

Does political knowledge increase turnout? Evidence from the 1997 British general election

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Received: 27 January 2006 / Accepted: 21 September 2006 / Published online: 11 January 2007
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Abstract A number of recent formal models predict a positive effect of political knowledge on turnout. Both information acquisition and turnout, however, are likely to be determined by a similar set of variables, rendering hard the identification of a causal link in empirical investigations. Available empirical regularities should therefore be interpreted as mere correlations. I address this problem by using an instrumental variables approach, where the instruments are represented by various proxies of information supply on mass media. Using survey data from the 1997 British General Election Study, I show that political knowledge has a sizeable influence on the probability of voting and that mass media play an important role in influencing political participation.

Keywords Voting · Information · Mass media · Political participation · Information aggregation · British politics

JEL Classifications: D72, D83

1 Introduction

In an idealized vision of democracy, public decisions are based on the preferences and the opinions of all the members of a polity. It is therefore common in the public debate to regard the extent of electoral participation as a measure of the quality of democratic governance. Low turnout is sometimes seen as a symptom of little attachment to public affairs and even to democracy itself and is therefore associated with the danger of a self-referential political class. On the other hand, however, high participation is not compelling evidence of healthy democratic governance, and many *de facto* dictatorial systems show extremely high turnout rates. At the same time, abstention could be interpreted as satisfaction rather than disinterest.

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Understanding the determinants of turnout is central to this debate and can provide a substantial insight on the quality of democratic governance and the possible steps to improve it. A central question is whether more and better political information can increase voters' participation. Uninformed participation is, after all, not necessarily better than no participation at all.

The extent of political participation is also likely to affect public policy. Starting with the study of Wolfinger and Rosenstone (1980), a vast empirical literature consistently finds positive correlations between turnout and individual characteristics such as income and education. This implies that low voter turnout is likely to mean unequal and socioeconomically biased turnout (Rosenstone & Hansen, 1993; Lijphart, 1997) which, in turn, can influence the identity and responsiveness of public policy-makers. Evidence in support of this has been found by numerous scholars who have shown, for example, that social spending is positively affected by aggregate turnout (Peterson & Rom, 1989; Hicks & Swank, 1992; Levitt & Snyder, 1995; Lindert, 1996; Strömberg, 2004), by lower-class mobilization (Hill & Leighley, 1992, and Hill, Leighley & Hinton-Andersson, 1995), and by the extension of the voting franchise¹ (Husted & Kenny, 1997).

Recent formal models link information to voter participation (Matsusaka, 1995; Feddersen & Pesendorfer, 1996; Ghirardato & Katz, 2002). There is, however, little empirical evidence in support of these models. Available evidence that education affects turnout (Milligan et al., 2004) provide only indirect support. Some studies are based on subjective assessments of knowledge (Sanders, 2001; Lassen, 2005). Direct measures of political knowledge show that better informed citizens are more likely to vote (Delli Carpini & Keeter, 1996; Wattenberg et al., 2000), but this relationship has to be interpreted with caution. Political knowledge is not an exogenous variable: the same motivation that leads to participation is likely to drive information acquisition. Thus, the link between information and turnout could be a spurious correlation driven by unobserved voters' heterogeneity.

In this paper I address this issue by providing an instrumental variable estimation of the effect of information on turnout using data from the 1997 general election in the United Kingdom. I conclude that, at least in the context analysed here, political knowledge has a sizeable and statistically significant impact on the British citizens' likelihood of voting. The instruments consist of proxies for the supply of news on the British media: thus, I also conclude that mass media can have an important indirect (i.e. via political knowledge) impact on participation.

2 Information and turnout

Politicians appear to struggle for the attention of mass media. Campaign strategies tend to be heavily conditioned by access to media and spin doctors are increasingly influential. Political advertising and access to television are regulated in many democratic countries during electoral campaigns. Either explicitly or implicitly, these phenomena must be based on the presumption that information matters for voting behaviour.

However, various arguments in support of the idea that information is "behaviour irrelevant" have been recently elaborated by Popkin (1991), Wittman (1995), and Lupia and McCubbins (1998). Their main argument is that voters use heuristics and manage to behave

¹ Besley and Case (2003), however, find no evidence of an impact of turnout on the composition of US state legislatures.

as if they were informed.² Also, using spatial models of elections, a number of papers show that it is possible for imperfectly informed voters to emulate the behaviour of the better informed ones when they receive a credible signal from a source whose preferences are known (McKelvey & Ordeshook, 1984; Calvert, 1985; Sobel, 1985; Grofman & Norrander, 1990; Lupia, 1992). If party platforms tend to be consistently tied to the interests of specific socio-economic groups, then party identification or public endorsements can provide a simple and effective way to vote instrumentally. Bartels (1996), using the National Election Study surveys conducted for six US presidential elections, finds instead that uninformed voters “do significantly better than they would by chance, but significantly less than they would with complete information, despite the availability of cues and shortcuts”. For what concerns turnout, if information does not increase the utility of casting a vote then it should also not affect participation. This conclusion, however, is not supported by empirical research. Palfrey and Poole (1987), for example, use ICPSR survey data from the 1980 presidential election in the US to show that political knowledge is significantly related to both political extremism and turnout.

A number of formal models on information aggregation put forward the idea that, in spite of influencing individual voting behaviour, political information can be “outcome irrelevant”. In Feddersen and Pesendorfer (1996 and 1999), non-informed voters have an incentive to delegate their choice to the better informed to increase the chances of an informed aggregate decision. Delegation takes place via abstention, which increases the probability of any informed voter being pivotal. This argument relies on the assumption that non-partisan voters share the same objective function. Thus, in delegating their decision to other non-partisan voters, the uninformed do not incur the risk of leaving the decision to people with different tastes.³

Matsusaka (1995), presents a decision-theoretic model of the impact of information on turnout based on the idea that better informed choices provide more utility to Bayesian voters. Ghirardato and Katz (2002) show that non-Bayesian “ambiguity-averse” voters are even more prone to abstain than Bayesian voters when they receive poor quality information. A different approach is that of Aldashev (2005), who considers the possibility that informed citizens enjoy discussing political matters with other informed citizens (social exchange), hence generating strategic complementarities in information acquisition. Larcinese (2005) argues that increasing returns in information acquisition are a possible cause of an economically biased turnout: this may have important implications for redistributive politics.

It seems fair to say that the evidence in support of such models is still limited: in particular, despite a vast body of empirical research on the determinants of turnout, we are still far from knowing whether there is any causal link between political knowledge and participation. Education has often been found to have a high influence on turnout (Wolfinger & Rosenstone, 1980; Matsusaka & Palda, 1999; Milligan et al., 2004).⁴ It is possible to rationalize this empirical regularity on the ground that education reduces the costs of acquiring information. In empirical terms, however, education and information can be correlated for a number of

² Sniderman, Brody, and Tetlock (1991) define heuristics as “judgmental shortcuts, efficient ways to organize and simplify political choices, efficient in the double sense of requiring relatively little information to execute, yet yielding dependable answers even to complex problems of choice” (p.19). Evidence on the use of heuristics is provided, among others, in McKelvey and Ordeshook (1984), Brady and Sniderman (1985), and Lupia (1994).

³ Feddersen and Pesendorfer’s argument fits in the tradition of the so-called “Condorcet-jury theorem” (Young, 1988; Austen-Smith, 1990; Austen-Smith & Banks, 1996), where the assumption of common objective functions is clearly less problematic than in political elections.

⁴ In Britain, however, such influence has not been found to have high statistical significance (Denver, 2003).

other reasons, including the fact that formal education might increase socialization, sense of efficacy, and the identification with the general values of a society.⁵

Sanders (2001) uses survey data from the 1996 US presidential election to show the importance of perceived uncertainty about candidates for turnout.⁶ Delli Carpini and Keeter (1996) go one step further by using direct measures of political knowledge from the 1988 NES Survey and showing that these are good explanatory variables of turnout. Wattenberg et al. (2000) show that voters who are more informed about the US House are more likely to vote in the House elections. This is, however, still one step short of showing that information *determines* turnout, since political knowledge is an endogenous covariate.

To illustrate this endogeneity problem, suppose we want to estimate the effect of information on turnout and let us consider a simple model of instrumental voting. In the classical formulation of Riker and Ordeshook (1968), a citizen votes if

$$PB + D > C \quad (1)$$

where P is the probability to cast a decisive vote, B is the gain in policy benefit derived from the victory of the preferred candidate when compared with the alternatives, D is the psychological benefit of voting and C is the cost. Political information helps the citizens to form a more precise idea about B .⁷

Assume now that there are only two candidates, that the policy space is uni-dimensional and that B depends on the distance δ between the two proposed platforms. The optimal decision for the voter depends on the value of δ . We can indicate with $W(\delta)$ the maximum value function derived from the maximization of $U(\delta) = PB(\delta) + D - C$ with respect to the voting decision. Now suppose that δ is unknown and has to be estimated. If $\hat{\delta}$ is a more precise estimate than $\bar{\delta}$ of the true δ , then we can say that the value of using $\hat{\delta}$ instead of $\bar{\delta}$ is given by

$$E_{\delta}W(\hat{\delta}; \delta) - E_{\delta}W(\bar{\delta}; \delta) \quad (2)$$

where E_{δ} represents the expected value operator. If the cost of passing from estimate $\bar{\delta}$ to estimate $\hat{\delta}$ is c (for example to acquire more observations), then such acquisition will take place if and only if

$$E_{\delta}W(\hat{\delta}; \delta) - E_{\delta}W(\bar{\delta}; \delta) + b > c \quad (3)$$

where, as in the voting Equation (1), I add a personal benefit b which represents the non-instrumental enjoyment of political information, orthogonal to political preferences. The problem in testing the effect of information on turnout arises as D and b are likely to be correlated, both being driven by some sense of civic duty or pure enjoyment of politics.

⁵Nie, Junn, and Stehlik-Barry (1996) propose the idea that political participation is influenced by relative education, rather than absolute. Tenn (2005) provides empirical evidence in support of this hypothesis.

⁶In a very different context, Coupe' and Noury (2004) show that, during a National Research Council investigation, US academics who declared themselves more familiar with specific doctorate programs were also more likely to express an evaluation on these programs.

⁷Other elements in (1) can be influenced by information: for example the perception of P can be affected by the polls published during the electoral campaign. I focus on B , because it is the element that reflects the policy platforms and can, therefore, be related to political knowledge in a strict sense.

Finding a positive relation between information and turnout could therefore just be the consequence of omitting relevant variables from the empirical analysis.

To identify the effect of information on turnout we need a theory of how political knowledge is formed. Following Luskin (1990), we can say that voters' learning of a particular subject depends on "the political information to which people are exposed, their ability to assimilate and organize such information, and their motivation to do so". Of these determinants, only the first appears to be genuinely exogenous and therefore capable of providing instrumental variables to identify information effects on turnout. Thus, in the turnout equation I instrument political knowledge by using various measures of the information supply to which voters have been exogenously exposed. As a by-product of this analysis we also get an insight on the determinants of the political knowledge of British voters and on the role of the media.

Two other papers provide empirical studies of the impact of information on turnout and take into account the endogeneity problem.⁸ Strömberg (2004) provides evidence of the impact of the diffusion of radio on the distribution of New Deal spending and finds that a part of this effect can be explained by the fact that radio fostered turnout: a 1% increase in the share of radio ownership in a county increased the turnout rate by 0.12%. This is a very interesting finding in itself but it is based on aggregate data and therefore it cannot demonstrate that it was increased political knowledge which determined increased turnout. Only the use of survey data can address this issue in a direct fashion. Lassen (2005) uses survey data from a referendum on decentralization held in the city of Copenhagen. Since four out of fifteen districts carried out a pilot project of decentralization before the referendum, the voters living in such districts are assumed to have exogenously been exposed to better information. Voters are assumed to be informed if they have an opinion on decentralization, not informed otherwise. Lassen finds that information has a sizeable and significant impact on turnout.

In Lassen (2005), turnout is self-reported, which probably overestimates the propensity to vote. For this reason I will use instead verified turnout data. Even more importantly, Lassen uses a measure of political knowledge that, apart from being extremely coarse, does not allow the observer to distinguish knowledge from pure beliefs (which are not necessarily based on information). In terms of the Feddersen and Pesendorfer model, for example, one would like to be able to distinguish not only the informed voters from the uninformed but also the partizan (whose voting decision is not conditional on the state of the world) from the independent. In the following I will show that people who have an opinion (in the form of attachment to a party) are not necessarily better informed than others.⁹

Distinguishing between opinions and information has also clear normative implications: a higher turnout rate may improve the quality of democratic decision-making if it is driven by information. This is not necessarily the case if turnout is fostered by uninformed beliefs. In this paper I use therefore an objective measure of political knowledge and see how it affects the propensity to vote.

⁸ Two recent papers also provide experimental evidence. Horiuchi, Imai, and Taniguchi (2005) conducted an Internet-based randomized field experiment during the 2004 Japanese election. Battaglini, Morton, and Palfrey (2006) present the first laboratory study on the issue. Both papers support the idea that political knowledge reduce abstention.

⁹ Lassen (2005) refers to a previous unpublished version of this paper and points out that a "key instrument, readership of quality newspapers, could be related to unobserved heterogeneity". Although over-identification tests support the use of that instrument, it is known that such tests have low power. In this paper I do not make use of that instrument and all results remain unchanged. See Larcinese (2000).

Finally, this paper is also related to the recent experimental evidence on voter mobilization by Gerber and Green (2000). They show that voter turnout is substantially increased by non-partizan personal canvassing. One possible interpretation of this result is that canvassing increases political awareness: at the very minimum, people are reminded of the coming election. By showing that political knowledge increases participation, this paper makes such interpretation quite plausible and, at the same time, shows that voters can be mobilized by information provided by the mass media.

3 Empirical specification

In Equation (1) I defined a citizen's net utility from voting as

$$U_0 = PB + D - C. \quad (4)$$

U_0 is a latent (unobservable) variable and turnout T is a binary indicator such that $T = 1$ if $U_0 > 0$ and $T = 0$ if $U_0 \leq 0$. We can approximate U_0 by using a linear random utility model:

$$U_0 = \beta' \mathbf{X} + \varepsilon \quad (5)$$

where \mathbf{X} is a vector of characteristics of the individual and of the environment¹⁰ (including P) and ε is a white noise disturbance that includes the non-instrumental benefit D .¹¹ We can then say that

$$\Pr[T = 1|\mathbf{X}] = \Pr[\varepsilon < \beta' \mathbf{X}] = \mathbf{F}(\beta' \mathbf{X}) \quad (6)$$

Assuming $\mathbf{F}(\cdot)$ is the standard normal distribution function, the (6) can be estimated by maximum likelihood probit.

Let us now introduce political information (*Info*) and define a new latent variable U_1 of the form

$$U_1 = \beta_1 \text{Info} + \beta_2' \mathbf{X} + \varepsilon \quad (7)$$

We then have that

$$\Pr[T = 1|\text{Info}, \mathbf{X}] = \mathbf{F}(\beta_1 \text{Info} + \beta_2' \mathbf{X}). \quad (8)$$

Estimating Equation (8) is a correct procedure only if information acquisition is orthogonal to turnout. In the model of Feddersen and Pesendorfer (1996), for example, people are randomly informed or uninformed about the true state of the world, and therefore this estimation would be appropriate. However, as discussed in Section 2, information could be an endogenous explanatory variable in which case the coefficient estimates of (8) would be

¹⁰This includes a vector of 1s, and therefore β' includes a constant term.

¹¹Some imperfect indicators of the sense of civic duty and interest in politics can be included in \mathbf{X} . Such inclusion, however, does not change the results in any substantial way.

biased. To overcome this problem we estimate the following triangular system:

$$Info = \alpha'_1 \mathbf{X} + \alpha'_2 \mathbf{Z} + u_1 \quad (9)$$

$$U_1 = \beta_1 Info + \beta'_2 \mathbf{X} + u_2 \quad (10)$$

where $T = 1$ if $U_1 > 0$, $T = 0$ if $U_1 \leq 0$, and \mathbf{X} is again a vector of covariates representing individual and constituency characteristics which are assumed to affect both turnout and information acquisition. The identifying covariates are represented by the vector \mathbf{Z} . These explanatory variables are assumed to affect political knowledge but not directly the turnout decision. If this is the structural model, then simple probit estimates will clearly suffer endogeneity bias as the two error terms u_1 and u_2 are correlated. Thus, I use a two-step probit procedure. The first step consists of estimating the reduced form (9) by OLS and getting the residuals \hat{u}_1 . Our turnout equation will then be based on the following latent variable:¹²

$$T^* = \beta_1^* Info + \beta_2^{*'} \mathbf{X} + \beta_3^* \hat{u}_1 + u_2^* \quad (11)$$

This procedure provides both consistent (though not efficient) estimates of $(\beta_1^*, \beta_2^{*'})$, as well as an endogeneity test to determine whether there is any overlap between the set of unobservables affecting Equations (9) and (10). It consists of a simple t-test for the significance of the coefficient β_3^* : we cannot reject the null hypothesis that *Info* is weakly exogenous in the turnout equation if β_3^* is insignificant.

The estimated standard errors from this method are not correct but Monte Carlo evidence tend to show that the asymptotically correct standard errors are no more effective in large finite samples than the conditional standard errors (Bollen, Guilkey, & Mroz, 1995). Nevertheless, to overcome any potential problems, standard errors of relevant variables have been estimated by bootstrap (with 1000 repetitions).

Finally we need to check the validity of the instruments. This can be done in several ways. One possibility is to compare a probit regression of turnout on all exogenous variables and instruments (unrestricted model) with the same regression where instruments are excluded but fitted values from the first stage regression are included (restricted model). Ideally, we would like the two to be similar. We can then perform a chi-square test based on the likelihood function. Another method, based on a Wald test, consists in checking the joint significance of the instruments in the turnout equation. If information is not included this is always a valid test. If information is found to be exogenous then another method becomes available. I illustrate this test in Section 5, where results are presented.¹³

4 The data

I use data from the 1997 general election in Great Britain.¹⁴ The United Kingdom is a parliamentary system in which members of parliament are elected one in each electoral

¹² Define $Y = (X, Z)$ and consider the reduced form $U_R = \Pi Y_i + v$. Then indicating with σ_2 the standard deviation of v , we have that the estimable structural equation is based on the variable $T^* = B_1/\sigma_2$. For further details see Maddala (1983).

¹³ For an illustration of the overidentification tests used in this work see Wooldridge (2002) or Bollen, Guilkey, and Mroz (1995).

¹⁴ I include England, Scotland and Wales. Northern Ireland has a substantially different political situation from the rest of the country and it is customarily surveyed separately.

constituency using a first past the post rule. Two major parties, Conservative and Labour, compete to obtain a majority in the parliament, and therefore control of the government. A number of other parties, however, present their candidates in most constituencies and some manage to win seats in parliament. In particular, the Liberal-Democratic party is a well established national third force, while, in Scotland and Wales, nationalist parties tend to win normally more seats than the Conservatives. In 1997 the Labour party obtained a significant victory after four consecutive Conservative terms.

The main source of data used in this paper is the 1997 British General Election Study (BES). This study collects data from face to face interviews that were conducted shortly after the election, with approximately 90% of the fieldwork completed within six weeks of the election date. The response rate was 62%, resulting in an overall sample of 3615 voters. However, I have been forced to drop a number of observations since some respondents refused to answer relevant questions (particularly about income). The results that will be reported use in most cases a sample of 2882 registered voters.¹⁵ All estimations have been repeated excluding income and therefore using a sample of 3306 observations. This leads only to minor variations in the results.¹⁶

A very important problem faced by studies on turnout is that most surveys tend to over-represent the turnout rate. This is essentially due to two reasons: first, people tend to declare that they voted even if they did not and, second, people that participate in elections tend also to be more willing to take part in surveys. Our dataset does not suffer from the first type of bias: turnout was verified by using the electoral register. I rely on self-reported information only when verified turnout is not available. This is the case for 415 observations (or 14.4% of the sample), among which the turnout rate (72.3%) is very close to the official turnout rate for that election (71.5%). As can be seen from Table 1, there are 109 respondents in the sample that declared to have voted when in fact they did not and 18 voters that declared to have not voted when in fact they did. This shows that using verified turnout can make an important difference.¹⁷

The second type of bias, although much harder to avoid, appears to be limited.¹⁸ Our sample displays an overall 78.2% turnout while official turnout was 71.5%. However, when the official turnout is adjusted to take into account of the inaccuracies in the electoral register

¹⁵ The qualifying date for electoral registration expired several months before the election day (10th October 1996). We are interested in information acquisition and turnout of potential voters; clearly the motivation to acquire information of non-registered voters is different. Thus, only registered voters are considered here. This implies dropping a limited number of observations. All estimations have been replicated including those observations and no relevant changes have been noticed.

¹⁶ The results are therefore not reported but are available from the author upon request.

¹⁷ The “social desirability bias” can potentially concern also some explanatory variables, like political interest, education and income. It is hard to gauge what is the impact of this bias on our estimates without using other sources of information. Moreover, validating the dependent variables without being able to do the same for the independent variables can have consequences too. For example, if we assume that respondents who are more prone to overreport on turnout are also more prone to overreport on other social desirable characteristics, then correcting only the independent variable may lead to underestimation of the effects of the socially desirable characteristics. Although it is hard to gauge the relevance and the magnitude of this potential bias, it is important to stress that the main independent variable (information) is not self-reported.

¹⁸ In the absence of an appropriate specification for the selection equation, it is hard to evaluate the direction of this bias. However, as long as a large part of the self-selection can be explained by variables included in the regression (like political interest or education), the selection process is basically ignorable and the bias should be extremely small (see Wooldridge, 2002, p. 556). In other terms, although turnout and political knowledge will both be higher in the sample than in the population, the relationship between them should be the same.

Table 1 Self-reported and verified turnout

	Verified			Tot
	Yes	No	Not known	
Self-Rep.				
Yes	1952	109	300	2361
No	18	387	115	520
Don't know	0	1	0	1
Tot	1970	497	415	2882

at the time of the election¹⁹ this figure raises to 74% (Denver, 2003), so that the actual bias is just slightly above 4%.

A special feature of the 1997 BES is to include a higher number of voters from ethnic minorities and Scotland. This makes the use of the population weights absolutely crucial if we want the sample to be representative of the British citizenry.²⁰ Unweighted regressions (not reported) tend however to deliver similar results.

The starting point of this analysis is to measure political knowledge. Clearly, the range of issues and facts that are relevant to politics is extremely large, so how can we gauge political knowledge? What is relevant and what is not? Is there any risk to bias the assessment with our priors? Delli Carpini and Keeter (1996), in presenting evidence on the political knowledge of American voters, based their analysis on nearly 3700 questions collected in various surveys. They concluded that “researchers developing national or general political knowledge scales need not be overly concerned with the mix of specific topics covered by individual items. Scales made up of items tapping only knowledge of institutions and processes, substantive issues, or public figures are likely to serve as reasonable measures of the overarching construct”.²¹ This is extremely important in this case: the empirical analysis I present uses only respondents’ knowledge of the candidates’ in their constituency but correct answers to such questions are likely to be correlated with the knowledge of other political matters.

The 1997 BES is well suited for the purpose of this study. Starting in 1992, the BES includes questions on political knowledge. These normally consist of a list of questions on the British political and institutional system. Answers to these questions probably reflect long term knowledge of political matters rather than the sort of information that can be acquired during an electoral campaign. Hence, our identification strategy, based on the use of proxies of information supply on mass media as instrumental variables, is inappropriate when political knowledge of this sort is used as an explanatory variable. The 1997 BES is unique since it is the only British electoral survey containing questions on candidates’ name recollection. Respondents were asked to write down as many candidates’ names in their constituency as they could remember (with a maximum of six). The answers have then been reconciled with the actual list of candidates and, by adding up the correct answers of each respondent, it is possible to construct a measure of political knowledge (*Info*) that will serve as our main explanatory variable.²²

¹⁹ The electoral register is compiled several months before the election. The official turnout rate refers to the population on the register and is therefore not totally accurate.

²⁰ As usual, these weights also take into account the different selection probabilities and rates of response.

²¹ Delli Carpini and Keeter (1996), p. 174.

²² The 1997 BES also contains 7 true/false questions on general features of the British political system. Answers to these questions are less likely to be influenced by information reported on mass media during the

The BES also includes questions on a number of economic and socio-demographic individual characteristics that I use as control variables. I also use data from the 1991 Census to control for the possible influence on turnout of the characteristics of the local environment, like marginality, social norms etc.²³

In general, I attempt to include all the variables that, for different reasons, have been found to be relevant by the empirical literature on turnout.²⁴ For this reason the list of variables employed in this study is long, and the standard errors are often high because of multicollinearity (see Table A2). Nevertheless, this strategy leads to robust results for what concerns the variables we are interested in.

One important issue concerns the use of political attitude variables, such as a person's interest in politics, her attachment to a specific party and her ideological self-placement on the left-right dimension. These variables have been found to be important predictors of electoral turnout. Moreover, they can capture some of the unobserved heterogeneity that drives both turnout and political knowledge, and their inclusion in the turnout equation should limit the omitted variables problem. Nevertheless, there are good reasons to be cautious about their use. Answers to this sort of questions can be an ex-post rationalization of voting behaviour. Moreover, it has been shown that responses to this type of questions are sometimes sensitive to the order in which the questions are posed.²⁵ This casts doubts on the overall reliability of such indicators. Thus, I perform my analysis both with the political attitude variables and without. As an alternative I use other, imperfect but more objective, indicators, like the awareness of being registered, the fact of reading a quality newspaper regularly and whether the respondent voted or not in the previous election. Results turn out not to be sensitive to the inclusion or not of political disposition variables.

Finally, I now describe the instrumental variables, i.e. the vector \mathbf{Z} in Equation (9). I use three variables that I consider to influence information acquisition but not directly turnout. The first instrument is represented by a dummy variable (*bigshot*) equal to 1 when a nationally famous politician is candidate in the constituency. I define as big shots all the current and past members of cabinet, the members of the Labour "shadow-cabinet"²⁶ and the leader of the third major party (Liberal Democratic), Paddy Ashdown. I assume that these politicians are better known by the public than all the other candidates. Therefore, voters from those electoral constituencies should have better information on candidates. The second instrument (*Saliency*) attempts to capture the saliency on media of each electoral constituency during the campaign. For this purpose I refer to the content of three major national newspapers²⁷ during the thirty days preceding the election. *Saliency* consists of a dummy equal to 1 if a constituency (or any of its candidates) has received above average coverage in these

campaign. In fact, if we use only these questions to measure political knowledge the instruments turn out to be rather ineffective. In a previous version of this paper, I used a combination of the two measures, in order to obtain a smoother index of political knowledge. The results, however, were very similar to those presented here.

²³ Data from the Census are at the level of Districts, local administration units reported in the BES.

²⁴ See for example Matsusaka and Palda (1999), and, for a study of the U.K., Swaddle and Heath (1989).

²⁵ See for example Bishop, Oldendick, and Tuchfarber (1984) and Abramson, Silver, and Anderson (1987).

²⁶ A "shadow-cabinet" is put in place by the main opposition party and is composed of those who, in case of victory, are most likely to become members of the cabinet. A shadow foreign secretary, for example, follows very closely the government foreign policy and is supposed to be able to control, comment and propose alternatives to the foreign policy of the government. This makes shadow-cabinet members quite popular on the media.

²⁷ The Times, The Guardian and The Independent.

newspapers but is not included in *bigshot*. My assumption is that people living in more salient constituencies are more exposed to political information and therefore, keeping other things equal, will know more about candidates and platforms in the day of the election. The third instrument is a dummy variable (*bbc100*) equal to 1 for citizens living in constituencies that the BBC defined as “the battleground” and on which the BBC decided to focus its attention on the night of the election: they were the expected closest 100 Conservative-held constituencies (and therefore the decisive ones since in 1997 a swing against the Conservatives was expected). I expect these constituencies to get larger media coverage during the electoral campaign and, possibly, a more intense effort by parties in making candidates and platforms known to the public. It should be noted that I do not expect voters to be deterministically better informed when they live in salient constituencies. Actual information acquisition will ultimately depend on behavioural factors that are not exogenous. However, if a voter lives in a constituency which is more under the spotlight during the electoral campaign, she should be, *ceteris paribus*, more likely to learn about information which is relevant for voting decision making.

Data description and summary statistics are reported in the Data appendix.

5 Results

To make this analysis comparable with previous studies of turnout, I start by estimating a standard turnout equation. The results are reported in Table 2. Column 1 contains the results when income, education and church attendance are numerical variables while in column 2 they are considered as categorical variables. A comparison of the log-likelihood scores shows that the restriction imposed under the first specification cannot be accepted and, therefore, in the subsequent analysis I always consider income, education and church attendance as categorical dummies.

I find that the propensity to vote increases with income, and is significantly larger for people who are married, who have been contacted by a canvasser²⁸ and who are aware of being on the electoral register. More surprisingly, I find that a number of individual variables like education, gender and age, are not significant. It should be noted, however, that columns 1 and 2 include past voting behaviour, i.e. whether the respondent voted or not in the previous general election. This aims at capturing relevant individual-specific unobservables and probably absorbs most of the impact of other variables (whose parameters represent therefore variations with respect to this individual effect). Moreover, to capture unobservable environmental characteristics I include aggregate turnout, which is also likely to absorb the effect of other constituency-level variables.

Column 3 presents a more parsimonious model where past voting behaviour and aggregate turnout have been excluded. The resulting estimates have a decidedly more familiar flavour. Consistent with previous findings on the determinants of turnout in British elections (Crewe, Fox, & Alt, 1977; Swaddle & Heath, 1989; Denver, 2003), my estimates show that income, marital status, housing tenure and residential mobility are, together with the respondent’s age, very good predictors of turnout, while education and gender seem to have little impact.²⁹

²⁸ If we separate face-to-face canvassing from telephone calls we find that the first is vastly more effective (not reported but available upon request). This confirms what has been found by Gerber and Green (2000) for the United States.

²⁹ Milligan et al. (2003) find that the impact of education is especially strong on registration. Conditional on being registered, this effect disappears. It is therefore not surprising that education tends to be insignificant in

Table 2 Probit estimates of turnout

Dependent variable: Turnout	(1)	(2)	(3)	(4)	(5)
Age	-0.002 (0.70)	-0.002 (0.65)	-0.002 (0.45)	0.006* (1.81)	-0.001 (0.19)
Age2	0.003 (0.86)	0.003 (0.81)	0.002 (0.60)	-0.004 (1.03)	0.000 (0.10)
Married	0.052** (2.37)	0.052** (2.39)	0.044* (1.93)	0.058** (2.50)	0.042* (1.93)
Gender	-0.021 (1.05)	-0.020 (1.02)	-0.022 (1.16)	-0.029 (1.46)	-0.024 (1.24)
Asian	0.079 (1.29)	0.083 (1.36)	0.077 (1.31)	0.041 (0.63)	0.043 (0.71)
Black	-0.016 (0.14)	-0.006 (0.06)	-0.026 (0.23)	0.000 (0.00)	-0.125 (0.88)
Union member	0.019 (0.92)	0.019 (0.91)	0.013 (0.66)	0.021 (1.04)	0.010 (0.51)
Length of residence	0.001* (1.77)	0.001* (1.78)	0.001* (1.88)	0.001** (2.14)	0.001* (1.74)
Full time job	-0.034 (1.38)	-0.035 (1.44)	-0.036 (1.53)	-0.022 (0.91)	-0.037 (1.62)
House owner	0.031 (1.52)	0.030 (1.49)	0.034 (1.57)	0.045** (2.11)	0.045** (2.10)
Quality newspaper reader	0.046 (1.47)	0.046 (1.47)	0.047 (1.54)	0.040 (1.29)	0.010 (0.30)
Canvasser	0.066*** (3.65)	0.065*** (3.61)	0.065*** (3.72)	0.064*** (3.67)	0.058*** (3.34)
Voted in 1992	0.273*** (10.48)	0.272*** (10.42)	0.273*** (10.90)		0.209*** (8.75)
Aware of being registered	0.701*** (6.61)	0.700*** (6.54)	0.711*** (5.90)	0.700*** (5.27)	0.707*** (6.60)
Retired	-0.007 (0.20)	-0.007 (0.19)	-0.007 (0.19)	-0.014 (0.39)	-0.014 (0.38)
Marginality	-0.081 (1.36)	-0.049 (0.77)	-0.042 (0.65)	-0.049 (0.84)	-0.038 (0.61)
Degrees	0.045 (0.10)	0.027 (0.06)	0.155 (0.35)	0.207 (0.47)	0.179 (0.40)
Unemployment rate	0.147 (0.30)	0.333 (0.67)	0.435 (0.89)	0.240 (0.50)	0.241 (0.48)
Population density	0.004 (0.36)	0.007 (0.67)	0.007 (0.69)	-0.002 (0.19)	0.009 (0.84)
Aggregate turnout		0.427* (1.70)	0.473* (1.86)		0.384 (1.57)
Interest in politics					0.034*** (4.02)
Ideological self-placement					0.015** (2.45)
Party attachment					0.130*** (7.13)
Education	0.009* (1.68)	0.009* (1.69)	[0.18]	[0.17]	[0.30]

(Continued on next page)

Table 2 (Continued)

Dependent variable: Turnout	(1)	(2)	(3)	(4)	(5)
Income	0.003 (1.23)	0.003 (1.16)	[0.00]***	[0.00]***	[0.00]***
Church attendance	0.009** (2.46)	0.009** (2.45)	[0.02]**	[0.01]***	[0.02]**
Observations	2882	2882	2882	2882	2843
Pseudo-R2	0.1297	0.1310	0.1501	0.0950	0.1880
Observed P	0.7922	0.7922	0.7922	0.7922	0.7924
Predicted P (at the mean)	0.8180	0.8182	0.8238	0.8133	0.8360

The table reports marginal effects at the mean for continuous variables and the probability variation determined by a switch from 0 to 1 for dummy variables. All regressions include a constant and regional dummies

Robust *z*-statistics clustered by constituency in round brackets. *significant at 10%; **significant at 5%; ***significant at 1%

For categorical variables (education, income and churchgoer in columns 3–5) we report in square brackets the *p*-value of a Wald test and use the stars to indicate the joint significance of the coefficients

Column 4 includes political attitude variables which, not surprisingly, have a very strong explanatory power. Thus, the data offer no major surprises. Before proceeding, it is worth noting the negative impact of having a full time job on the propensity to vote³⁰ and the little impact of the constituency-level variables, even when aggregate turnout is not included.

Table 3 reports estimates of the turnout equation when information is included. It is immediately clear that information is a strong predictor of turnout. Both the magnitude and the significance level of the coefficient seem to suggest that information is amongst the most important explanatory variables of electoral participation. In the simple probit estimates of column 1, increasing information by one standard deviation above the mean renders a voter approximately 5% more likely to participate. This effect is strong and robust to variations in the specification adopted. I obtain very similar estimates whether or not I include the respondents' self assessment of their political interest, ideological position and party attachment.

The two step probit also shows a positive impact of information on turnout. Estimation is this time less precise³¹, but the magnitude of the coefficient is larger. This time an increase in information by one standard deviation determines an increase of 13% in the probability of voting.³² Once again, introducing disposition variables does not produce any relevant changes in the size of the coefficient but improves its significance level. Figure 1 reports the probability of voting associated with the estimates of columns 1 and 3 in Table 3³³: the impact of information is clearly stronger when the two-step procedure is used. This finding is consistent

Britain, where compiling the register is the responsibility of local authorities. Our sample contains, anyway, only registered voters.

³⁰ Thus, voting on a working day (Thursday) may have an impact on the decision to vote.

³¹ The significance level is, however, still very close to 5% when disposition variables are not included and well within 5% when disposition variables are included.

³² This figure (as well as the corresponding figure for the simple probit estimation) is surprisingly robust to changes in the way information is measured (i.e. whether general knowledge questions are used or not).

³³ Including disposition variables would change the graphic only marginally.

Table 3 Information and turnout: Probit estimates

Dependent variable: Turnout	Probit	Probit	Two-step probit	Two-step probit
Information	0.047*** (5.06)	0.039*** (4.11)	0.119* (1.85)	0.126** (2.03)
Age	-0.002 (0.69)	-0.001 (0.35)	-0.004 (1.14)	-0.003 (1.37)
Age2	0.003 (0.83)	0.001 (0.27)	0.004 (1.31)	0.003 (0.77)
Married	0.042* (1.87)	0.041* (1.86)	0.039* (1.70)	0.035 (1.57)
Gender	-0.021 (1.13)	-0.021 (1.13)	-0.023 (1.20)	-0.020 (1.06)
Asian	0.086 (1.53)	0.050 (0.85)	0.109* (1.95)	0.078 (1.39)
Black	-0.034 (0.29)	-0.134 (0.93)	-0.049 (0.40)	-0.167 (1.10)
Union member	0.006 (0.30)	0.005 (0.23)	-0.007 (0.29)	-0.010 (0.44)
Length of residence	0.001 (1.38)	0.001 (1.27)	0.000 (0.49)	0.000 (0.12)
Full time job	-0.032 (1.36)	-0.034 (1.47)	-0.026 (1.07)	-0.026 (1.12)
Huse owner	0.030 (1.40)	0.041* (1.92)	0.024 (1.13)	0.034 (1.57)
Quality newspaper reader	0.034 (1.10)	0.002 (0.06)	0.011 (0.30)	-0.019 (0.54)
Canvasser	0.057*** (3.24)	0.050*** (2.87)	0.042** (2.01)	0.031 (1.51)
Voted in 1992	0.258*** (10.39)	0.199*** (8.25)	0.233*** (8.51)	0.177*** (7.24)
Aware of being registered	0.708*** (6.21)	0.703*** (6.95)	0.705*** (6.23)	0.702*** (7.07)
Retired	-0.017 (0.44)	-0.021 (0.57)	-0.03 (0.78)	-0.035 (0.90)
Marginality	-0.014 (0.22)	-0.014 (0.21)	0.031 (0.42)	0.043 (0.59)
Degrees	0.108 (0.24)	0.163 (0.36)	0.101 (0.22)	0.205 (0.45)
Unemployment rate	0.281 (0.57)	0.139 (0.27)	0.131 (0.26)	0.030 (0.06)
Population density	0.010 (0.94)	0.011 (1.02)	0.012 (1.18)	0.013 (1.19)
Aggregate turnout	0.398 (1.60)	0.320 (1.33)	0.284 (1.10)	0.171 (0.67)
Political interest		0.030*** (3.51)		0.019* (1.81)
Ideological self-placement		0.011* (1.80)		0.003 (0.36)
Party attachment		0.129*** (7.04)		0.137*** (7.20)

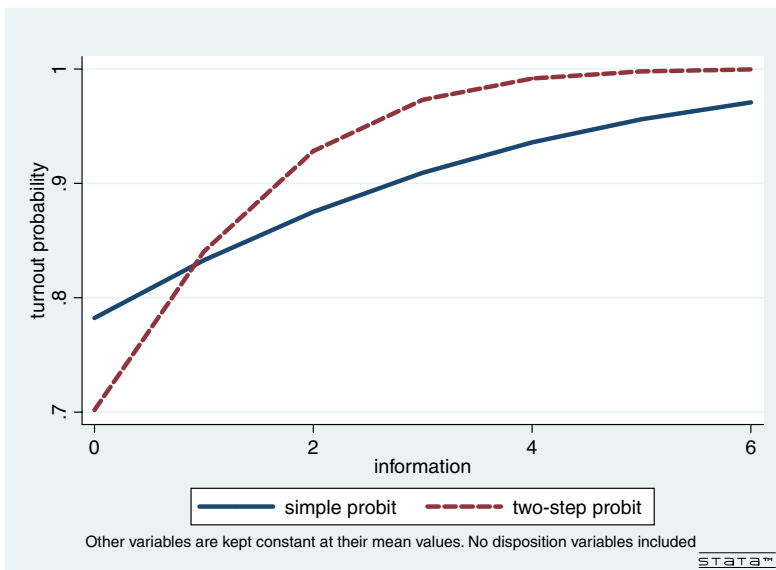
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Table 3 (Continued)

Dependent variable: Turnout	Probit	Probit	Two-step probit	Two-step probit
First stage residuals			−0.073 (1.32)	−0.090* (1.66)
Education	[0.32]	[0.40]	[0.64]	[0.63]
Income	[0.00]***	[0.00]***	[0.00]***	[0.00]***
Church attendance	[0.06]*	[0.03]**	[0.12]	[0.08]
Observations	2882	2843	2882	2843
Pseudo-R2	0.1620	0.1963	0.1626	0.1973
Observed P	0.7922	0.7924	0.7922	0.7924
Predicted P (at the mean)	0.8278	0.8381	0.8278	0.8384

The table reports marginal effects at the mean for continuous variables and the probability variation determined by a switch from 0 to 1 for dummy variables. All regressions include a constant and regional dummies

Robust *z*-statistics clustered by constituency in round brackets. Standard errors for the variable “information” and residuals in columns 3 and 4 have been calculated by bootstrap. *significant at 10%; **significant at 5%; ***significant at 1%. For categorical variables (education, income and churchgoer) we report in square brackets the *p*-value of a Wald test and use stars to indicate the joint significance of the coefficients

**Fig. 1** Predicted voting probability as a function of information

with previous work (Lassen, 2005) and probably due to the presence of measurement error in the index of political knowledge. In fact, recalling the name of candidates is only a proxy for knowledge of policy-specific facts that ultimately may have a relevant impact on voting behaviour. Although measures of political knowledge tend to be correlated (Delli Carpini & Keeter, 1996), Gilens (2001) shows that policy-specific knowledge may have a greater impact on political preferences than general knowledge. If this is the case, then simple probit estimates may suffer from the attenuation bias which is typical of variables measured with

error. IV estimation helps to correct this problem too, therefore increasing the estimated effect of information on turnout.

Having shown that political knowledge increases turnout, which estimates should we use if we wanted to quantify this impact? The coefficient of the first stage residuals is insignificant in columns 3 (no disposition variables) and barely significant at the 10% level in column 4 (with disposition variables). Hence, the endogeneity problem is probably not severe. This does not imply that no variables are driving both turnout and information. It means, however, that including the standard controls used in most studies of turnout, we can probably be reassured that there are no omitted variables left in the residuals that are correlated with information. Controlling for past voting behaviour is, for example, important to capture unobserved heterogeneity. Including political disposition variables is, instead, not essential. The choice of which estimates to trust depends, however, also on how well we believe to have measured political knowledge, since measurement error bias is also removed by instrumental variables estimation.

The instruments I use pass comfortably the overidentification tests presented in the previous section and shown in Table 4. Twice the difference between the log-likelihood of the equations in the first and the second columns (where, respectively, the first stage fitted values and the instrumental variables are included) is equal to 0.41 and a chi-test is easily passed. The corresponding statistic when I include disposition variables (comparing the specifications of Columns 5 and 6) is 0.44 and again a chi-test is passed. Table 4 also reports the Wald tests for the exclusion of *bigshot*, *bbc100* and *salience* from the turnout equation (where information is not included): these deliver similar outcomes. To these, we can add a further test if, like in this case, exogeneity cannot be rejected: the validity of the instruments can be checked by including in the turnout equation both information and the three instrumental variables. If instruments are valid then this equation should be not too different from the restricted model when the three instruments are excluded. The results (both a log-likelihood ratio and a Wald test) are reported at the bottom of columns 3 and 7 for, respectively, the equations with and without disposition variables. They also show that the three instruments are not directly related to turnout. Hence, all this seems to suggest that the instrumental variables have been well chosen and that the endogeneity test reported in Table 3 is valid.

Before concluding this section it is useful to look at the first stage regressions, which, although in a reduced form, give an indication of the propensity of British voters to be informed about politics (Table 5). First of all, the instruments are significant and show the expected signs. This suggests that mass media coverage and the overall strategic importance of a constituency during an electoral campaign make voters more informed. Thus, exposure to relevant information matters.

Among other exogenous variables, both education and income are very strong predictors of political knowledge. This result is obtained in spite of controlling for a number of covariates that are normally used to explain income. A number of other socio-demographic and economic characteristics are also good predictors of the voter political knowledge. Age, gender, the length of residence in a given constituency and union membership all display sizeable and significant effects. Interestingly, the results show that the time constraint matters, as it affects the ability to gather information: while retired voters tend to be better informed than average, the opposite is true for voters in full time occupation.

In contrast with what we found in the turnout equation, constituency-level variables are good predictors of political knowledge: voters are substantially more informed in constituencies with closer competitions. This is clearly compatible with the fact that politicians and parties put more effort in marginal constituencies (as suggested for example in Cox & Munger,

Table 4 Testing the overidentification restrictions

Dependent variable: Turnout	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Fitted values from 1st stage regression	0.117** (2.24)				0.126** (2.49)			
bbc100		0.037 (1.08)	0.020 (0.71)			0.035 (1.51)	0.025 (1.00)	
Saliency		0.028 (0.90)	0.030 (0.85)			0.041 (1.21)	0.032 (0.92)	
Bigshot		0.028 (0.90)	0.016 (0.47)			0.029 (0.97)	0.020 (0.67)	
Info			0.046*** (4.47)	0.047*** (5.06)			0.037*** (3.76)	0.039*** (4.11)
Interest in politics, Ideological self-placement and party attachment	NO	NO	NO	NO	YES	YES	YES	YES
Observations	2882	2882	2882	2882	2843	2843	2843	2843
Log-L	-1249.35	-1249.14	-1233.16	-1234.20	-1176.00	-1175.78	-1161.43	-1167.07
LR test	0.41	2.08			0.44		3.27	
Prob>chi2	0.8128		0.5570		0.8031		0.3511	
Wald test		5.25	1.64			6.39	2.88	
Prob>chi2		0.1545	0.6511			0.0942	0.4109	

Robust z statistics clustered by constituency in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%
 The LR test in (1) compares model (1) with model (2). Thus, 0.41 is twice the difference in the Log-L between specification (1) and specification (2).
 Prob>chi2 refers to the p -value of the LR test. Analogously, the LR test in (3) refers to the comparison between the unrestricted model in column (3) and the restricted model of column (4). The LR test in column (5) compares model (5) with model (6), and the LR test in column (7) compares column (7) with column (8)

The Wald tests reported in columns (2), (3), (6) and (7) consist in testing the exclusion of bbc100, bigshot and saliency from the respective model

Table 5 First stage regressions

Dependent variable: Information	(1)	(2)
bbc100	0.343*** (3.17)	0.351*** (3.12)
bigshot	0.304*** (3.21)	0.302*** (3.12)
Media salience	0.192* (1.76)	0.217* (1.96)
Age	0.021** (2.57)	0.017** (2.08)
Age2	-0.021** (2.42)	-0.018** (2.17)
Married	0.043 (0.84)	0.059 (1.19)
Gender	0.028 (0.56)	-0.006 (0.12)
Asian	-0.504*** (4.11)	-0.413*** (3.50)
Black	0.187 (1.06)	0.265 (1.57)
Union member	0.189*** (4.60)	0.177*** (4.31)
Length of residence	0.006*** (4.89)	0.007*** (5.44)
Full time job	-0.089* (1.79)	-0.088* (1.81)
House owner	0.081 (1.48)	0.082 (1.50)
Quality newspaper reader	0.358*** (4.69)	0.243*** (3.19)
Canvasser	0.191*** (3.71)	0.199*** (3.81)
Voted in 1992	0.244*** (4.05)	0.181*** (2.99)
Aware of being registered	0.149 (0.97)	0.101 (0.65)
Retired	0.169 (2.14)	0.140 (1.84)
Marginality	-0.511** (2.39)	-0.502** (2.37)
Degrees	-0.110 (0.08)	-0.692 (0.54)
Unemployment rate	1.777 (1.17)	0.936 (0.60)
Population density	-0.040 (1.22)	-0.024 (0.74)
Aggregate turnout	0.935 (1.16)	1.036 (1.30)
Political interest		0.134*** (5.21)
Ideological self-placement		0.092*** (5.04)

(Continued on next page)

Table 5 (Continued)

Dependent variable: Information	(1)	(2)
Party attachment		-0.111** (2.28)
Education	[0.00]***	[0.13]
Income	[0.47]	[0.41]
Church attendance	[0.18]	[0.07]*
Observations	2882	2843
R-squared	0.1727	0.2089

All regressions include a constant and regional dummies. Robust z-statistics clustered by constituency in round brackets. *significant at 10%; **significant at 5%; ***significant at 1%. For categorical variables (education, income and churchgoer) we report in square brackets the *p*-value of a Wald test and use stars to indicate the joint significance of the coefficients

1989, Aldrich, 1993, and Shachar and Nalebuff, 1999). However, an alternative interpretation is possible: that individual demand for political information increases when the probability to be a pivotal voter is higher.³⁴ A quite surprising result is that political knowledge is higher in constituencies with more unemployment. This might be due to the fact that the unemployed have lower opportunity costs of time.

Finally, political disposition variables have a large impact on political knowledge: voters that declare to have a strong interest in politics are better informed. The same is true of voters that pose themselves at extreme points on the left-right scale. However, voters that show a strong attachment to a party tend to be less informed. This stresses the importance of distinguishing between objective knowledge and opinions, especially if one wants to derive normative statements about the desirability of an informed public opinion and of a participative citizenry.

6 Concluding remarks

Does political knowledge affect the propensity of citizens to vote? The conclusion of this paper is that it does. Analysing data from the 1997 British general election I find not only that information is a good predictor of turnout, but also that it raises voter participation in a clearly causal fashion. An increase equal to one standard deviation from the mean in our measure of political knowledge raises the probability that a person votes by at least 5% (with other variables kept constant at their mean). A person with maximum knowledge can be, other things equal, almost one third more likely to vote than a person at the bottom of the knowledge distribution. This is a sizeable effect.

I also derive results on the determinants of voters' political knowledge and show that a number of socio-demographic variables with little direct impact on turnout (like education and gender) can actually have a vast impact on it through their effect on political knowledge. This, together with the finding that income is an important predictor of knowledge, implies that political representation is probably even more socioeconomically biased of what previous studies of turnout could reveal. I also show that political salience and the coverage given by mass media play a very important role in increasing voters' knowledge of political matters,

³⁴ See Larcinese (2007).

in spite of their negligible direct impact on turnout. This seems to suggest that the limited impact of mass media on voting behaviour encountered in a number of studies could be due to misspecification in the estimated equations.

Finally, it is useful to conclude with some normative remarks on the link between my results and the findings of recent formal models of information aggregation. If the better informed are more likely to vote then we should expect that general elections aggregate information, at least to a certain extent. However, I have also shown that this process relies crucially on the supply of information: the availability of political information increases voters' political knowledge and, in this way, increases informed turnout, thus making it more likely that the process of collective decision making leads to desirable outcomes. Hence, although not included in formal definitions of what democracy consists of, an informed public opinion and an accurate transmission of information on the mass media improve the quality of democratic governance.

A Data Appendix

If not otherwise specified, variables are derived from the 1997 British General Election Study.

- *Information.* The variable *Info* has been constructed by using the following question:
 1. Do you happen to remember the names of any candidates who stood in your constituency in the general election this year?
 Please write in all the names of candidates that you can remember (6 spaces provided) or tick box: I can't remember any of the candidates' names.
Note: the names of candidates written in by respondents were checked against official lists of candidates.
- *Turnout.* Voters' verified turnout. Reported turnout has been used for respondents whose turnout has not been verified. These are approximately 15% of the sample. Turnout = 1 means that the respondent voted.
- *Income.* Total household income from all sources before tax. Categorical variable from 1 to 16.
- *Age.* respondent's age. Age2 is defined as the square of age divided by 100.
- *Gender.* Respondent's gender, equal to 1 if male.
- *Education.* Respondent's education level. Categorical variable from 1 to 7.
- *Married.* Respondent's marital status, equal to 1 if "married" or "living as married".
- *Ethnicity dummies.* "To which of these groups do you consider you belong?". The variable *asian* is equal to 1 if the answer is one of "Indian, Pakistani, Bangladeshi, Chinese, Other Asian". The variable *black* is equal to 1 if the answer is one of "Black African, Black Caribbean, Other Black".
- *Churchgoer.* Categorical variable derived from the question: "Apart from such special occasions as weddings, funerals and baptisms and son on, how often do you attend services or meetings connected with your religion?", with answers going from "no religion or never or practically never attends" to "once a week or more".
- *Length of residence.* Answer to: "How long have you lived in this neighbourhood?" (in years).
- *Full time job.* Dummy variable equal to 1 if the respondent works regularly 30 hours per week or more.
- *House owner.* Dummy variable equal to 1 if the respondent's household owns their accommodation.

Table A1 Summary statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Turnout	2882	.7876475	.409044	0	1
Information	2882	.9195003	1.114002	0	6
bbc100	2882	.129771	.3361096	0	1
Saliency	2882	.1065232	.3085597	0	1
Bigshot	2882	.0725191	.2593905	0	1
Age	2882	48.61659	17.65495	18	95
Edu	2882	3.569396	2.16618	1	7
Income	2882	6.989591	4.581465	1	16
Married	2882	.5860514	.492625	0	1
Gender	2882	.4656489	.4989052	0	1
Asian	2882	.01839	.1343804	0	1
Black	2882	.0090215	.0945686	0	1
Church attendance	2882	1.975364	2.601047	0	7
Union member	2882	.593338	.491296	0	1
Llength of residence	2882	19.75989	18.0382	0	94
Full time job	2882	.7581541	.4282758	0	1
House owner	2882	.6776544	.4674556	0	1
Retired	2882	.2338654	.423361	0	1
Quality newspaper reader	2882	.1186676	.3234531	0	1
Canvasser	2882	.2890354	.4533931	0	1
Voted in 1992	2882	.7987509	.4010034	0	1
Aware of registration	2882	.9944483	.0743155	0	1
Party attachment	2882	.2366412	.4250939	0	1
Interest in politics	2882	3.029146	1.053177	1	5
Ideological strenght	2843	1.202603	1.524986	0	5
Marginality	2882	.3032604	.1936666	.0051282	.8140044
Aggregate turnout	2882	.7130278	.0511328	.514	.8
Degrees	2882	.0603349	.0269313	.0149414	.1797613
Unemployment	2882	.0929566	.0395296	.0286795	.2248957
Population density	2882	1.344676	1.669413	.0021854	11.10492

- *Canvasser*. Dummy variable equal to 1 if a positive answer is given to “Did a canvasser from any party call at your home to talk to you during the electoral campaign?” and/or “Were you contacted by anyone on the telephone during the electoral campaign asking how you might vote?”.
- *Voted in 1992*. Dummy variable equal to 1 if the respondent voted in the 1992 general election (self reported).
- *Quality paper reader*. Dummy variable equal to 1 if the respondent declares to regularly read a daily morning newspaper and, to the question “which daily morning newspaper do you read most often?”, answers one of the following: The Daily Telegraph, The Financial Times, The Guardian, The Independent, The Times.
- *Retired*. Dummy variable equal to 1 if the respondent declares to be “wholly retired from work”.
- *Union*. Dummy variable equal to 1 if the respondent, or his/her partner, is, or has been in the past, member of a union.
- *Ideological strength*. Variable derived from the respondent’s ideological self-placement on a 0 (left) to 10 (right) scale. The ideological strength is posed equal to 0 if the position of the left-right dimension is 5, is equal to 1 if the position on the left-right dimension is

Table A2 Correlation coefficients

	Turnout	Inform.	Age	Educ.	Income	Married	Gender	Quality newsp. reader	Political interest	Party attach.	Media salience	Bigshot		
Turnout	1													
Information	0.1874	1												
Age	0.0976	0.0797	1											
Education	0.0467	0.1549	-0.3754	1										
Income	0.0899	0.1278	-0.3399	0.4848	1									
Married	0.1299	0.1124	-0.082	0.0829	0.3821	1								
Gender	-0.0037	0.0224	-0.0173	0.0772	0.149	0.1347	1							
Quality newspaper reader	0.0803	0.1519	0.0115	0.2743	0.2613	0.0618	0.0816	1						
Political interest	0.1993	0.2382	0.095	0.2696	0.2172	0.0991	0.1737	0.2883	1					
Ideol. self-placement	0.135	0.1836	0.098	0.0787	0.0434	-0.0067	0.0147	0.1412	0.2476	1				
Party attachment	0.2087	0.0191	0.2171	-0.1363	-0.0997	-0.004	-0.035	0.0171	0.1191	0.1634	1			
bbc100	0.034	0.131	-0.0533	0.0365	0.0458	0.0183	-0.0325	-0.0105	-0.0069	-0.0204	-0.0154	1		
Media salience	0.0522	0.0957	-0.0121	0.0225	-0.0002	0.0076	-0.0189	-0.0105	0.0036	-0.0284	0.0127	0.2455	1	
Bigshot	0.0103	0.0437	-0.0275	-0.0143	0.0595	0.0397	0.021	0.0168	0.0081	-0.0028	-0.0225	-0.0482	-0.0965	1

either 4 or 6, etc. Respondents who answered “can’t choose” have an ideological strength equal to 0.

- *Party attachment*. Dummy variable equal to 1 if the respondent declares to be very strongly attached to a party or if the respondent declares to have voted always the same party.
- *Degrees*. Ratio of the population in the district with a degree (source: Census, 1991).
- *Unemployment*. Ratio of unemployed population in the district (source: Census, 1991).
- *Population density*. Persons per hectare in the district (source: Census, 1991).
- *Aggregate turnout*. Percentage turnout in the constituency in 1997 election (source: Boothroyd, 2002).
- *Marginality*. Define with W and R the percentage of votes reported respectively by the winning candidate and the runner up. Then $Marginality = (W - R)/(W + R)$ (source: author’s elaboration on data from Boothroyd, 2002).
- *Bbc100*. Dummy equal to 1 if the constituency was included among the 100 decisive constituencies (“the battleground”) according to the BBC (source: BBC web page).
- *Big shot*. Dummy equal to 1 if one of the candidates in the constituency is a current or former member of cabinet, a current member of the shadow-cabinet or the leader of the Liberal-Democratic party.
- *Salience*. Dummy variable equal to 1 if a constituency is found to have been “salient” on national newspapers during the last 30 days of the electoral campaign, but not included in *bigshot*. The number of articles mentioning one of the candidates has been collected from three national newspapers (The Guardian, The Independent and The Times). These have been weighted by the inverse of the total political articles appeared in each newspaper during the same period and then averaged. A constituency (in the sense of any of its candidates) is defined as being salient if it has been mentioned in a number of articles which is above the average (source: author’s elaboration on data from the Guardian, the Independent and The Times).

Acknowledgements I am very grateful to Tim Besley for helpful discussions during all stages of this project and for comments and suggestions on a number of previous versions of this paper. I also wish to thank Oriana Bandiera, Richard Blundell, Harold Clarke, Keith Dowding, Guillaume Frechette, Cesar Martinelli, Maria Pia Monteduro, Imran Rasul, Leo Rizzo, Cristiana Vitale and Donald Wittman as well as participants in a number of meetings and seminars for their useful comments and suggestions. I remain the sole responsible for limits and errors of this work. Financial support from the European Commission under the TMR Scheme (Marie Curie Fellowship) and from ESRC is gratefully acknowledged.

References

- Abramson, P.R., Silver, B.D., & Anderson, B.A. (1987). The effects of question order in attitude surveys: The case of the SRC/CPS citizen duty items. *American Journal of Political Science*, 31, 900–908.
- Aldashev, G. (2005). Political information acquisition for social exchange. *mimeo*, Università Bocconi.
- Aldrich, J.H. (1993). Rational choice and turnout. *American Journal of Political Science*, 37, 246–278.
- Austen-Smith, D. (1990). Information transmission in debate. *American Journal of Political Science*, 34, 124–152.
- Bartels, L.M. (1996). Uninformed voters: Information effects in presidential elections. *American Journal of Political Science*, 40, 194–230.
- Battaglini, M., Morton, R., & Palfrey, T.R. (2006). The swing voter’s curse in the laboratory, *CEPR Discussion Paper* 5458.
- Besley, T., & Case, A. (2003). Political institutions and policy choices: Evidence from the United States. *Journal of Economic Literature*, XLI, 7–73.
- Bishop, G.F., Oldendick, R.W., & Tuchfarber, A.J. (1984). Interest in political campaigns: The influence of question order and electoral context. *Political Behaviour*, 6, 159–169.

- Bollen, K.A., Guilkey, D.K., & Mroz, T.A. (1995). Binary outcomes and endogenous explanatory variables: Tests and solutions with an applications to the Demand for contraceptive use in Tunisia. *Demography*, 32, 111–131.
- Boothroyd, D. (2002). United Kingdom election results, <http://www.election.demon.co.uk/>
- Calvert, R.L. (1985). Robustness of the multidimensional voting model: Candidate motivations, uncertainty and convergence. *American Journal of Political Science*, 29(1), 69–95.
- Coupé, T., & Noury, A.G. (2004). Choosing not to choose: On the link between information and abstention. *Economics Letter*, 84, 261–265.
- Cox, G.W., & Munger, M.C. (1989). Closeness, expenditure, turnout: The 1982 U.S. house elections. *American Political Science Review*, 83, 217–232.
- Crewe, I., Fox, A., & Alt, J. (1977). Non-voting in British general elections 1966–October 1974. In C. Crouch (Ed.), *British political sociology yearbook*, Vol. 3, (pp. 38–109), London: Croom Helm.
- Delli Carpini, M.X., & Keeter, S. (1996). *What Americans know about politics and why it matters*, Yale University Press.
- Denver, D. (2003). *Elections and voters in Britain*. Palgrave MacMillan.
- Feddersen, T.J., & Pesendorfer, W. (1996). The Swing's voter's curse. *American Economic Review*, 86, 408–424.
- Feddersen, T.J., & Pesendorfer, W. (1999). Abstention in elections with asymmetric information and diverse preferences. *American Political Science Review*, 93, 381–398.
- Ferejohn, J. (1986). Incumbent performance and electoral control. *Public Choice*, 50, 5–26.
- Gerber, A.S., & Green, D.P. (2000). The effects of personal canvassing, telephone calls, and direct mail on voter turnout: A field experiment. *American Political Science Review*, 94, 653–663.
- Ghirardato, P., & Katz, J.N. (2002). Indecision theory: Quality of information and voting behaviour. Social Science Working Paper 1106R, California Institute of Technology.
- Gilens, M. (2001). Political ignorance and collective policy preferences. *American Political Science Review*, 95(1), 379–396.
- Grofman, B., & Norrander, B. (1990). Efficient use of reference group cues in a single dimension. *Public Choice*, 64, 213–217.
- Heath, A., Jowell, R., Curtice, J.K., & Norris, P. (1999). The British general election study, 1997, available at <http://www.data-archive.ac.uk/>
- Hicks, A.M., & Swank, D.H. (1992). Politics, institutions, and welfare spending in industrialized democracies, 1960–1982. *American Political Science Review*, 86, 658–674.
- Hill, K.Q., & Leighley, J.E. (1992). The policy consequences of class bias in state electorates. *American Journal of Political Science*, 36, 351–365.
- Hill, K.Q., Leighley, J.E., & Hinton-Anderson, A. (1995). Lower class mobilization and policy linkage in the US States. *American Journal of Political Science*, 39, 75–86.
- Horiuchi, Y., Imai, K., & Taniguchi, N. (2005). Estimating the causal effects of policy information on voter turnout: An internet-based randomized field experiment in Japan. *Australian National University Discussion Paper 05-4*.
- Husted, T.A., & Kenny, L.W. (1997). The effect of the expansion of the voting Franchise on the size of government. *Journal of Political Economy*, 105, 54–82.
- Larcinese, V. (2000). Information acquisition and electoral turnout: Theory and evidence from Britain. Paper presented at the CEPR meeting, “The Political Economy of Economic Policy”, Toulouse.
- Larcinese, V. (2005). Electoral competition and redistribution with rationally informed voters. *Contributions to Economic Analysis and Policy*, 4(1), art. 4.
- Larcinese, V. (2007). The instrumental voter goes to the news-agent: Information acquisition, marginality and the media. *Journal of Theoretical Politics*, forthcoming.
- Lassen, D.D. (2005). The effect of information on voter turnout: Evidence from a natural experiment. *American Journal of Political Science*, 49, 103–118.
- Leighley, J.E., & Nagler, J. (1992). Individual and systemic influences on turnout: Who votes? 1984. *The Journal of Politics*, 54, 718–740.
- Levitt, D.S., & Snyder, J.J. (1995). Political parties and the distribution of federal outlays. *American Journal of Political Science*, 39, 958–980.
- Lindert, P. (1996). What limits social spending? *Explorations in Economic History*, 33, 1–34.
- Lupia, A. (1992). Busy voters, agenda control, and the power of information. *American Political Science Review*, 86, 390–404.
- Lupia, A. (1994). Shortcuts versus encyclopedias: Information and voting behaviour in California insurance reform elections. *American Political Science Review*, 88, 63–76.
- Lupia, A., & McCubbins, M.D. (1998). *The Democratic Dilemma: Can citizens learn what they need to know?* New York: Cambridge University Press.

- Luskin, R.C. (1990). Explaining political sophistication. *Political Behavior*, 12, 331–361.
- Maddala, G. (1983). *Limited dependent and qualitative variables in econometrics*. New York: Cambridge University Press.
- Matsusaka, J.G. (1995). Explaining voter turnout patterns: An information theory. *Public Choice*, 84, 91–117.
- Matsusaka, J.G., & Palda, F. (1999). Voter turnout: How much can we explain? *Public Choice*, 98, 431–446.
- McKelvey, R.D., & Ordeshook, P.C. (1984). Rational expectations in elections: Some experimental results based on a multidimensional model. *Public Choice*, 44, 61–102.
- Milligan, K., Moretti, E., & Oreopoulos, P. (2004). Does education improve citizenship? Evidence from the US and the UK. *Journal of Public Economics*, 88, 1667–1695.
- Nie, N.H., Junn, J., & Stehlik-Barry, K. (1996). *Education and democratic citizenship in America*. Chicago: The University of Chicago Press.
- Palfrey, T.R., & Poole, K.T. (1987). The relationship between information, ideology, and voting behavior. *American Journal of Political Science*, 31, 511–530.
- Patterson, S.C., & Caldeira, G.A. (1983). Getting out the vote: Participation in gubernatorial elections. *American Political Science Review*, 77, 675–689.
- Peterson, P.E., & Rom, M. (1989). American federalism, welfare policies, and residential choices. *American Political Science Review*, 83, 711–728.
- Popkin, S.L. (1991). *The reasoning voter*. Chicago: The University of Chicago Press.
- Riker, W.H., & Ordeshook, P.C. (1968). A theory of the calculus of voting. *American Political Science Review*, 62, 25–42.
- Rosenstone, S., & Hansen, J.M. (1993). *Mobilization, participation, and democracy in America*. New York: MacMillan Publishing Company.
- Sanders, M.S. (2001). Uncertainty and turnout. *Political Analysis*, 9, 45–57.
- Shachar, R., & Nalebuff, B. (1999). Follow the leader: Theory and evidence on political participation. *American Economic Review*, 89, 525–547.
- Sniderman, P.M., Brody, R.A., & Tetlock, P.E. (1991). *Reasoning and choice: Explorations in political psychology*. New York: Cambridge University Press.
- Sobel J. (1985). A theory of credibility. *Review of Economic Studies*, 52, 557–573.
- Strömberg, D. (2004). Radio impact on public spending. *Quarterly Journal of Economics*, 119, 189–221.
- Swaddle, K., & Heath, A. (1989). Official and reported turnout in the British general election of 1987. *British Journal of Political Science*, 19, 537–551.
- Tenn, S. (2005). An alternative measure of relative education to explain voter turnout. *Journal of Politics*, 67, 271–282.
- Young, P. (1988). Condorcet's theory of voting. *American Political Science Review*, 82, 1231–1244.
- Wattenberg, M., McAllister, I., & Salvanto, A. (2000). How voting is like taking a SAT test – an analysis of American voter rolloff. *American Politics Quarterly*, 28, 234–250.
- Wittman, D.A. (1995). *The myth of democratic failure: Why political institutions are efficient*. Chicago: University of Chicago Press.
- Wolfinger, R.E., & Rosenstone, S.J. (1980). *Who votes?* New Haven: Yale University Press.
- Wooldridge, J.M. (2002). *Econometric analysis of cross section and panel data*. Cambridge: MIT Press.