CHAPTER 14

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
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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
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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 \(p\) diverges 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 pre-election 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:

\[
P_{ODG} = \frac{2e^{-2(N-1)p^2}}{\sqrt{2\pi(N-1)}}.
\]

Now \(P_1\) is simply the probability that \(N\) will be odd (0.5) times \(P_{ODG}\), and \(P_2\) is the same. Thus, \(P \approx (1/2)P_{ODG} + (1/4)P_{ODG}\), 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).

\(^4\) 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).

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.
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There are essentially three ways around the paradox: (1) redefine 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) $D$. 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, $C$. 
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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: $S_1$, 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.\footnote{Beck (1975), Goodin and Roberts (1975), Mayer and Good (1975), and Meehl (1977).} 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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<th>States</th>
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<td>Vote</td>
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<td>(a)</td>
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<th>Strategies</th>
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<td>Abstain</td>
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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

\(^7\) On the other hand, some people do buy flood insurance, even though the probability of such an event is very low.