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Economic voting and information

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Abstract

The notion that voters are rational causes three closely related paradoxes: the paradox of voting, the paradox of indeterminacy and the paradox of ignorance. In this paper, we discuss the paradox of ignorance, i.e., the claim that the rational voter is uninformed about economic and political issues. We argue that the paradox of ignorance exaggerates the degree of voter ignorance. We maintain that voters, *on average*, are ignorant about the economy because of the consumption cost of information. Nevertheless, some voters do have an incentive to become informed, either because vote-relevant information is collected as a by-product of other activities or because information has value in social interaction. © 2000 Elsevier Science Ltd. All rights reserved.

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1. Introduction

At least since Anthony Downs published his book, *An Economic Theory of Democracy*, in 1957, it has been recognized that vote decisions are significantly different from other economic decisions. While consumption, production and labor supply decisions matter in the sense that a “wrong” decision imposes a utility loss on the decision maker, a “wrong” vote decision in a mass election has, by and large, no direct utility consequence. Hence, voting is an example of a *payoff-irrelevant decision*. The key point is that the individual voter cannot affect the outcome of the election unless he or she is pivotal, which he or she is highly unlikely to be. Hence, voting takes place under a veil of insignificance (Kliemt, 1986). From this fundamental insight, three predictions about the behavior of *instrumentally rational* voters follow immediately:

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1. The paradox of voting: since the expected benefit of voting is approximately zero and casting a vote is costly in terms of time and effort, the instrumentally rational voter does not vote at all (Downs, 1957).
2. The paradox of indeterminacy: assuming the rational voter (for some reason) decides to vote despite the disincentive to do so, then *any* voting strategy is as good as any other, and there is, *ceteris paribus*, no reason to believe that the rational voter would decide rationally between the alternatives (Kirchgässner, 1992; Kirchgässner and Pommerehne, 1993).
3. The paradox of ignorance: to the extent that information is costly, the rational voter is ignorant about all aspects of the economic and political environment (Downs, 1957).

The paradox of voting has attracted substantial attention in the literature (Aldrich, 1997) and many attempts have been made to resolve it.¹ The lack of a “hard” economic incentive to vote has led many researchers to argue that voting is a *consumption* decision rather than an *investment* decision. That is, the act of voting has an intrinsic value above and over the pure investment value of voting. Downs (1957) argued that voters vote to preserve the democratic institutions. Fiorina (1976) and others argued that voting is an *act of expression* of support for the voter’s most preferred political candidate or party. If the cost of voting in terms of time and effort, is small, as argued, e.g., by Niemi (1976) and Aldrich (1993), then these “soft” incentives encourage the rational voter to vote after all. The paradox of indeterminacy can be resolved along similar lines. If a small “psychological” loss associated with the act of “voting against one’s own interest” exists (Kirchgässner, 1992; Kirchgässner and Pommerehne, 1993), then the rational voter would indeed cast his or her vote to maximize expected utility: after all, it is a weakly dominant strategy to do so. This leaves us with the paradox of ignorance: information is needed as input to a rational voting strategy, yet, the instrumentally rational voter has no “hard” economic incentive to become informed about economic and political issues. This observation is, of course, hard to reconcile with the idea of economic voting, i.e., a situation in which the vote decision is based on facts about the past and expectations about the future state of the economy. It is, however, important to realize that voter ignorance is primarily related to peoples’ knowledge of the *macroeconomy*. Hence, if economic voting is Egotropic (i.e., the vote decision is based on the voter’s own economic experience) as evidence from Denmark (Nannestad and Paldam, 1997) suggests rather than Sociotropic (i.e., the vote decision is based on the voter’s perception of the macroeconomy) as evidence from the US and other countries suggests (Kinder and Kiewiet, 1981; Lewis-Beck, 1988), then voter ignorance is less of a problem. After all, we do expect that the voter knows his or her own economic

¹ Ferejohn and Fiorina (1974) show how a minimax regret strategy can be used to solve the paradox. Ledyard (1981) shows that there exist Nash equilibria in which almost everybody votes, but these equilibria are, as shown by Palfrey and Rosenthal (1983), very fragile. Overbye (1995) uses the notion of a repeated game to argue that voting is a means to build a reputation for being trustworthy in social interaction.

situation fairly well. With this in mind, in the remainder of this paper, we shall focus on voter ignorance relative to the macroeconomy.

The purpose of this essay is to reconsider the paradox of ignorance: is it really true that the rational voter knows nothing about the macroeconomy? First, we explain why information has value as an investment object, show how information acquisition can be endogenized in a simple model of *payoff-relevant* decisions and formally derive the paradox of ignorance. Second, we discuss several solutions to the paradox. We argue that voters are, *on average*, ignorant about the macroeconomy but that specific groups of voters have an incentive to be informed either because information has value in social interaction or because information is collected as a by-product of other activities. Third, we review recent empirical studies that investigate what voters actually know about the economy. Finally, we provide some concluding remarks.

2. The cost and benefit of information

In this section, we consider how a rational decision maker decides how much information to acquire as input to a given economic or political decision. We think of information acquisition as an *investment* decision.

2.1. Why does information have value as an investment object?

All real world decisions are made under uncertainty about past, contemporary and future aspects of the decision environment. Uncertainty is a result of lack of information. If the decision maker has information about every relevant aspect of the decision environment, then there is complete certainty. Accordingly, acquisition of information reduces uncertainty. To the extent this has a value, so does information.

We make a distinction between information as a flow variable and information as a stock variable. The *stock of knowledge*, K , encompasses the decision maker's knowledge about the relevant economic and political environment at a given point in time. Not only does K contain data, it also contains knowledge about the causal relationship between the data. The stock of knowledge depreciates over time, i.e., the decision maker forgets things, he or she once knew, if no new information is acquired or old information is updated. *Messages* are the flow of information which add to the stock of knowledge. An example of a message is a news report that provides information about, say, the latest inflation and unemployment rates. Receiving a report of this type adds to the decision maker's stock of knowledge about the economy. Moreover, it may tell him or her something new about the relationship between the two variables (say, the Phillips curve).

Consider a society in which a representative decision maker makes a non-strategic decision, x , before he or she observes a discrete, decision-relevant variable, y .² We

² The presentation follows Hirshleifer and Riley (1992).

think of y as (post-electoral) macroeconomic conditions and x as a (pre-electoral) economic or political decision. While the decision maker cannot observe y until after he or she has chosen x , we do assume that he or she has some beliefs about the distribution of y , denoted $p(y)$, where $p(y) > 0$ and $\sum_y p(y) = 1$. These beliefs are based on his or her initial stock of knowledge about y . Utility depends on x and y , i.e., $u = u(x, y)$. Furthermore, the decision maker obeys the axioms of the von Neumann–Morgenstern utility theory and chooses x to maximize expected utility $u(x, p) = \sum_y p(y)u(x, y)$. If no additional information is acquired, the optimal decision is denoted x^* .

The decision maker can decide to acquire an additional message about y before he or she chooses x . Until the message is actually acquired, knowing the exact nature of it is impossible. The decision maker has, however, some idea about what the message could be. For example, if the source of the message is a newspaper, he or she may have glanced at the front page or he or she may have previous experience with the paper that can help him or her to characterize the likely nature of the message. Nevertheless, he or she cannot learn the facts unless the newspaper is actually acquired, read and understood. Therefore, it is essential, as pointed out by Marschak and Miyasawa (1968), to make a distinction between a *message service* (the newspaper) and the message (the relevant facts contained in the newspaper). Formally, let m denote a message about y drawn from a discrete set of possible messages, M . A message service is then defined as follows:

Definition 1. A message service, z , is (1) a (marginal) probability distribution of messages, $q(m)$, and (2) a joint probability distribution of messages and economic conditions, $p(m, y)$. In short $z = \{q(m), p(y, m)\}$. The set of feasible message services is denoted Z .

When a given message service has been acquired, the decision maker revises, via Bayes' Theorem, his or her prior beliefs, $p(y)$, into posterior beliefs about y , $p(y|m)$, where $p(y|m) = p(y, m)/q(m)$. Define $x(m)$ as the optimal decision, conditional on message m being received, i.e., $x(m) = \operatorname{argmax}_x \sum_y p(y|m)u(x, y)$. The investment value of message m is the expected gain from a revision of the decision, evaluated from the updated beliefs, i.e., $v(m) = u(x(m), p(y|m)) - u(x^*, p(y|m))$. Since it is impossible to acquire messages directly, the information decision is based on the *investment value of the message service*, which is defined as the expectation of $v(m)$ with respect to m :

$$\begin{aligned}
 V(z, K) &= E_m v(m) = \sum_m q(m) \sum_y p(y|m) [u(x(m), y) - u(x^*, y)] \\
 &= \sum_m q(m) \sum_y p(y|m) u(x(m), y) - \sum_y p(y) u(x^*, y).
 \end{aligned}
 \tag{1}$$

The (expected) value of the message service is the difference between expected

utility with and without the service. The value of the message service is conditional on the (initial) stock of knowledge, K , because the prior belief about y and, to some extent, also the characterization of the message service, $q(m)$ and $p(m, y)$, depend on K . Since $x(m)$ is chosen optimally, $v(m)$ (and, so, $Ev(m)$) is always nonnegative. That is, the decision maker cannot be made worse off, ex ante, by acquiring a *costless* message service.

The investment value of the message service is not directly related to the risk preference of the decision maker. Of course, the risk averse decision maker may be willing to pay a higher price for a given message service than a risk lover, but it is not true that risk aversion is required to provide an incentive to acquire information.

2.2. Payoff-relevant decisions and costly information

A payoff-relevant decision matters to the decision maker in the sense that a “wrong” decision has a negative impact and, correspondingly, a “right” decision has a positive impact on the decision maker’s utility. For example, a worker, who quits his or her current job to look for a new one, is hurt if it turns out to be impossible to find a new and better job and is rewarded if it is. Formally, a payoff-relevant decision variable is defined as:

Definition 2. A decision variable, x , is payoff-relevant if there exists a y for which it is true that $u(x', y) \neq u(x'', y)$ for some feasible $x' \neq x''$.

The investment value of the message service is nonnegative (see Eq. (1)) because a revision of the choice of x , induced by the message service, has a payoff consequence.³ In other words, information has value because it helps the decision maker to adopt better to the risky environment in which he or she operates. Or, alternatively, information has value because a “wrong” choice has a negative impact on the utility of the decision maker and information helps the decision maker to avoid making “wrong” choices.

The cost of a given message service, z , has two components. First, we have the *supply price* of information, denoted by $\lambda(z)$. This is, typically, a monetary cost paid to the provider of the message service. In the absence of price discrimination, it is the same for all individuals. If, for example, the message service is a newspaper, then the supply price is the price of the newspaper. The expansion of mass media, such as radio, television and the web, has significantly reduced the supply price of information over the last half a century. Second, we have the *consumption cost*, denoted by $\mu_i(z, \beta_i, K_i)$. This is the cost associated with understanding — consuming — the message service. The consumption cost is, typically, an opportunity cost in terms of time and effort needed to disentangle the relevant information. This includes, among other things, the cost of sorting reliable information from less

³ The investment value is, of course, zero if the decision maker decides not to change his or her choice of x .

reliable information; understanding and putting the information contained in the message service into the right context; and looking through complex incentive problems. The consumption cost depends on various personal characteristics of the decision maker (β_i) such as age, gender, occupation, income and education. Moreover, the cost of consuming a given message depends on the decision maker's initial stock of knowledge, K_i . This captures the idea of increasing returns to scale in information processing: the more information the decision maker already has, the easier it is to consume new information. While the supply price of information in most circumstances is low, the consumption cost is *always* positive and in many cases it is high (though not equally so for all decision makers).

The decision problem — whether or not to acquire a given message service — balances the (marginal) value of the service, $V_i(z, K_i)$, and the (marginal) cost of acquiring the service. Hence, decision maker i acquires message service $z \in Z$ if and only if:⁴

$$V_i(z, K_i) \geq \lambda(z) + \mu(z, \beta_i, K_i), \quad z \in Z. \quad (2)$$

Eq. (2) implies that different decision makers acquire different amounts of information.⁵ In particular, some agents may choose to become well-informed (buy all Z message services), while staying uninformed is optimal for others. What is more important, the distribution of information across the population of decision makers is systematically related to a number of background variables. In Table 1, we list a sample of relevant background variables and their likely impact on the cost and benefit of information.

From Table 1, we can derive hypotheses about how well-informed different groups of decision makers are likely to be. For example, we expect that middle-aged, rich or well-educated individuals are better informed than poor, uneducated and young individuals. Likewise, we expect that individuals that have their own business are better informed about macroeconomic conditions than wage earners. Finally, pensioners may be less interested in the economy due to the fact that they have few payoff-relevant decisions to make (see also Nannestad and Paldam, 2000, Tables 13 and 14, this issue).

⁴ See Stigler (1961), Feige and Pearce (1976), Darby (1976), Verrecchia (1982) and Galbraith (1988) for alternative models of endogenous information.

⁵ If the available message services are independent, each decision maker uses Eq. (2) to decide how many of the Z services he or she wants to acquire. If the available message services are dependent (e.g., because they, to some extent, contain the same type of information), then the set of message services that a given decision maker acquires depends on the sequence in which the message services are being acquired. Moreover, we assume that message services are a non-rival good: the fact that one decision maker buys the service does not prevent others from buying it too.

Table 1
Personal characteristics and the cost and benefit of information

Personal characteristics	Cost	Benefit
Income	The opportunity cost of time may be higher for rich than for poor individuals.	Rich individuals make more payoff-relevant investment decisions than poor individuals.
Education	It is easier for educated individuals to consume information.	
Occupation	Some individuals acquire information that is useful for their private decisions via their jobs.	Private business owners undertake more payoff-relevant decisions than wage earners.
Gender		Women make more day-to-day consumption decisions than men.
Age	Older individuals are more experienced than younger individuals in disentangling information.	Middle-aged individuals undertake a larger number of pay-off relevant investment decisions than young and old individuals.

2.3. *Payoff-irrelevant decisions and voting*

A payoff-irrelevant decision has no influence on the utility of the decision maker. In short, decisions do not matter; a “wrong” decision is not punished, nor is a “right” decision rewarded. Formally,

Definition 3. A decision variable x is *payoff-irrelevant* if it is true that for any given y , $u(x, y)$ is independent of x .

Not surprisingly, it follows directly from Eq. (1) that a decision maker that makes payoff-irrelevant decisions attaches no investment value to information. The vote decision in a mass election is the prime example of a payoff-irrelevant decision. The voters, collectively, elect one or more representatives. These representatives implement a policy (subject to the expected realization of y). There are, typically, millions of voters involved in the election and so, the probability that a given voter is decisive in the election is very small. In fact, for all practical purposes, it is zero. Accordingly, the vote decision has no influence on neither the election outcome nor the implemented policy. At the end of the day, the voter is neither rewarded nor punished for his or her vote decision. This implies that the rational voter only wants to acquire costless information. However, costless information is rare: even if the supply price of information is zero, the consumption cost is always positive and usually significantly so. Therefore, it is rational to be ignorant about economic and political issues but, without information, one is wondering how the (rational) voter could ever use a rational voting strategy. This is the paradox of ignorance.

3. How can the paradox of ignorance be solved?

3.1. *Cues as substitutes for detailed information*

Many scholars, including Downs (1957), have argued that voters use *cues* (e.g., party identification, endorsements from lobby groups or opinion leaders, advice from technical experts or journalists)⁶ instead of detailed information as input to their vote decision. Cues are useful for two reasons. First, they summarize lots of information about the political and economic environment in a simple way. Second, precisely because they summarize a lot of information, they are cost effective. Lupia and McCubbins (1998) and Wittman (1995) and others have argued that because of cues, “limited information need not prevent people from making reasoned choices” (Lupia and McCubbins, 1998, p. 4). That is, voters may know few facts about the political and economic environment; despite this deficit, they *are* still able to make rational choices.

While cues, without doubt, are being used by many voters as part of a cost minimizing information acquisition strategy, the argument does not really resolve the paradox of ignorance. The problem is that even the simplest cue has to be understood and related to the context in which it is going to provide guidance. Moreover, if the cue arises from social interaction with other people, then the voter has to judge if the cue is reliable or not. In any case, there is a real cost involved in the process of understanding, relating and judging the cues (the consumption cost). Hence, the crucial point continues to be valid: the expected net benefit of information as input to a payoff-irrelevant vote decision is negative (or at best zero).

3.2. *The intrinsic value of information*

The simplest solution to the paradox of ignorance is to argue that information has an intrinsic value; that is, information is of value independently of its usefulness as input to a decision making process (the investment value). Hence, if voters like to be informed about the economy, political candidates and issues, or feel a moral obligation to be informed about society, they collect information until the marginal cost of doing so is equal to the intrinsic value of being informed. There are two problems with this line of reasoning. First, why people like being informed is not really *explained*. Second, the intrinsic value of information is unlikely to be sufficiently large to make any significant difference. The point is that the consumption cost of information, unlike the cost of voting and the cost of using a rational voting strategy, for most voters is significant. It *is* costly to acquire and understand information. Therefore, on average, the calculus would still predict that rational voters are ignorant.

⁶ The suppliers of information, such as journalists and experts (research institutions and government agencies), are *employed* to collect and process information about the economy (and other issues) so they can be expected to be well-informed. Hence, the question is at what cost can they transmit their knowledge to the voters.

3.3. *Information and social interaction*

People interact every day in a variety of social situations. They interact professionally and informally at the work place, sports clubs, at parties, etc. To participate actively in a given social context, specific information is needed. To the extent that lack of relevant information excludes the person from social interaction and exclusion is associated with a utility loss, it is, in general, beneficial to acquire costly information. That is, information has a value in social interaction. How much information a given person chooses to acquire about a given topic, say economic conditions or politics, depends on (1) the likelihood that the topic is going to be discussed in the social context in which the person enters; (2) the cost of obtaining the information; and (3) the utility loss associated with not being informed, should the topic come up. This line of reasoning suggests that clusters of informed voters can be found among those who (1) face a low cost of acquiring information about economic and political issues; (2) interact in an environment in which economic and political issues are likely to be discussed; and (3) dislike being excluded from social interaction.

3.4. *Vote-relevant information as a by-product*

Voters make other decisions than an occasional vote decision. In particular, now and then they make investment (buy a house, a car, etc.) and labor supply (change job, choice of education, undertake training, etc.) decisions and, on a recurring basis, they make (minor) consumption decisions. All of these decisions are payoff-relevant and so, some information will be acquired before they are made. Moreover, information is a “public good”. That is, once it is acquired, it is available as input to other relevant decisions *at no additional cost*. In particular, it is available as input to the vote decision.

However, most voters are only rarely undertaking significant payoff-relevant decisions. Therefore, this line of reasoning leads us to expect that the rational voter, *on average*, is ignorant but that some voters do have the incentive to become informed about the economic and political environment. Moreover, the previous analysis can be used to identify these voters and so, we expect that the distribution of information across voters is systematically related to background variables such as gender, age, education and occupation.

4. What do voters know about the economy?

In this section, we briefly review what recent empirical research has to say about the degree of voter ignorance. We focus on what voters know about the *economy* and so we do not intend to review the literature concerned with what voters know about politics.⁷ We consider three questions: (1) What do voters know about econ-

⁷ The voter’s knowledge about the economy affects his or her voting strategy as well as the nature of the expectations he or she forms. Therefore, indirect information about the degree of voter ignorance can be gained by testing the hypothesis of *the sophisticated voter*, who uses an instrumentally rational, forward-looking voting strategy and who forms rational (model-consistent) expectations (Chappell and Keech

omic data? (2) What do voters know about the economic system? (3) How does the degree of voter ignorance vary with background variables such as gender, income, age and education?

4.1. *What do voters know about economic data?*

Surprisingly, only a handful of studies, using survey data from the US, Australia, Sweden and Denmark, focuses directly on this question. Blendon et al. (1997) studied a sample of US voters from 1996. They found that only one out of eight can correctly cite the rate of inflation and unemployment within half a percentage point. While about 42% know that the US economy was growing more slowly in 1996 than 5 years earlier and about 37% know that the unemployment rate had been declining over the period, only 16% know that the rate of inflation was lower in 1996 than in 1991. Conover et al. (1986) found similar evidence based on a survey of voters in Kentucky. Kentucky voters know little about the rate of unemployment and inflation but, interestingly, the trend movements, in particular in unemployment, are picked up quite fast. These findings are, by and large, confirmed by Nannestad and Paldam (2000, this issue) in a sample of Danish voters. Gruen (1991) investigated what Australian economics students know about the level of outstanding government debt. He found that only one out of eight knows the right order of magnitude and is willing to state that his or her estimate is anything but a complete guess. Jonung and Laidler (1988) investigated the properties of inflation perceptions, i.e., the public's knowledge of the historical behavior of the price level, in a sample of Swedish households from 1979 to 1985. They found that perceptions are unbiased but that the prediction errors are correlated. This may indicate that voters do not find it worthwhile to improve their inflation prediction. Overall, these studies support the view that voters are, *on average*, poorly informed about economic data such as the unemployment rate, inflation, growth in GDP and the level of public debt.

4.2. *What do voters know about the economic system?*

One thing is to know (or not to know) the economic data. Another is to put whatever is known into the right context. A few studies have investigated what voters know about the economic system. Jonung (1984) found that Swedish households (in the late seventies) did not hold a Phillips curve in their mind when they forecasted inflation. Walstad (1996) found, in a survey of US voters, that very little is known about the economic system. For instance, only one out of three knows that the consumer price index is the most common measure of inflation or that the Federal Reserve Board is responsible for monetary policy in the US. These studies confirm

1985, 1988), against the hypothesis of the naive voter, who uses a non-instrumental, retrospective voting strategy and who forms adaptive expectations (Kramer, 1971; Fiorina, 1981). Some recent papers have done precisely that. Chappell (1983) and Alesina et al. (1993) cannot reject that voters act *as if* they were sophisticated and, hence, well-informed. Others find evidence in favor of the view that voters are naive and, hence, uninformed (Nordhaus, 1989; Suzuki, 1991).

the general impression that voters know little, not only about economic data, but also about how the economic system works.

4.3. *The distribution of knowledge among voters*

In a series of papers on inflation perceptions in Sweden, Norway and Finland,⁸ the perceived rate of inflation is found to vary systematically with background variables such as education, gender (not in Norway), age and income. Using Swedish survey data on inflation perceptions, Batchelor and Jonung (1986) more specifically have shown how this variation may be related to differences in the cost and benefit of acquiring information. For instance, they found that middle-aged people have a more accurate perception of inflation than young people. This may be because middle-aged people have a greater labor force participation rate than young people, many of whom are still in education. Likewise, they have shown that rich people have a more accurate perception of inflation than poor people. This may be because rich people hold a larger share of their wealth in nominally denominated assets than poor people and so, the benefit from a more accurate estimate of inflation is larger for the rich than for the poor. Blendon et al. (1997) found, along similar lines, that US voters with a college degree are significantly better informed about current economic performance than voters with less education. This suggests that education reduces the cost of “consuming” information. Finally, the findings of Nannestad and Paldam (2000, this issue) support the view that educated, middle-aged voters with above average income are better informed about unemployment and inflation than other voters.

5. Conclusion and discussion

Whether voters, who lack information about the economy, can use elections to hold the government accountable for economic conditions is a matter of ongoing debate. The pessimists focus on political failures and argue that democracy does not work well because voters have no incentive to make rational and informed decisions (Iyengar, 1987). The optimists, on the other hand, argue that voters may not be fully informed but they know enough to make rational and informed decisions. Democratic institutions can, therefore, produce accountability despite voter ignorance (Wittman, 1995; Lupia and McCubbins, 1998).

Based on our theoretical discussion and the review of the empirical literature, we agree with the optimists that the paradox of ignorance exaggerates the degree of voter ignorance. While it is true that voters, *on average*, are ignorant about the economy, some voters do have an incentive to acquire costly information, either because it has value in social interaction or because it is available as a by-product of other decisions. This implies that *a subset* of voters possesses sufficient infor-

⁸ See Jonung (1981, 1984), Jensen and Jonanssen (1987) and Vartia and Mankinen (1984).

mation to make rational and informed choices. Among these *elite* voters, we expect to find educated, middle-aged voters with a relatively high level of income. In contrast, other groups of voters (the poor and uneducated) cannot be expected to be informed about economic and political issues to any significant extent. They are, therefore, unlikely to cast rational and informed votes. It is an interesting question if the subset of informed voters (the elite voters) is sufficiently large to avoid the lurking political failure associated with the paradox of ignorance. The fact that economic variables such as unemployment and inflation can, in fact, explain about one-third of the variation of votes in an average election (Nannestad and Paldam, 1994) suggests that it, to some extent, is sufficiently large. On the other hand, the instability of the vote and popularity function (Nannestad and Paldam, 1994) suggests, to the contrary, that it is not.

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