, and no rational self-interested individual would ever vote. But millions do, and thus the paradox.

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[1] Owen and Grofman (1984) derive the following formula for the probability that a voter's vote breaks a tie when N is odd:

$$P_{OG} = \frac{2e^{-2(N-1)(p-1/2)^2}}{\sqrt{2\pi(N-1)}}.$$

Now P_1 is simply the probability that N will be odd (0.5) times P_{OG}, and P_2 is the same. Thus, $P \approx (1/2)P_{OG} + (1/4)P_{OG}$, which is the formula in the text. See also Beck (1975), Margolis (1977), and Mayer and Good (1975).

[2] Peters (1998, p. 180) omits the 2 from the denominator of (14.1) and thus computes P as 0.00012.

[3] With $p = 0.51$ and $N = 100,000,000$, $P = 6 \times 10^{-6}$ (Fischer, 1999, p. 274).

The formula in (14.1) implies a very sharp fall in P, as p moves away from 0.5, while the sampling approach just described implies a much flatter, and more plausible relationship between P and p. See Mayer and Good (1975), Fischer (1999), and Shachar and Nalebuff (1999).

[4] Skinner (1948, p. 265) appears to be the first to have used the probability of an auto accident as a foil to puncture the rational voter hypothesis, writing some nine years before Downs, cited in Goodin and Roberts (1975). Meehl (1977) also uses it.

There are essentially three ways around the paradox: (1) redfine the rational voter's calculus so that the rational action is now to vote; (2) relax the rationality assumption; (3) relax the self-interest assumption. All three routes have been pursued. We begin with three attempts that continue to assume rational, self-interested behavior, as it has traditionally been depicted in public choice, and then consider more radical departures from this behavioral assumption.

14.1.2   *A taste for voting*

The simplest way to reconcile voter rationality with the act of voting is to posit the existence of benefits stemming from the act itself, but not dependent on the consequence of the act, that is, not depending on whether the vote is decisive. Individuals may have a patriotic or civic itch, and voting helps scratch that itch, yielding benefits (utility) D.[5] Thus, a person votes if $PB + D - C > 0$. With PB tiny, the act of voting is explained by the private gains (psychic income) from the act of voting itself, D, exceeding the personal costs of going to the polls, C. Voting is not undertaken as an instrumental act to determine the winning candidate, but as a private, or symbolic act from which satisfaction is derived independent of the outcome of the election.

This modification of the rational voter hypothesis does reconcile the act of voting with individual rationality, but does so by robbing the rational, self-interest hypothesis of its predictive power. Any hypothesis can be reconciled with any conflicting piece of evidence with the addition of the appropriate auxiliary hypothesis. If I find that the quantity of Mercedes autos demanded increases following an increase in their price, I need not reject the law of demand, I need only set it aside, in this case by assuming a taste for "snob appeal." But in so doing I weaken the law of demand, as a hypothesis let alone as a law, unless I have a tight logical argument for predicting this taste for snob appeal.

So it is with rescuing the rational, self-interested voter hypothesis by assuming a taste for civic duty. If this taste explains the act of voting, what else might it explain? If the voter is carried to the polls by a sense of civic duty, what motivation guides her actions once there? Does she vote for the candidate, whose policies advance the voter's narrow interests, or does her sense of civic duty lead her to vote for the candidate, whose victory is most beneficial to the general, public interest? If voters can be moved by civic duty, why not politicians and bureaucrats? Without a theory explaining the origin, strength, and extent of an individual's sense of civic duty, merely postulating a sense of civic duty "saves" rational egoism by destroying its predictive content.

14.1.3   *Voting as a game of cat and mouse*

If each rational voter were to decide not to vote because her vote has too small of a chance of affecting the outcome, and all voters were rational, no one would vote. But

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[5] See Riker and Ordeshook (1968). Tullock (1967a, p. 110) described these personal, psychic gains from voting as a negative cost, C.

then any one voter could determine the outcome of the election by voting. Whether it is in fact rational for an individual to abstain depends on whether other voters are abstaining. The greater the number of other voters I expect will rationally abstain, the more rational it is for me to vote. The result is an n-person, noncooperative game, in which each person's strategy, to vote or to abstain, is dependent on her expectations with regard to the other voters' decisions. Under some assumptions, the solutions to this game involve positive numbers of individuals voting (Ledyard, 1981, 1984; Palfrey and Rosenthal, 1983). But when individuals are uncertain about the costs of voting of other citizens and the size of the electorate is large, a rational individual votes only if the psychic benefits from voting exceed the costs (Palfrey and Rosenthal, 1985). This effort to rescue the rational voter hypothesis by resorting to game theory does not succeed. Let us examine another.

14.1.4 *The rational voter as minimax-regret strategist*

In a much discussed article, Ferejohn and Fiorina (1974, p. 525) set out "to show one means of rescuing rational choice theorists from this embarrassing predicament" of the voting paradox. They recognize that the Achilles' heel of rationality is the tiny but positive probability that a vote will change the outcome of an election. They then posit that voters may be using a decision strategy that does not weigh each possible event by its probability, but rather gives all events equal weight, like the minimax-regret strategy. Under this decision rule, one calculates not the actual payoff for each strategy choice and state-of-the-world combination, but the regret, that is, the loss one would experience in choosing the given strategy should this state of the world occur, as opposed to the best alternative strategy under this state of the world. One then chooses the action that minimizes the regret. Voting for one's second choice is, not surprisingly, a dominated strategy. So the decision reduces to whether to vote for one's first choice or to abstain. There are essentially two relevant states of the world to consider: S_I, the outcome of the election, is independent of whether one votes; S_D, by voting the individual, produces the victory of one's preferred candidate by either breaking a tie or forcing a runoff, which the candidate wins. If one votes and the outcome is independent of one's vote, one regrets voting because one has incurred C to no avail (see Matrix 14.1, cell (a): entries are sizes of regrets). If the outcome is independent of one's vote and one abstains, one has no regrets (b); the same is true if one votes and casts the decisive vote (c). If the net gains from having one's candidate's victory (B) are at least double the costs of voting, C, then one's maximum regret occurs when one abstains and one's vote would have been decisive (d). The minimax-regret strategy is to vote.

The minimax-regret strategy is extremely conservative and leads to rather bizarre behavior when applied to other decisions or even when extended within the voting context, as several critics have stressed.[6] Suppose, for example, that a voter is indifferent between the Republican and Democratic candidates. His minimax-regret strategy is then to abstain. Suppose now that the Nazi Party enters a candidate. Now the minimax-regret criterion forces the voter to the polls to avoid the possible,

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[6] Beck (1975), Goodin and Roberts (1975), Mayer and Good (1975), and Meehl (1977).

Matrix 14.1. *Minimax-regret options.*

		States	
		S_I	S_D
	Vote	(a) C	(c) 0
Strategies			
	Abstain	(b) 0	(d) B-C

although highly unlikely, event that the Nazi candidate will win, *and will do so by a single vote.*

Few situations in everyday life in which individuals routinely employ minimax-regret strategies come to mind. Indeed, it is easier to think of examples where people exhibit the reverse tendency. Losing one's home and possessions must be a disaster at least comparable to having one's second choice for president win, and probably occurs with no less probability than that one's vote decides an election. Yet most people do not protect themselves against losses from floods even when insurance is sold at rates below actuarial value (Kunreuther et al., 1978).[7] Is it reasonable to assume that the same person is a risktaker with respect to home and personal possessions, but becomes minimax-regret conservative when deciding whether or not to vote?

Ferejohn and Fiorina seem to think so. They cite Levine and Plott (1977) in support of the "possibility that individuals act as if they vary their decision rules in response to the decision context" (1975, p. 921). People also vote. The issue is not whether these things happen, but whether they can be explained and predicted using the rational egoism postulate. If individuals commonly switch from extremely risk-averse strategies to risk-taking strategies, how are we to predict their behavior? What theory tells us which situations elicit which strategy? To rationalize a given action ex post as possibly consistent with the use of a particular decision strategy in this situation does not suffice to justify the rational egoism postulate as the foundation of a *general* behavioral theory, unless one has a theory to predict which decision strategies are chosen in which situations.

14.2   The rational voter hypothesis: the evidence

Ferejohn and Fiorina's major defense of their thesis rests upon empirical evidence. The key determinant of voter turnout under the minimax-regret hypothesis is $B - C$. The costs of voting are difficult to define and measure, but data on the perceived differential between candidates are gathered in surveys like those conducted by the University of Michigan Survey Research Center (SRC). These may be used as a

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[7] On the other hand, some people do buy flood insurance, even though the probability of such an event is very low. Peters (1998) uses behavior such as this and assumptions about risk aversion less extreme than that of Ferejohn and Fiorina to try to rehabilitate the rational Downsian voter who votes.

measure of B. B also figures prominently in the Downsian expected utility model, as does P. Ferejohn and Fiorina's test of the minimax-regret hypothesis is to see whether differences in B and P are significantly related to voter abstentions. Under minimax-regret, only B should be related to voter turnout; the probability of the voter being decisive does not matter. Under Downsian expected utility maximization, both B and P should be related. The choice between the hypotheses rests on whether P, the probability that a voter's vote will be decisive, is systematically related to abstentions.

Examining pre- and postelection survey results for 1952, 1956, 1960, and 1964, they find the minimax-regret hypothesis supported five times, the Downsian hypothesis only once (1975). A glance at Figure 14.1 reveals why one might not be surprised by the weak performance of P that Ferejohn and Fiorina observed. In this figure, T plots the percentage of the voting-age population that voted in each presidential election from 1932 to 2000. W plots the votes going to the winning presidential candidate as a percentage of the combined votes of the Republican and Democratic candidates. The Downsian model predicts that troughs in W should coincide with peaks in T. The Kennedy–Nixon election of 1960 matches the highest turnout during the 64-year period with the narrowest margin of victory, and thus conforms well to this prediction. But turnout declined only slightly from its 1960 peak at the 1964 Johnson landslide victory, and several other years – like 1948 and 1976 – seem out of line with the Downsian model's prediction.

About 90 percent of the respondents in Ferejohn and Fiorina's sample claimed to have voted. This is a much higher percentage than is typical of the United States and suggests a nonrandom sample or misrepresentation of voter behavior. More important, the variation in abstention rates is likely to be too small to allow one to run tests against other variables. A look at some additional evidence is warranted.

Kenny and Rice (1989) found that over a third of survey respondents sometimes "worried" that if they did not vote their preferred candidate would lose by only one vote. Consistent with the minimax explanation of voting, a higher percentage of these respondents voted in the 1985 election than for the remainder of those surveyed.

Blais et al. (1995) observed an even higher fraction of Canadian students who "would feel terrible if I didn't vote and my candidate lost by one vote," and these students also exhibited a higher proclivity to vote in the 1993 national election. In a regression explaining the decision to vote, however, the "minimax variable" proved to be statistically insignificant once other variables measuring the individual's sense of civic duty were included. "Those who believe it is the duty of every citizen to vote are prone to say they would feel really terrible if they did not vote and their candidate lost by one vote" (Blais, Young, Fleury, and Lapp, 1995, p. 833). Consequently, the minimax-regret explanation for voting cannot be distinguished empirically from the taste-for-voting explanation.

One of the first papers to present empirical evidence in support of the full rational voter hypothesis was by Riker and Ordeshook (1968), from which we have taken the $R = PB + D - C$ formulation of this hypothesis. Riker and Ordeshook examined 4,294 responses to the 1952, 1956, and 1960 prepresidential SRC questionnaires.

1932 1936 1940 1944 1948 1952 1956 1960 1964 1968 1972 1976 1980 1984 1988 1992 1996 2000

year
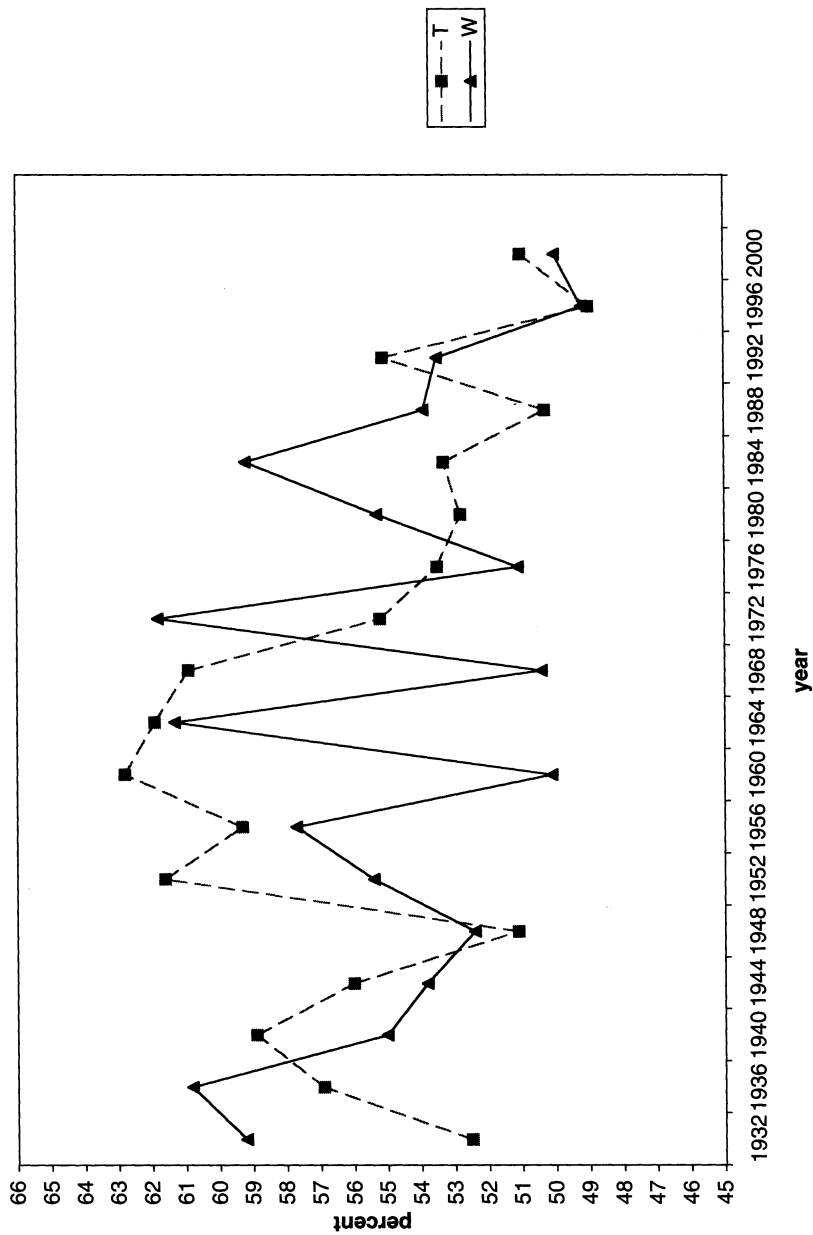
T is percentage of the voting age population that voted for a presidential candidate.
W is winning presidential candidate's percentage of the votes going to the Republican and Democratic candidates.

Figure 14.1. Winning percentages (W) and voter turnouts (T) in U.S. presidential elections, 1932–2000. *Source:* U.S. Department of Commerce, *Statistical Abstract of the United States,* various editions.

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They cross-tabulated responses to see whether P, B, and D have a significant impact on the probability of an individual's voting. They found that when one holds the levels of the other two variables fixed, P, B, and D all tend to have a significant impact on the probability of voting in the way that the rational voter hypothesis predicts. Thus, the Riker-Ordeshook results support both the instrumental-vote portion of the rational voter hypothesis (PB matters), as well as the tastes (D) matter portion.

Although P, B, and D all seem related to voter behavior in the manner that the rational voter hypothesis predicts, the quantitative importance of D is much greater than that of either P or B. The difference in probability of voting between those with high P (that is, those who thought the election would be close) and those with low P, ignoring both B and D, is 78 versus 72 percent. Eighty-two percent of those with high values for B voted, as opposed to 66 percent of those with low Bs. However, 87 percent of those with high Ds voted against only 51 percent of those with low Ds. D was operationalized by Riker and Ordeshook through questions related to citizen duty. Thus, the difference between a high and a low sense of citizen duty has a much larger quantitative impact on voter turnout than do differences between high values of either P or B and low values of these variables. Both parts of the rational voter hypothesis are supported in the Riker-Ordeshook study, but the taste component has the greatest quantitative impact.

Among the most ambitious tests of the rational voter hypothesis in terms of both sample size and number of variables included was that of Ashenfelter and Kelley (1975). They examined the responses of 1,893 individuals surveyed by the SRC in connection with the 1960 and 1972 presidential elections. They related individual answers to the question, "Did you vote?" to a large set of variables grouped under the following headings:

1. Personal characteristics
2. Cost variables
3. Strategic value of voting
4. Interest in campaign
5. Obligation toward voting.

These variables can be related to the rational voter hypothesis

$$R = PB + D - C, \tag{14.2}$$

with C obviously related to group 2 variables, P and B both related to 3; B and possibly D related to 4; and D and 5 related. The personal characteristics of each individual (education, income, age, and so on) could be related to any one of the components of R and do not clearly discriminate among the hypotheses.

Ashenfelter and Kelley's results gave mixed support for the rational voter hypothesis. Several measures of the cost of voting were statistically significant and of the right sign. Most important among these were the existence of a poll tax and literacy tests, legal in 1960 but abolished by 1972. A six-dollar poll tax in 1960 reduced the probability of an individual voting by 42 percent (Ashenfelter and Kelley, 1975, p. 708). This result gives one a rough idea of what the distribution of $PB + D$ is for a large fraction of voters. Several of the other variables introduced as proxies

for the costs of voting did not perform well, although multicollinearity among the cost variables was a problem.

Turning to proxies for P and B, Ashenfelter and Kelley (1975, p. 717) did not find that a voter's perception of whether the race is close or not had a statistically significant relationship to the probability of voting. On the other hand, this proxy for P was of the correct sign (t value of 1.4 in the pooled regression), and the difference in the percentage of voters who thought the 1972 Nixon landslide would be close and the percentage that thought the Nixon-Kennedy 1960 election would be close was so great (10 versus 60 percent) that the difference in the levels for this variable between 1960 and 1972 was enough to explain 40 percent of the change in turnout between 1960 and 1972 (pp. 720–1). Both of these findings are of considerable importance in explaining an otherwise perplexing inconsistency in the literature on voter participation, and we shall return to them.

Of the variables that might measure an individual's perception of the differences between the candidates, B, the answer to the question, "How do you think you will vote?" proved to have the most explanatory power. If, at the time of the survey, an individual was undecided as to how she would vote, there was a 40 percent lower probability that this individual would vote at all (p. 717). If an individual's indecision arises because of a small perceived difference between the two candidates, a small B, then this result offers considerable support for the rational voter hypothesis. But if indecision concerning how one will vote stems from indecision over whether one will vote – that is, one is not interested in the election – then the impact of the finding is less clear. Some people may simply prefer to remain aloof from the political process.

Individuals who felt a "strong obligation" to vote did so with a 30 percent higher probability; those with a "very strong obligation" voted 38 percent more often (pp. 719–20). These variables, measuring a sense of obligation to vote, had substantial explanatory power. Their impressive performance underlines the importance of the D term in the rational voter's calculus.

Ashenfelter and Kelley (1975, p. 724) concluded, "The theory of voting that is best supported by our results is that which posits a sense of duty or obligation as the primary motivation for voting. The variables with the greatest quantitative impact on voting are education, indecision, the dummy variables representing the sense of an obligation to vote, and certain cost variables." This study offers rather strong support for the Tullock-Riker-Ordeshook interpretation of rational voting, which sees the D and C terms in the $BP + D - C$ equation as dominating the voting decision. As noted earlier, indecision might arise from a small B term, but indecision might also detract from the D term, if the sense of obligation to vote is weakened by not knowing for whom to vote. Education should ceteris paribus reduce the importance of the BP term, since higher education levels should make one less susceptible to the misconception that one's vote makes a difference (that P is large). Education's positive impact on voting must then come through the D and C terms. We shall consider education's role in explaining voting again.

A very similar pattern of results appeared in Silver's (1973) analysis of 959 SRC questionnaires from the 1960 election survey. Several cost variables were significant,

as were interest in the campaign, sense of citizen duty, and education. Whether the individual thinks the election will be close or not did not have a significant impact on the probability of voting. Thus, the only support for the BP portion of the rational voter hypothesis in Silver's results came through the "interest in the campaign" responses, if one assumes that these measure B, although Silver regarded them as an index of D.

The same general picture of the voter's decision reappeared in the analysis of survey results for some 2,500 voters in the 1968 presidential election using Opinion Research Corporation and SRC data by Brody and Page (1973). In explaining abstentions they focused upon the importance of indifference – the perceived difference between candidates, and alienation – the difference between a voter's position and her preferred candidate's position. Abstentions did increase with both indifference and alienation, but not by enough to confirm a purely instrumentalist interpretation of the act of voting. Forty-three percent of the 201 individuals who saw no difference between the candidates ($B = 0$) voted nonetheless. Forty-four percent of the 174, who were both alienated and indifferent, chose to vote (Brody and Page, 1973, p. 6). For these voters and probably for many others, the D and C terms of R must explain the decision to vote.

A fifth test of the rational voter hypothesis using SRC data, although explicitly built on Downs' formulation, is more difficult to interpret. Frohlich et al. (1978) constructed proxies for B, P, and D from the SRC questions by combining various questions using different weights. They then made various assumptions about the distribution of the unknown C variable, and used combinations of B, P, D, and C[8] to predict both turnout and choice of candidate for the 1964 presidential election. The assumption that C is lognormally distributed worked best, and with this assumption they could predict turnout with an R^2 of 0.847.[9] But Frohlich et al. did not report their results in such a way to allow one to gauge the relative importance of BP, D, and C in explaining turnout, although the assumption concerning the distribution of C was important. However, the individual's opinion as to the efficacy of her vote (the proxy for P) did appear to be important, suggesting that P played a bigger role in explaining turnout in the study by Frohlich et al. than it did in those of Ferejohn and Fiorina, and Ashenfelter and Kelley.

Matsusaka and Palda (1993) presented survey evidence on voting in the May 1979 and February 1980 general elections in Canada. They found that a voter's expectation of the closeness of the election did not have a statistically significant impact on the probability of someone's voting. No direct measures of B, C, or D were included.

The results from these six studies plus four more are summarized in Table 14.1. To the four key variables in the Downsian model – P, B, D, and C – have been added two of the sociological variables that come up most consistently with the same signs, education (E) and income (Y). Even here, however, some exceptions exist.

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[8] They formulated the $R = BP + D - C$ equation slightly differently, but their formulation and the one used here are equivalent.

[9] As with the Ferejohn and Fiorina SRC sample, a gigantic 90.9 percent of the subjects reported having voted, raising issues of representativeness or misrepresentation.

Table 14.1. *Summary of studies testing the Downsian model (with extensions) using survey data*

Study	Sample and time period	P	B	D	C	E	Y
Riker and Ordeshook, 1968	4,294 questionnaires 1952, 1956, 1960 U.S. presidential elections	+	+	+			
Brody and Page, 1973	2,500 questionnaires 1968 presidential election		0			+	
Ashenfelter and Kelley, 1975	1,893 questionnaires 1960 + 1972 U.S. presidential elections	0	+	+	–	+	+
Silver, 1973	959 questionnaires 1960 U.S. presidential election	0	+?	+?	–	+	
Frohlich, Oppenheimer, Smith, and Young, 1978	1,067 questionnaires 1964 presidential election	+	+?	+?	–?		
Parry, Moyser, and Day, 1992	Nearly 1,600 questionnaires 1984 and 1985 U.K. national and local elections	+?	+?			–	0
Matsusaka and Palda, 1993	2,744 questionnaires 1979 and 1980 Canadian national elections	0				+	0
Knack, 1994	4,651 questionnaires 1984, 1986, 1988 U.S. national elections			+		+	+
Greene and Nikolaev, 1999	Nearly 21,000 questionnaires 1972–1993 U.S. elections	–				+	+
Thurner and Eymann, 2000	1,400 questionnaires 1990 German national election		+ (weak)[a]				

Notes: P, B, D, and C are proxies for the main components of the Downsian model, $R = PB + D - C$.
E and Y stand for the education level and income of the voter.
   "+" indicates a significant positive effect on the probability a survey respondent said that s/he voted,
   "–" a negative and significant coefficient, and a "0" an insignificant coefficient. Blank spaces imply that the variable was left out. A question mark implies uncertainty over whether the proxies used are related to the relevant variables.
[a] Thurner and Eymann test whether perceived differences in party positions on key issues increased the likelihood of the respondent's voting. For only one issue – immigration policy – was a significant effect found. I interpret this as weak support for the importance of B.

As noted above, respondents to voting surveys systematically overstate the frequency with which they vote. For example, 91 percent of the respondents to a survey in Canada stated that they voted in the 1979 Canadian general election for which the actual turnout was only 76 percent (Matsusaka and Palda, 1999). This degree of overstatement introduces an error in the measurement of the dependent variable that reduces the explanatory power of the model and explains why the typical model

using survey data can explain only a small percentage of the variation in the dependent variable. Indeed, Matsusaka and Palda (1999) find that the estimates of a model with 36 explanatory variables do not allow them to classify correctly any more of the voters than they are able to classify simply by predicting that *everyone* votes.

This difficulty with survey data is avoided when one uses actual turnout data. In these studies the rational voter hypothesis is tested by relating aggregate figures on voter turnout at, say, the state level, to characteristics of the population of voters in that state. These studies have basically tested to see whether P, the probability that a vote changes the outcome, has a significant impact on voter turnouts. They have done so by regressing turnout figures on p, the percentage of the vote going to the leading candidate, and N, the size of the jurisdiction. Reference to the formulas used to calculate P, which were discussed in Section 14.1.1, indicates that P varies inversely with both N and the deviation of p from 1/2. Table 14.2 summarizes the results from 26 studies, abstracting from the functional form used to introduce N and $(p - .5)$. Some use the expected (actual) percentage of the vote going to the winning candidate to proxy for $(p - .5)$; others use the winner's margin of victory. Each differs from the other with respect to choice of functional form and choice of other variables included. We focus here on $(p - .5)$ and N, but again report the results for education and income when these are included. A negative coefficient for $(p - .5)$ or N is interpreted as being consistent with what the rational voter hypothesis predicts. Only signs and significance levels are given in the table. Cebula and Murphy (1980) attempt an ex ante measure of $(p - .5)$ by limiting their sample to states with a Democratic majority in the lower house and estimating $(p - .5)$ as the fraction of the house that is Democratic. Foster's (1984) last set of results employs a similar ex ante measure of $(p - .5)$, but for both Republican and Democratic majorities. Shachar and Nalebuff (1999) estimate an equation to determine the expected vote. Most other studies assume rational expectations on the part of voters and measure $(p - .5)$ by the actual split in the vote between the candidates on election day.

The most ambitious of the studies – separated from the others by horizontal lines – is that of Foster (1984), who reestimates models from four studies, and estimates his own model using data for the 1968, 1972, 1976, and 1980 presidential elections. Instability in the coefficient estimates for cross sections precluded pooling the data to reestimate the Barzel-Silberberg and Kau-Rubin models, so the results for the individual cross sections are presented. In general, voter turnouts are not related to $(p - .5)$ or N in Foster's retesting of the rational voter hypothesis. Outside of the Nixon landslide in 1972, $(p - .5)$ does quite badly. N performs only moderately more consistently.

Foster (1984, p. 688) concludes "that the perceived probability of a tied election at the state level is not a powerful or reliable factor in explaining across-state variation in voter participation rates in presidential elections." This conclusion seems justified regarding his own estimates, and his reworking of the four other studies. But an examination of the other studies in Table 14.2 reveals that $(p - .5)$ and N have the predicted sign more often than not, and when their coefficients are significant they are, with but one exception, of the correct sign. Although closeness does not always "count" in elections, it does so more often than not.

Table 14.2. *Impact of the probability of a vote's being decisive on voter turnouts*

Study	Sample and time period	$(p-.5)$	N	E	Y
Barzel and Silberberg, 1973	122 gubernatorial elections, 1962, 1964, 1966, 1968	−(.01)	−INS		
Silberman and Durden, 1975	400 congressional districts, 1962	−(.01)	−(.01)		+(.01)
Tollison, Crain, and Paulter, 1975	29 gubernatorial elections, 1970	−(.10)	+INS		
Kau and Rubin, 1976	50 states, 1972 presidential	+INS	−(.01)		
Settle and Abrams, 1976	26 national presidential elections, 1868–1972, omitting 1944	−(.01)			
Crain and Deaton, 1977	50 states, 1972 presidential	−(.01)	−INS		+(.01)
Cebula and Murphy, 1980	35 states, 1976 presidential	−(.10)[a]			
Chapman and Palda, 1983	Electoral districts in 5 Canadian provinces, 1972–8	−(.05)[b]		+(.01)[c]	−(.01)[d]
Patterson and Caldeira, 1983	46 states, 1978, 1980 gubernatorial elections	−(.05)		+(.05)	INS
Foster, 1984 Barzel-Silberberg	50 states,				
	1968 presidential	+(.05)	+INS		
	1972 presidential	−(.01)	−INS		
	1976 presidential	−INS	−INS		
	1980 presidential	+INS	−INS		
Foster, 1984 Kau-Rubin	50 states,				
	1968 presidential	+(.05)	−INS		
	1972 presidential	−(.01)	−INS		
	1976 presidential	+INS	+INS		
	1980 presidential	−INS	−INS		
Foster, 1984 Silberman-Durden	200 states pooled, 1968, 1972, 1976, 1980 presidential	−INS	−(.10)		+(.01)
Foster, 1984 Crain-Deaton	200 states pooled, 1968, 1972, 1976, 1980 presidential	−INS	−(.01)		+(.01)
Foster, 1984 Wolfgram-Foster	200 states pooled, 1968, 1972, 1976, 1980 presidential	−(.10)[a]	−INS		
Tucker, 1986	362 contests for state legislature in Washington, 1976–82	−(.01)			
Hansen, Palfrey, and Rosenthal, 1987	1806 elections in Oregon school districts, 1970–3		−(.01)		
Durden and Gaynor, 1987	847 observations, 1970 and 1982 congressional elections	−(.01)	−(.01)		+(.01)

Study	Sample and time period	$(p - .5)$	N	E	Y
Capron and Kruseman, 1988	26 democratic countries, 1959–66		−(.01)		
Darvish and Rosenberg, 1988	108 municipalities in Israel, 1978, 1983		−(.01)		−(.01)
	Knesset, Israel, 1977, 1981		−INS		+(.10)
Cox and Munger, 1989	270 contest for U.S. House of Representatives, 1982	−(.01)		+(.01)	+(.01)
Filer, Kenny, and Morton, 1991, 1993	County level data, U.S. presidential elections 1948, 1960, 1980			+(.01)	+(.01)[e]
Kirchgässner and Schimmelpfennig, 1992	248 electoral districts, German national election of 1987	−(.01)	−(.05)		
	650 electoral districts, U.K. national election of 1987	−(.01)	INS		
Matsusaka, 1993	885 California ballot propositions, 1912–90	INS			
Fort, 1995	Nuclear power plant referenda in the U.S., 562 counties, 1976, 1980	−(.01)		+(.01)	
Grofman, Collet, and Griffin, 1998	Off-year House and Senate elections, 1952–92	−(.01)			
Shachar and Nalebuff, 1999	50 states, presidential elections 1948–88	−(.01)[f]	−(.01)	+(.01)	+(.01)

Notes: $(p - .5)$ = expected (actual) percentage of vote for leading candidate or the winner's margin of victory; N = size of jurisdiction.

[a] Proxy for ex ante measure of closeness used, proportion of Democrats in the lower house for all states with more than 50 percent Democratic representation.

[b] Significant in 6 of 10 provincial elections, of wrong sign and insignificant in 3 of 10.

[c] Coefficient on education generally positive, often significant.

[d] Coefficient on income always negative, sometimes significant.

[e] Nonlinear specification.

[f] Predicted closeness from a regression equation.

Skepticism about the importance of closeness is strengthened, on the other hand, when one considers some of the biases that arise when aggregate voting data are used to test the Downsian-rational-voter model. For example, candidates and interest groups have a greater incentive to mobilize their supporters when elections are expected to be close. Thus, voter turnout can arise in close elections not because voters have an enhanced opinion of the efficacy of their votes, but because more pressure has been placed on them to vote (Cox and Munger, 1989; Aldrich, 1993, 1995, 1997, pp. 387–9; Matsusaka and Palda, 1993; Shachar and Nalebuff, 1999).

Matsusaka and Palda (1993) test for the bias introduced by the "ecological fallacy" of substituting actual ex post election outcomes for the voters' expectations of the closeness of the election prior to voting. As reported earlier, they do not find that

the anticipated closeness of the election significantly affected the probability of the survey respondents' voting. The aggregate, ex post data for the same election, on the other hand, revealed a significant negative coefficient on the margin of victory, as the Downsian model predicts. Matsusaka and Palda interpret this disparity in outcomes as confirmation of the ecological fallacy. In a separate study using California ballot propositions, Matsusaka (1993) again finds the closeness of the context to be unimportant in explaining the number of the votes cast.

Grofman, Collet, and Griffin (1998), on the other hand, claim to have uncovered an ecological fallacy that works against the Downsian voter model. "Because, on average, a higher proportion of Republican-leaning voters register, a higher proportion of the Republican (Republican-leaning) registrants come to the polls, and a higher proportion of the Republican-leaning voters who are at the polls cast a ballot for a full slate of offices ... there is a possibility for an ecological confound in looking at the link between turnout and competition in cross-sectional terms. The ecological effect operates so that maximum turnout will not occur when Republican versus Democratic vote shares are nearly 50-50, ... but rather will occur in more lopsided elections in which the Republican vote share is substantially above 50 percent" (p. 235, footnotes omitted). Although they do not uncover this ecological confound in all of their regressions, they do tend to find the margin of victory to be a significant determinant of turnout in Senate and House elections (see Table 14.2). [10] As is unfortunately so often the case in empirical tests of a controversial hypothesis, different researchers reach opposing conclusions concerning the quantitative and statistical significance of the key variables – in this case of $(p - 0.5)$ and N in the Downsian voter model.

Here the Ashenfelter-Kelley results with regard to voter perceptions of the closeness of an election should be recalled. They found that there was a statistically weak and quantitatively small positive effect on the chances of an individual voting if the individual thought that the election was close. Changes in voters' perceptions of the closeness of an election should vary considerably from one election to another. A preelection Gallup poll projection of a candidate's getting 60 percent of the vote makes the candidate's victory a virtual certainty. Few would bet against a candidate with preelection poll percentages in the 54 to 56 range. The difference in prior probabilities between an election that is "too close to call," like the 1960 Kennedy-Nixon or 2000 Bush-Gore contests and the 1972 Nixon landslide over McGovern, is the difference between a coin flip and a sure bet. With these shifts in odds, even if only some voters are weakly influenced by changes in their perception of the closeness of the contest, large changes in turnout may ensue. This consideration may explain why the closeness of the race in each state seems to have had a significant impact on voter turnouts in Nixon's 1972 landslide win (Crain and Deaton, 1977; Foster-Barzel-Silberberg and Foster-Kau-Rubin, 1984), and why efficacy affected voter turnouts in Johnson's 1964 landslide (Frohlich et al., 1978).

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[10] See also Grofman's (1993b) discussion of biases in testing the Downsian voter model, and Shachar and Nalebuff (1999).

In some ways a weak performance of P in explaining voter turnouts supports the overall view of the voter as a rational egoist more than it contradicts this image. Even when the probability of each voter's voting for one of the candidates is .5, the probability of a single vote being decisive in a polity of 100,000,000 is only 0.00006. As Riker and Ordeshook (1968) note regarding their finding that voter turnout is responsive to changes in P, this finding implies an unusually elastic response by voters to changes in probabilities. If drivers responded to changes in the probability of accidents to the same degree, heavy rain would find the roads abandoned. Riker and Ordeshook (1968, pp. 38–9) suggest that the highly elastic response of voters to changes in P may be due to the persuasive impact of television and radio announcements claiming that "your vote counts."[11] Consistent with Riker and Ordeshook's explanation of the importance of *perceived* closeness of the election are the results of Tollison, Crain, and Paulter (1975). They found an enhanced impact for the closeness variable in states with relatively large newspaper circulation. "Information concerning the expected outcome [tends] to make more people vote in close races" (p. 45). But if voters are so easily misled concerning the importance of their vote, one's confidence in the intelligence of the rational voter is weakened. Although naiveté and rationality are not strictly opposites, the existence of the former does undermine the importance of the rationality assumption somewhat.

The results reviewed here suggest that the relationship between changes in P and voter abstentions is weaker than Riker and Ordeshook concluded. If so, then voters are less naive about their ability to change the outcome of the election, and thus behave in what seems like a more sophisticatedly rational way. But in so doing they confirm the more cynical interpretation of voter rationality, that is, the noninstrumentalist view that voting is determined solely by its entertainment–psychic income value (D) and private costs (C). This interpretation raises the issue, in deriving a theory of voting, of the determinants of D and C.

Some components of C are easy to identify. Poll taxes, literacy tests, and other barriers erected in the southern states to prevent blacks from registering or voting have been found to have significant, negative effects (Ashenfelter and Kelley, 1975; Filer, Kenny, and Morton, 1991; and the case studies in Davidson and Grofman, 1994). Similarly, Jackman (1987) has found that voter turnouts tend to be higher in countries in which small fines are levied for not voting.

Several states in the United States construct jury lists from voter registration rolls. This practice raises the cost of registering to vote by increasing the likelihood if one does that one is called to jury duty. Knack (1993, 2000) found that selecting jurors from voter registration lists significantly lowers the likelihood of people registering to vote, as well as voter participation rates.

Heckelman (1995) found a seven-percentage-point decline in voting in U.S. gubernatorial elections following the introduction of secret ballots in the early 1890s.

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[11] As noted earlier, the intensity with which citizens are told that their vote counts or the frequency with which they receive other messages and pressure to vote may increase in districts where a close vote is expected, giving rise to a spurious correlation between turnouts and closeness.

The incentive to bribe people to vote for a particular candidate declined dramatically once the briber could not verify that the bribe recipient had in fact voted for the "right candidate." When bribes for votes declined, so too did voting.[12]

One popularly held belief is that bad weather deters citizens from voting. Shachar and Nalebuff (1999) observed turnouts in U.S. presidential elections declined when it rained, but both Knack (1994) and Matsusaka and Palda (1999) found that the weather had no significant impact on turnouts in the United States and Canada. However, Knack (1994) did observe that bad weather caused a significant drop in the likelihood that those with a low sense of civic duty would vote, while it had no effect on the voting of those with a high sense of civic duty. Knack's findings underscore the joint importance of the D and C terms in the Downsian model.[13]

From whence springs a sense of civic duty, a taste for voting, and how does one predict its variability across individuals and over time? We now examine two answers to this question.

14.3   The expressive voter hypothesis

In trying to reconcile the act of voting with rational individual behavior, Fiorina (1976) offered the hypothesis that an individual voted not to bring about a particular election outcome, but to *express* an opinion as to what that outcome should be. The utility gain from voting comes from the act of voting itself and the opportunity for expression that this act affords, not from the expected payoff from the outcome of the election. This utility gain from expression becomes another candidate for inclusion in D to explain the act of voting.

Of course, this expressive voter hypothesis is just as tautological as the taste for voting hypothesis unless we can define what it is that some people what to express, and others do not, and thereby construct a refutable *hypothesis. One possibility is* that the voter wants to express a preference for the candidate who promises her the highest utility payoff after the election. We all like people "who are on our side" more than those who seek to harm us; people who are similar to ourselves over those who are radically different; and so on. If candidate X promises to do more for us – or less against us – than candidate Y, then we might choose to vote for X, not because we thought that in so doing we would bring about her victory, but as a way of expressing our support for her position, of thanking her for standing up for our interests, of cheering her on. This interpretation of the expressive voting hypothesis makes D a function of B, as, for example,

$$D = D' + B, \tag{14.3}$$

where D' captures other items in D, like a sense of civic duty. This interpretation implies that B alone and not P or PB should have the most explanatory power in the

[12] See also Heckelman (2000).
[13] See also Knack (1992).

Downsian model. This predition is identical to that of the minimax-regret hypothesis, and thus Ferejohn and Fiorina's (1975) evidence in favor of minimax-regret can also be interpreted as support for an expressive voting hypothesis. Studies finding P to be a significant factor and B of modest significance should be counted against it, on the other hand. This first interpretation of the expressive voter hypothesis leads to the same prediction as the Downsian model with respect to *how* an individual votes, if she votes. Its novelty comes entirely in explaining *why* an individual votes.

Several writers have offered a quite different interpretation of expressive voting. They claim that by uncoupling the act of voting from the outcome of the election, the existence of a low P with large electorates frees the voter to express preferences that deviate dramatically from those that she would reveal if she thought that her vote would be decisive. Brennan and Buchanan (1984) suggest, for example, that the noninstrumentalist nature of voting may lead to more irresponsible voting. The voter believes that X's victory would be a disaster for the country. But X is the only candidate who condemns the influx of immigrants and promises "to do something about them." The voter feels threatened by the increasing numbers of immigrants and gives vent to her anxiety by voting for X, an action she would never take if she thought that X's victory hinged on her vote.

Alternatively, knowledge that one's vote "does not count" may induce one to express more noble sentiments. Some people give to charities, stop to help someone whose car has broken down, cart used bottles and cans to recycling bins, and so on. One explanation for these seemingly unselfish actions is that the actor's behavior is governed by norms or moral convictions, like the "golden rule," that prescribe certain sorts of behavior toward others. Since voting involves collective decisions that affect all members of the community, norms that govern conduct toward others might be expected to be particularly likely to come into play when individuals vote. When individuals vote they express their views as to what is good for the community and which candidate's election is most in the public interest.[14]

This interpretation of expressive voting seems to be contradicted by the evidence that many individuals vote strategically, however (Cox, 1997). In a single-member district contest a voter will not vote for her first choice if this person is running third or fourth in the preelection polling. She chooses not to "throw away her vote" in this way, and instead votes for one of the two front-runners. If this voter only wished to express her views as to which candidate's victory would be best for the community, one would not expect her to give the polls any weight. Her desire not to "waste her vote" seems to suggest that she thinks her "vote counts," and thus that she views voting as an instrumental action.

Both Carter and Guerette (1992) and Fischer (1996) have run experiments to test a private interest/public interest form of the expressive voting hypothesis. They tested whether subjects were more likely to give money to a charity rather than claim

[14] Although Brennan and Lomasky (1993) and Brennan and Hamlin (2000) admit that expressive voting might take a vindictive form, their books place much more emphasis on the well-intentioned voter, and constitute a spirited defense of this version of the expressive voter hypothesis.

it for themselves when the probability of their vote counting declined. Both studies found weak evidence of expressive voting.[15]

This version of the expressive voter hypothesis has much in common with the ethical voter hypothesis.

14.4   The ethical voter hypothesis

All of the studies reviewed so far see the individual as maximizing his utility, and thus are broadly consistent with the behavioral postulate underlying all public choice. Even the last hypothesis considered posits that it is the utility that an individual gets from expressing his views about the public interest that leads him to vote. The interpretation of the act of voting discussed in this section goes a step farther.[16] It views the voter as having two sets of preferences, an ethical set and a selfish set. The latter includes only one's own utility; the former includes the utilities of others, or one's perception thereof. In some situations – for example, the consumer in the marketplace – only one's selfish preferences come into play. One maximizes one's utility as conventionally defined. In others, one employs one's ethical preferences. Voting is one of those situations in which one's ethical preferences govern.

This Jekyll-and-Hyde view of man's nature has a long and distinguished ancestry. The importance of "a sense of civic duty" in explaining voting resonates with this "ethical voter" hypothesis, as does the interpretation of expressive voting which sees it as an opportunity to express one's views about the public interest. But the ethical voter hypothesis suffers from the same deficiency as the "taste for participation" as an explanation for voting. Instead of providing us with a hypothesis with which we can develop a theory of voting and perhaps of other cooperative-social behavior, it provides an ex post rationalization for the act. It provides the end for a story about voting, not the beginning for a behavioral theory of voting.

The kind of ethical-selfish dichotomy presumed in the ethical theory of voting might be operationalized as a predictive theory by assuming that each individual i maximizes an objective function of the following form:[17]

$$O_i = U_i + \theta \sum_{j \neq i} U_j. \tag{14.4}$$

A purely selfish voter sets $\theta = 0$; a fully altruistic voter sets $\theta = 1$, as in Harsanyi (1955). In either case, the individual is behaving rationally in the sense of maximizing an objective function. In either case, the analyst benefits from the most important advantage of the rationality assumption, clear predictions about human behavior, in

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[15] Fischer critiques Carter and Guerette's experimental design and claims to find much stronger support for expressive voting than they did. Of the 82 participants 42 voted selfishly in all eight of his experiments, however, with another 20 voting consistently altruistically. The remaining 20 did not vote consistently, as the expressive voting hypothesis predicted. Thus, the hypothesis accounted for the behavior of at best something less than a quarter of the participants in the experiment.

[16] See Goodin and Roberts (1975), Margolis (1982b), and Etzioni (1986). Harsanyi's (1955) approach is the same, although he does not discuss the act of voting. See also Arrow's (1963, pp. 81–91) discussion.

[17] This approach is elaborated in Mueller (1986).

this case in the form of first-order conditions to the maximization of (14.4) with θ equal to either zero or one.

Hudson and Jones (1994) have estimated θ, and thus have provided a direct test of this interpretation of the ethical voter hypothesis. They conducted two surveys in Bath, England in 1988 and 1992. Voters were asked to comment on different policy proposals regarding changes in taxes and expenditures on health, education, and social benefits. Voters first identified their preferred policy, and then stated (1) whether they thought that the policy would benefit themselves personally, and (2) whether they thought that the policy would be in the public's interest. From the answers to these questions Hudson and Jones inferred magnitudes of θ of 0.66 in 1988, and 0.73 in 1992.

In Hudson and Jones's survey voters were confronted with a choice between proposals that were in their self-interest and proposals in what they perceived to be the public's interest. In an analysis of voting in Oregon intermediate election districts by Jeffrey Smith (1975), voters were effectively confronted with a simple choice: did they favor higher taxes or not? Voting took place on whether tax burdens of the districts should be equalized or not, with equalization raising the tax rates of some districts and lowering those of others. A simple application of the self-interest hypothesis implied a vote for equalization if it lowered one's taxes – against it if it raised them. The percentage favoring equalization was positively related to whether one gained from equalization, and was larger for large gains (Smith, 1975, p. 64).

Percentage of large[18] gainers favoring equalization   60.7
Percentage of small gainers favoring equalization   52.9
Percentage of small losers favoring equalization   46.1
Percentage of large losers favoring equalization   32.7

Note that in this survey voters did not face a direct choice between their own private interest and the public interest (although one might argue that an ethical voter would vote for equalization out of a sense of fairness). While a majority voted consistently with their self-interest, over 40 percent of the population voted to raise their tax rates. Some factors beyond private interest must have influenced the voting of this substantial fraction of citizens.[19]

Tax limitation proposals raise private/public interest trade-offs more directly through the reductions in government spending implied, if the limitation proposal succeeds. Gramlich and Rubinfeld (1982b) found from an examination of the responses of 2,001 households to a telephone survey in Michigan that transfer recipients (the aged, unemployed, and those on welfare) had only a moderately higher tendency to vote against a tax limitation proposal than nonrecipients. A more significant difference occurred for public employees; yet even here, 42 percent of those voting voted to *restrict* expenditures. In general, self-interest voting models have not done well in explaining voting on Proposition 13 issues (Lowery and

[18] Large gainers (losers) had their tax rates lowered (raised) by equalization by more than $1 per $1,000 of assessed value.

[19] A similar interpretation lends itself to Bloom's (1979) analysis of voting on tax classification in Massachusetts.

Sigelman, 1981). Rather, votes for these proposals seem better treated as "symbolic acts" against "bad government" by citizens seeking improved government efficiency, the kinds of actions one might expect from a civic-minded (expressive) voter.

More direct comparisons with Hudson and Jones's test of the ethical voter hypothesis are obtained in studies of *economic voting*, which estimate the relative weights placed on *egotropic* and *sociotropic* variables. Egotropic variables measure voter expectations regarding the effect of the government's policies on the voter's own income, employment status, and so on. Sociotropic variables measure voter expectations regarding the effect of the government's policies on the economy at large, that is, on the welfare of all citizens. By linking voters' support for the government to their answers to these sorts of questions, researchers have been able to estimate equivalents to θ in (14.4), where $\theta = 1$ implies full weight on sociotropic variables, and $\theta = 0$ implies full weight on the egotropic variables. Estimates of θ falling between 0.5 and 1.0 have been made for the United States, the United Kingdom, France, and Germany.[20] Only Danish voters seem to conform largely to the egotropic economic man assumption in studies by Nannestad and Paldam (1996, 1997). They estimate a θ for Denmark of about 0.15.[21]

Findings in public goods experiments that individuals tend to contribute voluntarily about half of the difference between jointly optimal and the individually optimal amounts (Hoffman, 1997) are also consistent with a θ of about 0.5.

All of the preceeding tests of the motivation of voters directly or indirectly assume that the voter behaves either ethically or selfishly. The voter is given a choice between a proposal that is the public interest and one in his narrow interest, $0 < \theta < 1$. No effort is made to test an *un*ethical voter hypothesis, and no allowance is made for the possibility that $\theta < 0$. However, Sears, Law, Tyler, and Allen (1980) found in their analysis of Center for Political Studies survey data for the 1976 presidential election that racial prejudice was one of the "symbolic attitudes [that] had strong effects" in explaining voting on four controversial policy areas, "while self-interest had almost none" (see also Sears, Hensler, and Speer, 1979). Mr. Hyde and Dr. Jekyll are joined by Simon Legree. On issues regarding the treatment of men and women sexist attitudes might well play a role. The set of different preferences that the individual might draw upon grows. Even if we assume that we can specify the arguments of the individual utility functions that go into (14.4) – income, public good quantities, and the like – we cannot estimate such a model unless we can also specify the determinants of θ. How can one predict when an individual will behave selfishly and when ethically, or the degree to which one's ethical preferences govern one's actions, when ethical behavior is not a simple either-or decision? What makes Danish voters more egotropic than their German neighbors? What makes economics students free-ride to a greater degree than students from other disciplines (Marwell and Ames, 1981)? To predict such differences one needs to do more than merely posit the existence of ethical preferences; one needs a theory of how ethical preferences

[20] Kinder and Kiewiet (1979), Markus (1988, 1990), and Lewis-Beck (1988). See also Fiorina (1978, 1981), Kiewiet (1981, 1983), Kirchgässner (1985), and Lewin (1991).
[21] Estimate inferred from Table 6 in Nannestad and Paldam (1996).

are formed, what determines their strength, and what triggers their use. One needs a theory of learning, which probably must be found in the areas of psychology or sociology.

14.5 Ethical preferences as selfish behavior

Behavioral psychology offers a relatively simple description of the learning process.[22] Actions followed by rewards increase in frequency. Actions followed by punishment decline in frequency. Man learns to avoid doing that which brings about pain, and to do that which produces pleasure. When one observes how man learns, it is difficult to reject the postulate that man is innately a selfish animal. The same principles appear to describe the learning processes of all animals. Man differs from other animals not in how he learns, but in what he learns. Man is capable of learning far more complex behavioral patterns than are other creatures.[23]

Ethical behavior is learned. Much of this learning takes place when we are children. When we commit acts that harm others we are punished by our parents, teachers, and other adult supervisors. Actions that benefit others are rewarded. Ethical behavior patterns learned as children can be maintained at high frequency levels through adulthood by only occasional positive and negative reinforcement.[24] What we normally describe as ethical behavior is inherently no more or less selfish than what we call selfish behavior. It is a conditioned response to certain stimuli governed by past reinforcement experience.

There are several advantages to using behavioral psychology or some version of cognitive psychology that subsumes its principles to explain ethical behavior. First, it allows us to work with a single conceptualization of man, a conceptualization consistent with the selfish-egoism postulate underlying both economics and public choice. Second, it allows us to develop a purely positive theory of behavior, free from the normative prescripts that often accompany the Jekyll-and-Hyde view of man. Third, it gives us some insight into what variables might explain why some individuals behave in what is commonly described as an ethical manner, and some do not. Home environment during childhood, educational experience, religion, community stability, and any other factors that might affect an individual's ethical learning experience become possible candidates as explanatory variables in a positive theory of ethical behavior. Thus, ethical behavior such as voting can be explained if one retains the self-interest assumption of public choice and drops, or at least relaxes, the rationality assumption.

Equation (14.4) can be used to describe behavior in situations involving ethical choices if one assumes that individuals act *as if* they were maximizing (14.4), with some θ not necessarily equal to zero or one. The argument is similar to Alchian's (1950) argument that competition eliminates less profitable firms, leaving only the

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[22] For reviews of the basic principles of behavioral psychology, see Notterman (1970), and Schwartz and Lacey (1982, chs. 1–6).

[23] To explain complex behavior some variant of cognitive theory will most likely be required. But as the opening quotation from Schumpeter suggests, voting is probably best treated as a relatively simple, habitual action.

[24] See references in n. 22.

most profitable, whose actions resemble those they would have chosen had they consciously been maximizing profit even when they were not. It is in society's collective interest in certain contexts to establish institutions that condition people to behave as if they *were maximizing (14.4) with* $\theta = 1$. Although this degree of cooperative behavior is seldom achieved, the conditioning process is usually successful in eliciting some degree of cooperation. Observed behavior thus resembles what one would expect if individuals consciously maximized (14.4) with some $\theta > 0$, even though (because) individual behavior is governed by social conditioning.[25] Under this interpretation θ is a behavioral parameter to be explained by the individual's or group's conditioning history, not a choice variable set equal to zero or one depending on whether the individual has chosen today to be Hyde or Jekyll.[26]

14.6   The selfish voter

Normally, when we model individual behavior, an individual's past history plays no part in the analysis. Sunk costs are sunk, bygones are bygones, and all that matters are the future consequences of an individual's action. With respect to voting, this conceptualization of the voting act boils the number of relevant variables down to three: the benefits from the preferred candidate's victory, B; the probability that one's vote will bring about this victory, P; and the costs of getting to the polls, C.

Modeling individual behavior as conditioned by past learning shifts one's attention from the future payoffs from different actions to the past history of the individual. The list of potential explanatory variables is expanded considerably.

We have already made the point that years of education might, if voters were purely rational and egoistic, be expected to be negatively related to the probability of voting. The uneducated might be duped by television advertisements to believe their vote would count, but the more educated should remain rationally cynical regarding the efficacy of their vote.

One learns more than probability theory in school, however. One also learns to cooperate. Number of years of successfully completed schooling measures the

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[25] Darwinian selection will play a role in determining which social institutions or even which social groups survive. If the collective gains from cooperation are large, those groups that are more successful at eliciting cooperative behavior (inducing individuals to behave as if $\theta = 1$) will have higher survival chances. Evolutionary forces may also select gene structures more conducive to the teaching and learning of cooperative behavior, when cooperation raises individual survival chances.

[26] Overbye (1995a) proposes an explanation for voting that leads to many similar predictions to the behavioral theory just discussed, except that his theory is fully consistent with the selfish, rational actor assumption. Building on Frank (1988), Overbye argues that people vote to develop a *reputation* as the kind of person who votes, just as charitable giving can be interpreted as an *investment* in developing a reputation for generosity. Such reputations serve as signals to others that the actor is the kind of person who will not cheat on a contract, cooperates in prisoners' dilemmas, and so on. In the long run such reputations lead to higher incomes, happier personal relationships, and the like. Thus developing such a reputation by voting is a rational action that is in the long-run selfish interest of the individual. Overbye's hypothesis leads to analogous predictions as the psychological explanation given above, because the value of such a reputation depends on an individual's peer group. Thus, many of the same sociological variables that one expects will be correlated with conditioned habits to cooperate are predicted to be important by Overbye.

Hudson (1995) and Uhlaner (1989a,b, 1993) come closer to the behavioral approach outlined here in hypothesizing a link between voting and group membership, and the rewards and approbation of one's peers.

amount and strength of conditioning in the numerous cooperative games played in a school environment. By the time one graduates one has been rewarded again and again for going by the rules and doing what is expected, and one has usually been punished on those occasions when one has broken the rules. One expects those with more education to behave more cooperatively, to break fewer rules, be they driving laws or social mores, and to do more of what is expected of them as a citizen. Years of education have proven to be positively and significantly related to voter turnout in virtually every study of voter participation.[27]

Income is another variable which invariably picks up the wrong sign in explaining voter turnout from what a straightforward application of the rational egoism postulate would imply. The higher one's income, the higher the opportunity cost of time, and ceteris paribus the lower the probability that one goes to the polls.[28] Yet income is consistently, positively correlated with the probability of voting.[29]

Income, like a graduation certificate, is a mark of success at playing by certain rules of the societal game. (Of course, some individuals accumulate income by successfully breaking the rules, but I doubt that many of these persons are part of the SRC panels.) Individuals with high income are more likely to go by the rules, and to live within the social mores. Moreover, their high incomes are evidence that they have been rewarded for doing so, since money is society's chief token reinforcer. High-income individuals, like the highly educated, can be expected to break fewer rules and to behave in other socially cooperative ways, like voting.

This interpretation of voting as a sort of conditioned "good habit" would seem to be consistent with Blais and Young's (1999) experimental results. They observed a significant drop in participation rates among Canadian university students after they had heard a 10-minute lecture explaining the logic of the Downsian voter model. It appeared that many "students generally do not think in terms of benefits and costs" when they vote, but rather for them voting "is an unreflective and habitual act, based primarily on a sense of duty" (pp. 52–3). When they heard the act characterized as a rational choice involving weighing benefits and costs, an additional 7 percent chose not to vote.

There are other explanations than the one given above for why income and education might be positively related to political participation, of course. For example, education may reduce the cost of gathering information about candidates and thus be positively related to voting as predicted by the rational voter model.[30] Without denying the possible relevance of these explanations, I nevertheless favor starting from

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[27] Campbell et al. (1964, pp. 251–4); Milbrath (1965); Kelley, Ayres, and Bowen (1967); and Verba and Nie (1972, pp. 95–101). See also studies cited in Tables 14.1 and 14.2.
   Education appears to have a strong, positive effect on voting in the Patterson and Caldeira (1983) study; also, when correlated separately with voting. Its failure to have a significant impact when income is included is probably due to multicollinearity, a problem observed in several studies.

[28] See discussion of Russell, Fraser, and Frey (1972); and Tollison and Willett (1973).

[29] Dahl (1961) and Lane (1966) as cited by Frey (1971); Milbrath (1965); Kelley, Ayres, and Bowen (1967); Dennis (1970); and Verba and Nie (1972, pp. 95–101). See also studies in Tables 14.1 and 14.2.
   An important exception is Chapman and Palda (1983), who get a significant negative coefficient, as predicted by the rational voter hypothesis. See also Mueller and Stratmann (2002).

[30] See in particular Frey (1971), and ensuing interchange among Russell (1972), Fraser (1972), Frey (1972), Tollison and Willett (1973), and Chapman and Palda (1983).

a behavioralist view toward voting and other forms of cooperative behavior, both because this approach offers a more natural explanation for why these and other background characteristics of the voter matter, and because this approach offers greater potential for developing additional hypotheses about individual behavior in situations like voting, when narrowly self-interested behavior is inconsistent with the behavior that social conditioning dictates.

If education is positively related to voting because it reduces the costs of political participation, for example, one would expect a secular rise in participation rates since education levels have been rising. Yet since the early 1960s voter participation in the United States has declined steadily and dramatically (see Figure 14.1). Abramson and Aldrich (1982) attribute at least two-thirds of this decline to two factors: (1) weakening voter identification with the political parties, and (2) declining beliefs in the responsiveness of government. Both of these factors may in turn be explained as the result of negative rewards from voting in presidential elections since 1960. In a normal presidential election, over half of the voters are rewarded for going to the polls in that this action is followed by their preferred candidate's victory. In this way, majority rule tends to sustain political participation. Since 1960, however, three presidents have been elected whose performance in office must have been a great disappointment to their supporters: Johnson because of Vietnam, Nixon because of Watergate, and Carter because of an overall poor performance.[31] Thus, voting for the winning candidate was punished, and this punishment may explain the drop in the frequency with which individuals have gone to the polls after 1960. Figure 14.1 also reveals that the downward spiral in voting turnouts since 1960 has simply brought voter turnouts in the United States back to their level near the bottom of the Great Depression in 1932, where disillusionment with the government was again high.

This behavioral explanation of voting can also be interpreted as support for the expressive voter hypothesis. Brennan and Buchanan (1984) liken voting to cheering at a sporting event. In each case the actor obtains personal pleasure from the act; in each case the action has a negligible effect on the outcome of the contest. A fan's cheering is rewarded if his team wins; most fans cheer for the home team. Winning home teams provide more positive reinforcement for their supporters. Winning home teams tend to have higher attendance levels and more vocal fans than do losing teams.[32]

This positive-reinforcement interpretation of voting is also consistent with the overwhelming evidence of higher turnouts in countries with multiparty systems than in two-party democracies (Jackman, 1987). In a multiparty system, the actions of nearly all voters are reinforced in that the party for which they voted wins some

[31] To this list we may some day be able to add Clinton, because of his sexual escapades, but at this writing it is too soon to say.

[32] Matsusaka (1995) offers a somewhat different behavioral explanation for the decline in voting in U.S. presidential elections since 1960. He puts forward a variant of the expressive voter hypothesis in which voters obtain more utility from voting, the more confident they are about the superiority of their preferred candidate. Matsusaka speculates that Vietnam, Watergate, and the like increased uncertainty among Americans about what the "correct model of the world" is, and thus about which candidate to vote for. This enhanced uncertainty led to the decline in turnouts.

seats. In a two-party system, a substantial fraction of all voters are punished for voting by the defeat of their party.

14.7   Summary and implications

All of the public choice literature as it pertains to the outcomes of committee voting or elections assumes that voters vote, whether sincerely or strategically, to attain that outcome promising them the highest benefits. All of public choice is based on the assumption that it is the attainment of B in the equation $R = PB + D - C$ that determines the way in which an individual votes.

The logical foundation for this assumption is significantly undermined in elections or committees in which the number of voters is large. P is then infinitesimal, the PB term vanishes, and considerations other than the instrumental value of the vote determine whether or not an individual votes, or at least they ought to if the individual is both rational and sufficiently intelligent to make a reasonable guess as to the magnitude of P.

The empirical literature reviewed here is reassuring with respect to both the intelligence and the rationality of voters in that it indicates that P has a rather weak (statistically) and inconsistent relationship to the decision to vote. The primary explanation for why individuals vote comes from the D and C terms in R, as Downs (1957) and Tullock (1967a) first asserted.

The interpretation and specification of the components of C have been fairly uncontroversial, and considerable empirical evidence indicates that turnout falls as the costs of voting rise. Considerable disagreement exists, on the other hand, over the interpretation and modeling of D.

One interpretation is that some individuals get utility from expressing their preferences for a particular candidate through the act of voting. This interpretation provides an explanation for *why* a person votes, but not for how she votes. To use the expressive voter hypothesis to explain how people vote one needs to specify what it is exactly that people want to express by voting.

In contrast to the expressive voter hypothesis, the ethical voter hypothesis is an explanation for *how* a person votes. She votes as her ethical preferences tell her to vote. The fully ethical voter with a $\theta = 1$ votes for the proposal that maximizes the aggregate welfare of the community in which her utility has a negligible weight. The *rational*, ethical voter realizes, however, that the probability that her vote brings about this outcome is also negligible, and she thus abstains. To obtain an ethical theory of why people vote from the ethical theory of voting one must posit that voting improves the welfare of others by, say, improving the quality of the outcomes of the political process (better outcomes arise when all vote), or by helping to maintain democratic institutions. The D term in $R = PB + D - C$ is essentially the effect of one's vote on the welfare of all others.[33] Thus, the ethical voter hypothesis as an explanation for why people vote essentially subsumes the premise of the civic-duty rationale for voting in its set of givens.

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[33] This is the way Frohlich et al. (1978) describe the term in their Downsian test.

330 The paradox of voting

While the expressive and ethical voter hypotheses offer rationales for why and how people vote, neither provides a set of testable propositions without further elaboration. To see why this is so consider again the voting/cheering analogy. Why do some fans cheer? – to express support for a team. Suppose now that we wish to go beyond merely rationalizing why some fans engage in the seemingly irrational act of cheering. Suppose that we wish to predict which fans cheer and which do not, which team they cheer for, how loudly they cheer, and so on. How would we proceed? One way would be to survey fans at a game. We might then find that those fans who cheer for the home team tend to come from the home team's area. Many of those cheering for the visiting team have traveled from its area. Going further and inquiring how they came to be fans, we might find that they grew up in the area, their parents took them to games when they were children, most of their school mates as children also rooted for the team, and so on. We would not be surprised to find that the backgrounds of people at the game who do not cheer are quite different. From this sort of information we could begin to construct a set of variables measuring the personal characteristics of sports fans, which would allow us to predict cheering behavior.

Such an approach would be similar to the survey studies used to study voter behavior. Behavioral psychology offers an explanation for why an individual's personal history is an important determinant of his current behavior, and a guide as to which variables are likely to be important in explaining voting. Applying the principles of behavioral psychology is a particularly attractive way for public choice to introduce "sociological variables" like education and family background into a model of voter behavior, because it is fully compatible with the *egoistic* portion of the rational-egoism postulate, and in certain contexts behavioral psychology predicts that individuals act *as if* they were maximizing a utility function.

Such a behavioralist theory of voting can be interpreted simply as an alternative to rational actor theories including the expressive and ethical voter variants. However, one can also view the different theories as complementary. Behavioral psychology provides a theory of preference formation that can guide the selection of variables in the preferences that an expressive voter wishes to express, for example. The evidence reviewed above indicates that individuals place considerable weight on the welfare of others when stating their preferences toward certain government policies. They respond to survey questions *as if* they were maximizing an objective function that places a positive weight on the welfare of others. An expressive-ethical voter hypothesis is consistent with these survey responses. Several implications follow.

First, if voting itself were a (conditioned) ethical action, then estimates of the weight placed on the utilities of others, the θ of (14.4), that are based on survey responses of *citizens* would *underestimate* the θs for *voters*, since citizens with high θs would vote in higher proportions than the average survey respondent. Experiments like those of Fischer (1996), where voting is effectively compelled by the nature of the experiment, overestimate the extent of purely self-interested behavior in the population.[34]

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[34] Recall that slightly more than half of the participants voted selfishly in all eight of Fischer's experiments, with the remainder splitting equally between consistently altruistic and expressively altruistic voting.

This observation has an important implication for proposals to increase voter turnouts artifically by, say, fining people who do not vote (Lijphart, 1997). Such measures would increase the participation rates of "selfish voters" relative to "ethical voters," and thus might actually reduce the quality of the social outcomes.

This danger is increased if an important reason for voter abstentions is voter uncertainty over the choice of candidates, as Matsusaka (1995) argues and considerable survey evidence suggests.[35] Compelling more people to vote is thus likely to drive many people to the polls who are uncertain or undecided between the candidates. This hardly seems like a way to improve the outcomes of elections.[36]

The key normative question raised by the literature on why and how people vote is whether substituting a (conditioned) expressive-ethical voter for the rational, self-interested voter of the traditional public choice model will improve or worsen the outcomes from the process. Unfortunately, no simple "yes" or "no" answer can be given to this question.[37] Even when people place weights on the welfare of others, they may disagree in their rankings of various policy alternatives. Cycling is thus still possible, and with it comes the possibility of agenda manipulation and the like.

On the other hand, filtering issues through an ethical/ideological screen does tend to reduce the dimensionality of the issue space and thereby the likelihood of cycles (Hinich and Munger, 1994, chs. 6 and 7). Introducing ethical/ideological considerations can also increase their saliency, however, and make compromise more difficult. On issues like abortion, school busing, immigration policy, and the official status of languages, the middle of the ideological spectrum may be sparsely occupied. Even when the ethical/ideological framing of issues reduces the issue space to a single left/right dimension, political instability may ensue if ethical/ideological divisions in the polity lead to polarization (Sartori, 1976). The inability to compromise on an ethical issue helped lead the United States into a bloody civil war. Belgium and Canada have been driven to the brink of dissolution over language issues; Northern Ireland and Israel over religion.

The probabilistic voting model predicts equilibria in two-party electoral systems at which some form of social welfare function is maximized. With interest groups and campaign contributions added to the model, the weights each group implicitly receives in the social welfare function change, but the predicted outcomes remain Pareto optimal. These predictions are not affected by the substitution of expressive-ethical preferences of the sort implied by (14.4) for selfish ones. Only the weights assigned to the different groups change.

Such an amendment might greatly enhance the predictive power of these models. For example, farmers in developed countries have been extraordinarily successful at getting democratically elected governments to award them large subsidies and high price supports. Agricultural subsidies have made up more than half of the European

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[35] Being undecided before an election and not voting in it tend to be significantly correlated. See, for example, Ashenfelter and Kelley (1975, p. 717).

[36] Very little work exits that tests for the effects of high voter participation on the outcomes of the political process. See, however, Husted and Kenny (1997), Lott and Kenny (1999), and Mueller and Stratmann (2002).

[37] For arguments for a qualified "yes" to this question, see Brennan and Lomasky (1993) and Brennan and Hamlin (2000).

Union's budget throughout its existence despite the fact that the European Council has operated under the unanimity rule for much of this period. Why have farmers been so much more successful at winning favors for democratic governments than, say, nurses or plumbers? One reason may be that every child in these countries grows up reading books and singing songs about the good life and the good people on the farm. Countless books and movies depict courageous farm families struggling against bad weather and nasty bankers to keep their farms operating. The citizens of all developed countries have been conditioned to think fondly of farmers and implicitly place heavy weights on their welfare when voting. Miners have also received particularly favorable treatment in literature, song, and film, and they too do very well at the public trough.

Do the outcomes of the democratic process *improve* with the reweighting of the utilites of different groups that occurs when citizens express their ethical preferences when voting instead of their narrow selfish ones? The answer to this question depends on how well the new set of weights matches those of the reader's own preferences.

Bibliographical notes

For a survey of the literature on why people vote, see Aldrich (1997). For a survey of how they vote, see Fiorina (1997).

Merrill and Grofman (1999) develop the Downsian spatial model to explain *how* citizens will vote. The empirical support for their predictions using data from France, Norway, and the United States can be interpreted as support for the rational, self-interested voter hypothesis – once one abstracts from the question of whether the act of voting is itself rational.