



Warm Glow Voting?

An Analysis of Turnout in Portugal

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Abstract

Modern democracies rely on civic participation, namely through voting. In this work, I use rational choice theory and the paradox of voting to analyse individuals' voting motivations using data of the Portuguese electorate, collected and built by me (1200 observations). As a novel contribution to the discussion, I conduct a randomized controlled trial using two treatments. One tests the importance of the act of voting while the other tests the probability of being pivotal in an election. I find individuals vote because they value the act of voting – *warm glow voting*. Finally, I find evidence suggesting that providing information about the importance of voting increases turnout while there is no impact of information about the probability of being pivotal.

Keywords: Calculus of Voting, Warm Glow, Sense of Duty, Experimental

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1 Introduction

Tackling the decrease in turnout is one of the biggest challenges in modern democracies, where abstention has been increasing over the last decades. A reduction in political parties' mobilization capacity, traditionally associated with influencing many peripheral voters to turnout, due to an increase in the cost of mobilization may be one of the causes of this common phenomena in western democracies (Gray and Caul, 2000). Also, institutional procedures seem to affect turnout, as compulsory voting and easy voter's registration have a significant impact increasing turnout (Geys, 2006). Higher abstention is likely to translate into a greater distance between the electorate and the elected representatives, possibly creating a biased democratic representation towards who votes, as elected officials tend to respond to the preferences of those who turnout (Griffin and Newman, 2005).

Turnout rates differ substantially across countries and ages, as suggested by Figure 1. Also, young people, between 18 and 24, are 17% less likely to cast their vote than older adults (OECD, 2016).²

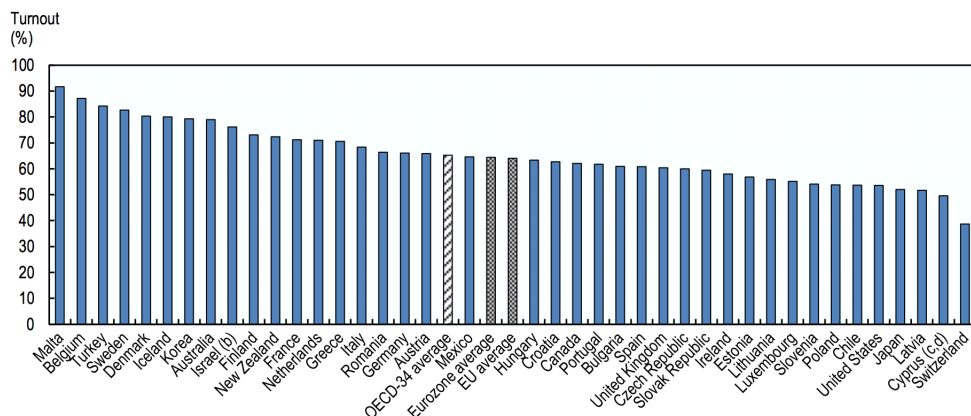


Figure 1: Turnout rate in latest national elections (OECD countries, 2016).³

Source: OECD, 2016

⁴ It urges to understand the main causes to vote or not to vote, so policy makers can design better institutional policies to increase voter turnout.⁵

²Voting is compulsory in Australia, Belgium, Greece, Luxembourg, Mexico, parts of Switzerland and Turkey.

³https://www.oecd.org/social/family/CO_4_2_Participation_first_time_voters.pdf

⁴Following a similar reasoning, minority parties should be favoured as turnout rates increase (Bernhagen and Marsh, 1997).

⁵However, abstention may not be necessarily bad. There is a field of research on the so-called swing

In this essay I have two main goals. First, I aim to understand the calculus of voting.⁶ I build an individual dataset about the last Portuguese legislative (2015), presidential (2015) and municipal (2013) elections, based on a survey built specifically for this work and containing information about the impact of the cost of voting, the expected gains from elections' outcome, sense of duty and social networks on voters' turnout. After, I focus on legislative elections and run a randomized controlled trial, using two treatments, to analyse how they affect the likelihood of future voting. One group is shown a *pivotal treatment*, providing information about the likelihood they may affect the outcome of the election. The other group is shown a *sense of duty* treatment and were provided information from official bodies stating how important the civic act of voting is.

This work brings two main contributions. First, it is one of first empirical works in Portugal (to the extent of my knowledge) running a survey at the individual level, assessing voting motivations and the calculus of voting among the Portuguese electorate, modelling it according to the rational choice theory.⁷ Second, this work runs a randomized controlled trial and finds significant statistical evidence that providing information about the importance of voting induces higher turnout. This finding is of major importance as it can help policy makers designing better policies to promote higher turnout.

The rest of this paper is structured as following: In the next two sections I cover the relevant topics in the literature, in the context of this article, and characterize the Portuguese electoral system. From sections 3 to 5 I explain my methodology, detailing the data I collected and used and the econometric analysis. In section 6 I show my results and discuss them, concluding in section 8 with the most important remarks of this paper and some ideas for future research.

voter's curse (individuals indifferent between candidates that decide not to vote even if voting is costless (Feddersen and Pesendorfer, 1996). More recently, these theoretical predictions have been empirically confirmed in laboratory studies (Morton and Palfrey, 2010).

⁶The rational decision to vote or not to vote, as defined by Downs (1957), Riker and Ordeshook (1968). (Please refer to the next section for more details).

⁷Magalhães (2008) already used an individual dataset but the analysis was on the impact of social networks in turnout. Please refer to the following section for more details.

2 Literature Review

2.1 The classical theory of the calculus of voting

The initial attempts to rationalize the decision to vote go back to the idea of the calculus of voting, firstly developed by Downs (1957) and later formalized by Riker and Ordeshook (1968). According to it, the individual decision to turnout depends on the rational trade-off between the cost of voting and its gains. Also, these include an instrumental component (directly linked to the outcome of the election) and a non-instrumental component (the increase in utility due to the act of voting). This model for the calculus of voting can be formalized as following:

$$V = P\beta - C + D \quad (1)$$

V is the individual reward from voting, and should be positive in order for an individual to vote. This reward depends on P , how likely the voter believes to be pivotal in the election⁸; β , which is the difference in benefit for the individual when his favourite candidate wins the election; the cost of voting, C , which includes the difficulty of going to the poll and the time the individual takes to get information about candidates.

Downs (1957) argued that in large elections (for example, legislative elections) the probability that an individual casts the decisive vote (P) should be very close to zero and even if the cost of voting is very small, $P\beta$ should be even lower and no one should vote. This is the so-called *Paradox of Voting*, which Riker and Ordeshook (1968) tried to solve by including D as the non-instrumental motivations leading individuals to turnout.

The sense of duty, D , was only included by Riker and Ordeshook (1968), accounting for the non-instrumental components motivating voters' turnout.⁹ Understanding this component plays a major role for explaining the paradox of voting (Blais, 2000).¹⁰ After the initial

⁸ P is a probability

⁹According to the authors, D can simply be the moral obligation to vote or can also be driven by a necessity to affirm partisan preferences or allegiance to the political system (which is very close to the previous idea of voting to maintain democracy.)

¹⁰Blais criticizes Riker and Ordeshook for using datasets not specifically designed for the calculus of voting, mainly because they were assuming C and P to be linked to the closeness of the election, similarly as Ashenfelter and Kelley (1975), and not as an individual's perception. He also suggests that besides D citizens could also go vote to maintain democracy. If the expected benefit of the election is very small and every citizen decides individually not to turnout, the democratic system fails. Moreover, if individuals

models by Downs (1957), Riker and Ordeshook (1968), a new approach of the calculus of voting, based on the strategic behaviour of voters, appeared (Palfrey and Rosenthal, 1983, 1985). According to it, large electorates do not necessarily mean zero or low turnout, with Individuals behaving strategically in a game-theoretical framework.¹¹

2.2 Alternative models in the literature

The failure of the basic calculus of voting to explain the magnitude of the turnout rate in democracies has prompted a number of theoretical contributions which depart from the purely self-interested, fully rational voter. One is the Mobilization Model, proposed by Rosenstone and Hansen (1993), which assumes that social networks pressure people to turnout. It expects people interested in politics, members of political parties and those who suffer pressure from their family and peers to be more likely to turnout. Thus, politicians can increase turnout by mobilizing these groups.¹² More recently, evidence from a field experiment suggests the threat of publicizing the names of non-voters (in their own communities) induces higher turnout (Gerber, Green and Larimer, 2008), evidencing a social pressure mechanism inducing turnout. Also, some argue there is a *social selection* process in which individuals build their social networks (Magalhães, 2008). Usually, this process is not random and individuals tend to be surrounded by people with ideas close to theirs. Magalhães (2008) finds that in Portugal this social network effect has an impact in turnout greater than individual interest in politics or political affiliation, being amplified as an individual feels closer to the individuals in his network.

2.3 Empirical results in the literature

Empirical results suggest most people do not perceive any costs of voting, or, when they do so, they are extremely low or even negligible (Blais, 2000). In Blais's (2000) seminal

realize that the rational decision is not to go vote, they may decide to bear the cost of voting in order to maintain democracy as they do not expect other people to turnout.

¹¹According to the authors, turnout can even increase with an increase of the cost of voting as voters adapt their behaviour, affecting how they perceive to be pivotal.

¹²(Verba et. Al, 1995) concluded that the voting decision in the United States was mainly driven by political interest.

book and in many of his papers, the author measured the cost of voting as distance to the polls, the subjective assessment of the difficulty to vote, or the cost of information about the candidacies.

Regarding the sense of duty, D , it seems to be positively affected by political interest, cultural variables (such as religiosity) and also by socio-economic indicators (gender, age and income), while education does not seem to have an impact (Blais, 2000). When estimating separately for individuals with high and low sense of duty, the author finds that P and political interest have a significant impact increasing turnout among individuals with low sense of duty. Those are the ones more sensitive to B , P and C while individuals with a strong sense of duty do not calculate costs and benefits and will always vote.¹³ These results corroborate previous findings showing that rain decreases turnout only in individuals showing low sense of duty (Knack 1994).

Also, regarding how much people perceive their vote to be decisive, turnout seems to be higher for closer elections (Blais, 2000) and smaller populations (Geys, 2006), suggesting people vote when they perceive their vote to worth more. According to Blais, P does not have a significant impact explaining the voting decision. Also, voters do not seem to clearly understand the probability of being pivotal (P), commonly overestimating it. However, some have argued more recently that voters behaviour towards turnout should be looked separately for those who are instrumental voters and those who are non-instrumental voters (Ungureanu and Roescu, 2015). They find that instrumental voters make their decision based on a cost-benefit analysis, perceiving costs to be high but, at the same time, overestimating the probability of being pivotal.¹⁴ Non-instrumental voters seem to correctly estimate P but do not make their decision base on a cost-benefit analysis.

Turnout also seems to vary across types of elections. It is higher in legislative elections and lower in local ones (Blais, 2000). A possible explanation is in voters' perception that local elections play a smaller role in day-to-day life. Other alternative is that local elections are less politicized than government, as data shows higher turnout rates in countries where

¹³Blais warns about the possibility individuals, when asked, say that voting is a civic duty, as they perceive it a social norm.

¹⁴Ungureanu and Roescu also find that these voters are the only thinking in the possibility their favourite candidate loses without their vote

local elections are highly politicized. Blais (2000) also analyses presidential elections in semi-presidentialist countries,¹⁵ showing that the turnout rates are not much different than those in legislative elections, although one could consider the president to represent a much smaller role than government in day-to-day life. One possible explanation is the personalization of presidential elections (Blais, 2000).

In the specific case of Portugal, previous work suggests that turnout rates are lower in more populated areas (Amaro de Matos, Barros and Pereira, 2009), raising the possible explanation that turnout can be linked to social network effects which can be more diluted in more populated areas. The same authors also find that geography and education do not have a significant impact in Portuguese turnout. However, the authors find that in Portugal higher income individuals are less likely to turnout, which is intriguing since previous findings (Amaro de Matos and Barros, 2004) show this same group is more likely to have stronger social networks and therefore to be more likely to turnout.

Finally, empirical evidence suggests that providing information (before the elections) about the importance of voting plays a significant role increasing voters turnout (Gine and Mansuri, 2010). Hence, providing impersonal information about the elections to potential voters also seems to significantly induce turnout (Dale and Strauss, 2009).

3 The Portuguese Electoral System

In Portugal there are legislative, presidential, municipal and European elections. In the legislative and municipal elections, votes are converted into seats according to the Hondt method, while in presidential elections there is a unique national district that elects the president through a direct vote, majoritarian system.^{16,17} In legislative elections only political parties can run, presenting closed lists of candidates for members of parliament. In municipal elections independent lists are allowed and in presidential elections any person

¹⁵Portugal fits in this kind of model. The political system is designed to have a national government and a President (Head of State) with limited powers.

¹⁶In the presidential election, there is a run-off in case one of the candidates does not collect more than 50% of the votes in the first round.

¹⁷There are also elections for the European Parliament, which are out of the scope of my analysis.

(following certain criteria) can run.¹⁸

In the legislative elections 230 members of the national parliament are elected according to 22 electoral districts, as shown in Figure 2.

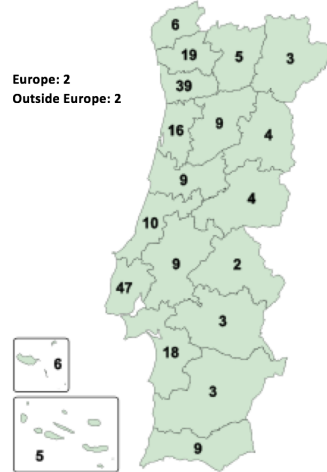


Figure 2: Electoral districts and respective members of parliament

Source: CNE (National Elections Committee), 2015.

Each district elects a number of members of parliament proportional to its population, following the Hondt method (approximately one member of parliament per 40 thousand individuals). The biggest district is Lisbon and the smallest is Portalegre. The outcome of the legislative elections of October 2015 is shown in Figure 3.

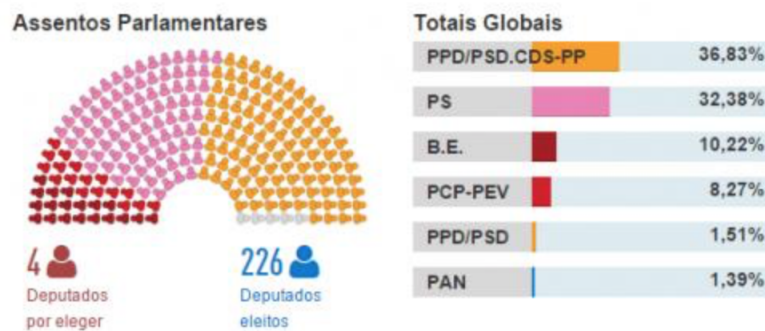


Figure 3: Legislative elections (2015), outcome. Abstention was 43.07%.

Source: RTP.¹⁹

¹⁸National and local governments are elected for a 4 years term while the president is elected for a 5 years term. Presidential candidates cannot be funded by political parties.

¹⁹The 4 seats missing corresponded to the European and non-European electoral districts and were attributed to PAF(3) and PS(1).

¹⁹http://www.rtp.pt/noticias/eleicoes-legislativas-2015/votos-contados-nasce-legislatura-sem-maioria-absoluta_a863632

The outcome of the last presidential (January 2016) and municipal (September 2013) elections is shown in Figures 4 and 5:



Figure 4: Presidential elections (2016), outcome. Abstention was 51.34%.

Source: RTP.²⁰

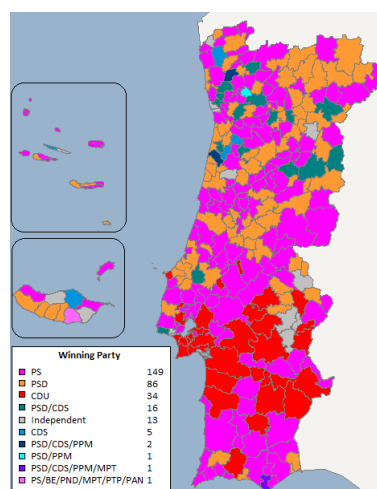


Figure 5: Municipal elections (2013), outcome (winning party). Abstention was 52.60%.

Source: Wikipedia.²¹

4 Data

4.1 Dataset Description

I collected data on 1211 individuals.²² The survey was designed and operationalized for this work in Qualtrics and distributed through digital platforms, such as e-mail and social media, during November of 2016. Before, in the second half of October, I conducted a pilot, getting 30 observations.²³ The distribution mechanism used becomes a limitation of my

²⁰<http://www.rtp.pt/noticias/eleicoes/presidenciais/2016>

²¹https://en.wikipedia.org/wiki/Portuguese_local_election,_2013.

²²Due to missing observations my analyses use between 800 and 930 individual observations (depending on the analysis).

²³Qualtrics website: <https://www.qualtrics.com>.

dataset as it was biased towards my personal social network, although I tried to mitigate this issue by controlling for several factors. The survey was written in Portuguese as my group of interest was the Portuguese electorate. The questions were based in questionnaires previously developed and tested by Blais.²⁴

The survey starts with common questions for individual's socio-demographic characterization, followed by a section about political interest and voting costs, C . There are questions aimed to measure B and D in the last legislative elections. After, individuals are subjected to a randomized controlled trial, being randomly assigned into one of three groups. Individuals in the first group were shown a sense of duty treatment, aimed to test its impact in D , by providing a set of impersonal information collected from Portuguese official authorities.²⁵ Individuals in the second group were shown a pivotal treatment, aimed to test its impact in $P\beta$ by providing information about the non-usage of some votes due to the precise methodology used in Portugal (Hondt method) to convert votes into seats. Individuals in the third group were shown a placebo treatment. The latter was constructed such that it was not correlated with turnout or elections. The three treatments were designed to be read approximately in same amount of time, and can be seen in the figures below.²⁶

Pivotal Treatment

In Portugal, the calculation of the number of mandates obtained by each party follows the "Hondt Method". In practice, the method used causes the votes of some voters to end up not being counted towards the election of mandates. That is, the votes of these voters have no impact on the allocation of mandates. In this context, after the legislative elections of 2015, *Jornal Expresso* published the following article: "In these legislative elections, there were approximately 762,000 votes (14.65%), which corresponds to more than the total number of votes obtained by both the BE and the CDU. For example, in the district of Portalegre 59,004 people voted and two deputies were elected, one for PS and one for PSD. PS received 25,037 votes and PSD / CDS-PP 16,303. After The calculation of the Hondt method concludes that the PS had a surplus of 8,734 votes and the PSD / CDS-PP 3,785. Counting the votes of all political parties in this circle, 28,159 votes had no representation in mandates." (*Expresso*, 10/18/2015)

Sense of Duty Treatment

In Portugal, the right to vote is enshrined in the law, in particular with Article 81 of the Electoral Law of the Assembly of the Republic: "Suffrage is a right and a civic duty". As the law mentions, besides being a right, voting is also a duty. According to the Voter's Portal

²⁴(Blais, 2000), further details in the bibliography section.

²⁵*Portal do Eleitor* and Portuguese National Election Commission (CNE). Impersonal information refers to a treatment which is not directed to a specific individual (Dale and Strauss, 2009).

²⁶Original treatments in Portuguese, including the placebo, shown in the appendix.

(Portal do Eleitor), we must vote "because we are born in a democratic state, where citizens exercise political power through universal, equal and direct suffrage. Citizens must recognize their value and be aware of the struggle that many men and women have done to conquer it. In exercising its right to vote, the citizen is contributing to its strengthening and consolidation. "

(Adapted from Portal do Eleitor)

One of the main limitations of the treatments is the impossibility to verify if individuals paid enough attention understanding them. As the survey was distributed online, it was impossible to equally provide the treatments among individuals.

After treatments were shown, respondents were asked to answer several types of questions, namely the probability they cast the pivotal vote (P) and their sense of duty. Also, there were two last sections. One about compulsory voting and the application of sanctions to individuals who abstain. Finally, there was a section about presidential and municipal elections, asking the same questions were asked before about legislative elections.

Below, Table 1 explains the main variables built from the sample's data.²⁷

Table 1: Variables built from the data

Variable Name	Description
Dependent Variables	
vtdles, vtdpres, vtdaut	Dependent variable for self-reporting to have voted in legislative, presidential and municipal elections, respectively
probvote	intention of voting if the next legislative elections (1=sure not to vote, 2=unsure 3=sure to vote)
probvote_dummy	intention of voting if the next legislative elections (1= sure to vote, 2=otherwise)
Characterization Controls	
age	variable for the age completed in 2016
masc	Dummy for being a men
lvtgth	Dummy for living together with a significant other (individuals may be married or not)
emp	Dummy for being employed (employee or self-employed)
north, lis, south, isld	Dummy for living in the north of Portugal, in Lisbon region, in the South or in the Islands, respectively. Centre is omitted
higheduc	Dummy for having a higher education degree
highincome	Dummy for having a high income (above 19.000 euros)
lvabroad	Dummy for living or having lived abroad
rel	Dummy for being religious
Cost of Voting	
ezyvot	Dummy for considering voting to be easy
Non-Instrumental Variables	
duty	Dummy for considering voting as a duty (showed before treatment)
Instrumental Variables ²⁸	
difflegis, diffpres, diffaut	The difference in utility, in a percentual scale, that individual gets if favourite candidate wins in legislative, presidential and municipal elections, respectively
probdecisl, probdecisp, probdecisa	Probability, perceived by the individual, to cast the decisive vote in legislative, presidential and municipal elections, respectively
expbenlegis, expbenpres, expbenaut	Proxy for P Proxy for $P\beta$ (interaction of P and β)
Mobilization variables	
intrst	Dummy for being interested in politics
filiated	Dummy for currently being filiated in a political party
set_peerpress	Dummy for agreeing that votes when peers, family and friends also vote
Treatments	
treat_duty	Dummy for information treatment, telling individuals they should vote because it is a civil duty
treat_pivotal	Dummy for Information treatment, telling individuals that due to the Hondt method, more than 700 thousand votes are not used to elect members of parliament in legislative elections
treat_placebo	Information treatment, control group

²⁷The complete survey is available in the appendix.

4.2 Basic Descriptive Analysis

Key descriptive indicators are presented in Tables 2 and 3:

Table 2: Comparison between collected data and population.

Sample		Population		Sample		Population		Sample		Population	
Age Dist.				Gender				Geography			
15-24	35.1%	13.5%	Males	47.6%	48.7%	North	15.7%	35.2%			
25-54	50.1%	49.6%				Centre	7.1%	22.4%			
55-64	8.9%	14.3%	Political Pref.				Lisbon	61.6%	19.1%		
65+	5.8%	22.7%	PAF	47.2%	38.5%	South	11.0%	18.6%			
Completed Educ.				PS	25.2%	32.31%	Islands	4.6%	4.6%		
No education	0.0%	8.3%	BE	10.0%	10.19%	HH Income Dist.					
Elementary	1.7%	54.7%	CDU	4.1%	8.25%	<19,000	26.8%	74.9%			
Secondary	21.1%	19.1%	Small Parties	5.3%	7.0%	[19,001;40,000]	29.1%	17.8%			
High	77.1%	17.1%	Blank + Null	8.2%	3.8%	>40,001	44.1%	7.3%			

Source: dataset collected via Qualtrics online platform, between November and December, 2016; Poradata;INE. Questionnaire in the appendix.

Table 3: Description of the variables used

	Average	Std. Dev.		Average	Std. Dev.		Average	Std. Dev.
Probvote (Dummy)	74.4%	0.434	Probdecis. Legis. (P)	.007	.026	Easy Vote (C)	71.5%	0.452
Probvote (ML)	2.72	0.51	Probdecis. Pres. (P)	.007	.025	Duty (D)	89.8%	0.303
duty_post_treat	66.6%	0.472	Probdecis. Aut. (P)	.009	.028	Pol. Interest	74.1%	0.438
Voted Legis.	90.4%	0.294	Diff. Legis. (β)	76.7%	24.8	Pol. Filiation	15.6%	0.363
Voted Pres.	85.3%	0.354	Diff. Pres. (β)	76.5%	26.2	Peer Pressure	92.6%	0.263
Voted Aut.	87.6%	0.330	Diff. Aut. (β)	70.6%	29.1	Placebo Treat.	31.8%	-
Duty Treat.	35.8%	-	Pivotal Treat.	32.3%	-			

Source: dataset collected via Qualtrics online platform, between November and December, 2016; Poradata;INE. Questionnaire in the appendix.

As shown in the tables above, individuals in the sample are mostly well educated (77.1%) and have high income(73.2%). The majority lives in the Lisbon area (61.1%) and is interested in politics (74%). Usually, there is a problem of self-selection, as individuals interested in politics, and therefore more likely to turnout, are more willing to give up their free time and answer a survey.

It is also plausible the existence of a sample bias towards education and income as the survey was mainly distributed through social media, being expected to exist an higher share of wealthier and well educated people responding.²⁹ Geographically, Lisbon is also overrepresented.³⁰ Overall, the dataset has several limitations regarding its external validity. Most of them are common for this type of survey and the way it was distributed. I try to minimize these limitations, controlling for the possible biases.

Next, I analyse turnout and voting results in my sample. Turnout was 90.4% in legislative elections, 85.3% in presidential elections and 87.6% in municipal elections. A large majority of respondents (74.4%) claims to be politically interested. β is almost equal in

²⁹<http://www.pewinternet.org/2016/11/11/social-media-update-2016/>

³⁰It is the region where most of my personal network is located.

Table 4: Turnout sorted by vote importance and sense of duty.

		Votes if it does not matter			Sense of Duty		
		Yes	No	Total	Yes	No	Total
Voted in last legislative election	Yes	90%	1%	91%	84%	6%	90%
	No	7%	2%	9%	6%	3%	10%
	Total	97%	3%	100%	91%	9%	100%

legislative and presidential elections and slightly lower in municipal elections. All these results are substantially higher than the ones registered in the elections, evidencing an overrepresentation of voters in my sample. Although this is an issue (as the sample is not totally representative), this was already expected. Previous findings suggest that individual datasets (built from surveys) usually overestimate their percentage of voters (Sciarini and Goldberg, 2015).

Table 4 shows that most of the individuals who voted or abstained in the last legislative elections (2015) would turnout even if their vote did not matter.³¹ These results seem to corroborate the idea that voters do not show a pivotal behaviour as respondents answer they would cast their vote even if it did not matter (Blais, 2000), an issue further explained below.

Table 4 also evidences that the majority (90%) of respondents considers voting to be a civic duty, suggesting that individuals with sense of duty may be overrepresented in this dataset. Previous empirical work already found high proportions of respondents reporting to have sense of duty, suggesting individuals tend to report what is socially acceptable (Blais, 2010).

5 Empirical Strategy

In this section I describe my methodology in both the analysis of the calculus of voting and the randomized controlled trial. Commonly all my analysis I use the same set of variables

³¹Individuals were asked if they would vote if sure their favourite candidate was about to win or lose by two votes.

controlling for individuals' characteristics, \bar{A} .³² Where:

$$\begin{aligned} \bar{A}_i = & \tau_1 masc_i + \tau_2 age_i + \tau_3 lvtght_i + \tau_4 emp_i + \tau_5 north_i + \tau_6 lis_i + \tau_7 south_i + \\ & + \tau_8 isld_i + \tau_9 highincome_i + \tau_{10} higheduc_i + \tau_{11} rel_i + \tau_{12} lvabroad_i \end{aligned} \quad (2)$$

5.1 Analysis of the calculus of voting

I start by studying the determinants of voting in the past Portuguese legislative, presidential and municipal elections. Are voters instrumental or non-instrumental? Do they vote because they feel it as a civic duty, just like theory predicts (Blais, 2000)? The relevant dependant variable, vtd is a dummy (voted or abstained) and it results from a latent variable, V in (1), which is not observed. When V is greater than 0, vtd is equal to 1, otherwise it is equal to 0.

I undertake two different strategies. The first entails an estimation the determinants of turnout for each of the three types of election considered (legislative, municipal, and presidential). In the second, I build a panel data set with two dimensions (individual and type of election) and thus estimate fixed effects for each type of election.

The first analysis consists in estimating the cross-sectional probit equation (3) three times, one for each type of election.³³

$$vtd_{i\kappa} = \alpha + \bar{A}_i + \overline{P_{i\kappa}\beta_{i\kappa}} + \bar{D}_i + \bar{C}_i + \epsilon_{i\kappa}, \quad i = 1, 2, 3, \dots \quad (3)$$

where i is the individual, κ is the election type (legislative, municipal, or presidential), and $P\beta$, D and C are defined as follows:

$$\overline{P_{i\kappa}\beta_{i\kappa}} = \gamma_1 diff_{i\kappa} + \gamma_2 probdecis_{i\kappa} + \gamma_3 expben_{i\kappa}, \quad \bar{D}_i = \theta duty_i, \quad \bar{C}_i = \delta_2 ezyvote_i$$

Next, I focus on the legislative elections of 2015 and estimate separately the same analysis for individuals with sense of duty and without, using equation 3. The sense of duty was measured as the answer to the question *In your case, you consider voting to be a duty?*.

³²To economise on notation, I shall drop the subscripts whenever their use is not strictly necessary to convey the message.

³³Assuming normality of the error terms.

The hypothesis is that determinants of voting differ and P , β and C are not expected to significantly impact individuals with high sense of duty, while impacting individuals with low sense of duty (Blais, 2000).

I now turn to the panel analysis, which allows me to test the hypothesis referred in the literature that turnout should be higher in legislative election than in municipal elections, and there should be no statistical difference between legislative and presidential (Blais, 2000).

The panel estimation can be defined as:

$$vtd_{ij} = \alpha + \bar{A}_i + P_{ij}\bar{\beta}_{ij} + \bar{D}_i + \bar{C}_i + \nu_1 pres_i + \nu_2 aut_i + \epsilon_{ij}, i = 1, 2, 3, \dots, j \in \{L, P, M\} \quad (4)$$

where i is the individual, j is the election type – legislative L (omitted category), presidential P , municipal M –, and $legis_{ij}$, $pres_{ij}$, and aut_{ij} are indicators of the type of election to which the turnout decision vtd_{ij} refers.

5.2 The Mobilization Model

I assess this model very briefly as it accounts for variables not included in the previous section. I try to understand if individuals vote because they have a general interest in politics, because they may feel pressured by their peers, friends or family or because they belong to a political party. According to previous findings, social networks should have a higher impact than individual political interest and filiation in the voting decision (Magalhães 2008). The regression can be estimated as follows:

$$vtdles_i = \alpha + \bar{A}_i + \bar{M}_i + \epsilon_i \quad (5)$$

And \bar{M} is defined as:

$$\bar{M}_i = \xi_1 intrst + \xi_2 set_peerpress + \xi_3 filiated \quad (6)$$

5.3 Randomized Controlled Trial

This analysis aims to study the impact of both sense of duty and pivotal treatments in the intention of voting in future legislative elections. More specifically, the respondents answer

the following question: *If the next legislative elections were to happen tomorrow, how likely would you go vote?* I coded the answer to this question in two alternative ways. The first is a multinomial variable including several degrees of certainty and therefore I use a bivariate ordered probit approach.³⁴ This definition of the future intention to vote entails defining an ordered categorical variable that ranges between 1 and 3, corresponding *impossible*, *unsure*, and *certain*. Second, I define the intention of future voting as a dummy with value 1 if individuals are certain to vote in the future and 0 otherwise. In this case I use a bivariate probit estimation.³⁵

All the second-stage regressions use the controls used previously in the calculus of voting and mobilization estimations. I allow individuals to be influenced at the same time by both *rational choice factors* such as P , β and D but also by *mobilization factors* such as political interest, party filiation, and peer pressure.

I hypothesise the pivotal treatment has a negative impact in future voting intentions. However, one must account for the possibility, suggested by Blais (2000), that individuals usually do not perceive probabilities correctly. The sense of duty treatment should cause an increase future voting intentions, as suggested by previous findings (Gine and Mansuri, 2010, and Dale and Strauss, 2009).³⁶

5.3.1 The Sense of Duty Treatment

The variable *duty_post_treat*, measures individual's sense of duty after the treatment.³⁷ As will be clear when I discuss my results, and following the literature, the sense of duty is one of the main determinants of the act of voting. However, this may result from reverse causality, as there may be an underlying preference that makes people vote and have report high sense of duty, and it may also be that the act of voting contributes to building the sense of duty. My sense of duty treatment respects, by construction, the exclusion restriction, as

³⁴See Cameron and Trivedi (2005).

³⁵See, e.g., Chiburis et. al (2011) for a recommendation of the usage of this methodology in this specific context (causality of a dummy treatment in a dummy outcome variable).

³⁶The pivotal treatment shows people that the Portuguese political system is designed such that thousands of votes are not used to elect members of parliament (Hondt Method). The sense of duty treatment shows how voting is important as a civic duty.

³⁷More specifically, it results from the answer to the following question: *What are the main reasons for you to vote?*, being *sense of duty* one of the options.

it is prompted randomly to the respondents and is therefore not correlated with the decision to vote. Moreover, as it will be seen, it has an impact on the sense of duty reported *after* the treatment. I therefore instrument the variable `duty_post_treat` with the treatment.³⁸The first stage regression is defined as:

$$\begin{aligned} \text{duty_post_treat}_i = & \alpha + \bar{A}_i + \bar{D}_i + \varphi_1 \text{intrst} + \varphi_2 \text{ezyvote} + \varphi_3 \text{difflegis} + \\ & + \varphi_4 \text{set_peerpress} + \varphi_5 \text{treat_placebo} + \varphi_6 \text{treat_duty} + v_i \end{aligned} \quad (7)$$

I combine a set of explanatory variables from both the previous calculus of voting estimation (\bar{D}_i , *ezyvote* and *difflegis*) which I expect to impact duty, and the mobilization estimation (*intrst* and *filiated*).

The second stage regression is given by

$$\text{probvote}_i = \alpha + \bar{A}_i + \bar{C}_i + \bar{D}_i + \overline{P_i \beta_i} + \bar{M}_i + \vartheta_1 \text{treat_placebo} + \vartheta_2 \widehat{\text{duty_post_treat}}_i + \epsilon_i \quad (8)$$

5.3.2 The Pivotal Treatment

In the pivotal treatment I use the variable *probdecisl*, instrumented by the pivotal treatment, which respects the exclusion restriction by construction. Referred to P in (1), it accounts for the probability of being pivotal and was measured after the treatments being presented.³⁹The first stage regression is defined as:

$$\begin{aligned} \text{probdecis_high}_i = & \alpha + \varrho_1 \bar{A}_i + \varrho_2 \text{ezyvote}_i + \varrho_3 \text{duty}_i + \varrho_4 \text{difflegis}_i + \\ & + \varrho_5 \text{intrst}_i + \varrho_6 \text{filiated}_i + \varrho_7 \text{treat_placebo} + \sigma_i \end{aligned} \quad (9)$$

The second stage regression can be described as:

$$\begin{aligned} \text{probvote}_i = & \alpha + \nu_1 \bar{A}_i + \nu_2 \text{ezyvote}_i + \nu_3 \text{duty}_i + \nu_4 \text{difflegis}_i + \\ & + \nu_5 \text{intrst}_i + \nu_6 \text{filiated}_i + \nu_7 \text{set_peerpress}_i + \nu_8 \text{treat_placebo} + \nu_9 \text{probdecis_high}_i + \mu_i \end{aligned} \quad (10)$$

The error terms $\epsilon_{i\kappa}$, v_i , σ_i and μ_i are assumed to be stochastic, *i.i.d.* and normally distributed.

³⁸Definition of a good instrument as in Cameron and Trivedi (2005).

³⁹Respondents were asked to answer the question: *In your opinion what is the probability your vote is pivotal in the case of a tie between two candidates?*. Several answer options were provided (*1 in 10, 1 in 100, 1 in 1000, 1 in 10000, ...*

6 Results

In this section I first present the results of my analysis of the calculus of voting, followed by the mobilization estimation and the randomized controlled trial.

6.1 Calculus of Voting

The results of estimating Equation (1) are presented in Table 5.

Table 5: Results of the calculus of voting

	(1)	(2)	(3)	(4)	(5)
	Legislative	Cross Sectional		Coefficients	Panel
		Presidential	Municipal		Marginal Effects
ezyvote	0.766*** (0.149)	0.0641 (0.192)	0.636*** (0.185)	0.599*** (0.120)	0.0669*** (0.0130)
duty	0.692*** (0.177)	0.478* (0.257)	0.613** (0.243)	0.799*** (0.147)	0.0892*** (0.0157)
expben	-0.0525 (0.0706)	-0.0354 (0.0669)	-0.0962 (0.109)	-0.0437 (0.0636)	-0.00488 (0.00710)
diff	0.00844*** (0.00248)	0.00293 (0.00304)	-0.00171 (0.00272)	0.00295* (0.00168)	0.000329* (0.000189)
probdecis	1.229 (5.286)	10.34 (7.654)	7.935 (9.039)	2.893 (4.852)	0.323 (0.542)
presidential election				0.0251 (0.0965)	0.00306 (0.0117)
municipal election				0.272*** (0.100)	0.0290*** (0.0104)
_cons	-0.372 (0.393)	-0.0533 (0.494)	0.644 (0.489)	-0.476 (0.312)	
N	875	829	828	2532	2532
Log lik.	-216.4	-177.8	-150.0	-596.0	
Chi-squared	79.61	82.16	61.56	114.8	

Robust standard errors in parentheses, * p<0.10, **p<0.05, *** p<0.01
Source: dataset collected via Qualtrics online platform, between November and December, 2016.
Complete table and questionnaire in the Appendix. Variable labels in Table 1.

Columns [(1), (2) and (3)], report the cross-sectional results for each type of election. Sense of duty has a positive significant impact in turnout in all cases. This makes sense as table 4 showed most of respondents have sense of duty, confirming previous findings in the literature (Blais, 2000). Higher costs of voting cause a statistically significant decrease in turnout for legislative and municipal elections. Conversely, P does not have a statistically significant impact for any type of election. However, in legislative elections β seems to be

statistically significant increasing voters' turnout. This is a signal that individuals care more about national legislative elections than presidential or municipal (Blais, 2000).

Overall, individuals' voting decision is consistently driven by its cost and by sense of duty. On average, those considering voting to be easy have more 6.69pp in the probability of voting while having sense of duty increases it by 8.92pp. As already referred, sense of duty is non-instrumental. The voting cost, although included in the calculus of voting, is a direct cost paid by the voter, which is independent of the election result. Taken together with the fact that the expected benefit is non-significant, suggests that voters do not take into account the election outcome when making their turnout decision. Following this reasoning, when observing β one must understand the idiosyncrasies of the legislative elections of 2015.⁴⁰ The panel regression results also suggest that in municipal elections, voters are more likely to turnout. One possible explanation is that the smaller number of voters causes a perception that an individual vote is worth more. This conclusion should be taken with caution, as it goes against our previous findings that voters are non-instrumental.

Table 6: Results of the calculus of voting, sorted by duty

	(1)	(2)	(3)	(4)
	With Duty			No Duty
	Legislative	Marginal Effects	Legislative	Marginal Effects
ezyvote	0.638*** (0.166)	0.0762*** (0.0196)	1.308*** (0.504)	0.300*** (0.0943)
expbenlegis	-0.264** (0.103)	-0.0315** (0.0125)	-0.00613 (0.176)	-0.00141 (0.0404)
diffl legis	0.00931*** (0.00281)	0.00111*** (0.000341)	0.00820 (0.00604)	0.00188 (0.00138)
probdecis1	20.55** (9.136)	2.452** (1.114)	-20.95* (12.01)	-4.802* (2.682)
_cons	0.424 (0.400)		-0.488 (1.114)	
N	798	798	77	77
Log lik.	-177.1		-31.78	
Chi-squared	44.30		29.57	

Robust standard errors in parentheses, * p<0.10, **p<0.05, *** p<0.01
Source: dataset collected via Qualtrics online platform, between November and December, 2016.
Complete table and questionnaire in the Appendix. Variable labels in Table 1.

Focusing in the legislative elections, Table 6, columns [(1) and (2)] report the results

⁴⁰More than a typical election, that moment served to evaluate the performance of the incumbent government, which had to rule and apply a very strict austerity program. At the time, public opinion was very emotional and it could be possible voters felt those elections to be of greater importance, increasing β .

and marginal effects for the subsample of individuals with sense of duty, while [(3) and (4)] report for individuals without sense of duty. The findings do not confirm Blais (2000)'s results, since I observe that individuals with sense of duty perform the calculus of voting when deciding to turnout, whereas Blais concluded that this calculus was performed by individuals without sense of duty.⁴¹ One possibility is that respondents showing sense of duty may also be interested in politics and therefore they care more about the elections and their results.

6.2 The Mobilization Model

The results of estimation Equation 5 are in Table 7:

Table 7: Results of the mobilization estimation

	(1)	(2)	(3)	(4)	(5)
	Cross Sectional			Estimation	Panel
	Legislative	Presidential	Municipal		Marginal Effects
intrst	0.485*** (0.158)	0.543*** (0.148)	0.312** (0.153)	0.417*** (0.125)	0.0764*** (0.0229)
peerpress	0.298 (0.197)	0.334* (0.198)	0.458** (0.188)	0.345** (0.166)	0.0633** (0.0306)
filiated	0.497** (0.225)	0.00664 (0.145)	0.504*** (0.195)	0.239** (0.115)	0.0439** (0.0215)
presidential election				-0.195*** (0.0626)	-0.0359*** (0.0114)
municipal election				-0.0822 (0.0546)	-0.0142 (0.00943)
_cons	0.428 (0.333)	-0.716** (0.324)	-0.225 (0.318)	-0.238 (0.268)	
N	908	926	926	2760	2760
Log lik.	-256.6	-326.4	-301.4		
Chi-squared	51.25	102.7	79.38	112.2	

Robust standard errors in parentheses, * p<0.10, **p<0.05, *** p<0.01
Source: dataset collected via Qualtrics online platform, between November and December, 2016.
Complete table and questionnaire in the Appendix. Variable labels in Table 1.

Results show that individual interest in politics has a positive significant impact in turnout in all types of elections, confirming previous findings (Verba et. Al, 1995). Party affiliation has a significant impact in all elections except presidential, which makes sense

⁴¹The low number of observations I used in the estimation for individuals with low sense of duty may explain the the low significance

since the latter are more personalized and candidates do not represent a party.⁴² There is mixed evidence on pressure from family and friends, with significant positive impact only in presidential and municipal elections. These results are intriguing in the case of legislative elections as political filiation has an impact (as expected, since political parties mobilize their members to turnout) but not mobilization from family and friends, whom usually are closer to the individual. Pressure from family and friends is significant when controlling for the type of election in the panel regression. Finally, the results contradict previous findings in the literature (Magalhães, 2008) as political interest seems to have a similar (or, if anything, slightly stronger) impact than social networks (family, friends and party filiation). One possible explanation can be different formulations of the questions asked in both datasets, such that although they measure similar effects, they are not the same. Although, the effect of social networks in the Portuguese electorate seems to require further research.

6.3 Randomized Controlled Trial

Table 8 reports the results of the treatments approach. Sense of duty treatment seems to be a good instrument for *duty_post_treat* as it has a significant positive impact in it, as shown in column (1). Also, duty post treat has a significant positive impact on future turnout. The Average treatment effect is an increase of 3.4pp in the intention of future voting.⁴³ These results suggest a causal effect of the sense of duty treatment in future individual turnout. Easier voting, political interest and filiation, peer pressure also seem to have a positive impact, confirming previous results from tables 5 and 7.

The pivotal treatment has intriguing results, as it shows that telling people that their vote does not matter increases P . Based in the literature, I hypothesized the opposite. A higher P significantly decreases the intention of future voting, going against predictions. One can put forward several explanations for these results. First, individuals may not

⁴²according Portuguese law presidential candidates cannot be funded by political parties.

⁴³We have computed the marginal effects of the instrumented *duty_post_treat* on the intention of future voting using an adaptation of the Stata code suggested by Jones (2005).

understand well probabilities.⁴⁴ Second, there is a chance that the question in the survey was not properly formulated and thus misunderstood. Third, respondents might not have understood the treatment.⁴⁵

Table 8: Results of the randomized controlled trial

	(1)	(2)	(3)	(4)	(5)	(6)
	Sense of Duty			Pivotal		
	Pseudo first-stage	Dummy	Multinomial	Pseudo first-stage	Dummy	Multinomial
duty_post_treat		1.698*** (0.570)	1.557*** (0.325)			
probdecis_high					-1.284** (0.544)	-0.935* (0.541)
treat_duty	0.333** (0.146)					
treat_pivotal				0.298*** (0.115)		
ezyvote	0.156 (0.167)	0.666*** (0.141)	0.597*** (0.127)	0.0524 (0.159)	0.666*** (0.152)	0.604*** (0.131)
expbenlegis		-0.0319 (0.0662)	0.00697 (0.0653)		-0.00570 (0.0246)	0.00141 (0.0293)
probdecisl		2.228 (5.245)	-1.244 (4.933)			
difflegis		0.0124*** (0.00215)	0.0110*** (0.00184)	-0.000638 (0.00217)	0.0117*** (0.00229)	0.0110*** (0.00191)
duty	1.984*** (0.171)	-0.0398 (0.445)	0.0105 (0.254)	0.241 (0.199)	1.093*** (0.170)	1.036*** (0.142)
intrst	0.425*** (0.157)	0.120 (0.144)	0.142 (0.130)	0.0421 (0.159)	0.221 (0.147)	0.281** (0.131)
filiated	-0.262* (0.152)	0.367** (0.148)	0.403*** (0.151)	0.669*** (0.128)	0.507*** (0.143)	0.500*** (0.153)
peerpress		0.275 (0.184)	0.309* (0.179)		0.228 (0.175)	0.257 (0.177)
treat_placebo	0.133 (0.140)	0.0626 (0.109)	0.0845 (0.105)	0.130 (0.123)	0.0371 (0.104)	0.0467 (0.102)
constant	-0.908** (0.377)	-2.704*** (0.362)		-1.014*** (0.347)	-1.954*** (0.436)	
N	895		895	895		895
Log lik.	-659.9		-724.5	-796.7		-863.6
Chi-squared	486.7		226.0	327.4		239.0

Robust standard errors in parentheses, * p<0.10, **p<0.05, *** p<0.01

Pseudo first-stage refers to the dummy estimation and is very similar to the one in multinomial.

Source: dataset collected via Qualtrics online platform, between November and December, 2016.

Complete table and questionnaire in the Appendix. Variable labels in Table 1.

⁴⁴See Blais (2000).

⁴⁵Individuals may not understand the pivotal treatment if they do not understand the Hondt method and how votes translate into seats in parliament.

7 Conclusion

In this work, I provide a comprehensive analysis of a dataset of 1211 Portuguese voters, that results from a survey that I have built and collected. My results suggest that Portuguese voters turnout for both instrumental and non-instrumental motives. My main conclusions can be summarised as follows. First, Portuguese voters are consistently sensitive to voting costs. If they perceive voting go be harder, they are less likely to turnout. Also, they seem to scale differently the importance of each type of election, as the benefit resulting from each one is different and usually higher in legislative elections. The probability of a voter being pivotal almost never has a significant impact in the turnout decision. Some strange results from the pivotal treatment suggest individuals do not quite understand probabilities. Further research is needed about individuals' understanding of pivotal probabilities. Voters' turnout rate is also positively impacted by political interest, peer pressure and political filiation (except presidential elections, in which parties involvement is less notorious), confirming theory and suggesting that mobilization factors affect voters' turnout.

I obtain convincing evidence that the sense of duty has a causal impact on the intention of future voting. Moreover, providing information about the importance of the act of voting increases the individual sense of duty. My results suggest that individuals vote because of the act of voting and not necessarily to affect the outcome of the election. I call this *warm glow voting*, a close relative of the term warm glow giving, coined by Andreoni (1990).⁴⁶ One needs to bear in mind that the data used in this work was collected during a time period of no elections and therefore the likelihood of future voting is no more than a manifested intention. It could be interesting to make the same natural experiment at the time of an election and collecting a representative sample. In my experiment I use information provided by official agencies, but an alternative could be studying the impact in turnout of key opinion leaders, such as sports stars or music idols, producing statements about their sense of duty and praising people who vote.

Finally, it could be interesting to further study the impact of polls in voters' turnout.

⁴⁶The adaptation to an election framework of the original idea of *warm glow* by Andreoni (1990) was already explored by Conley et al. (2006).

Nowadays, and during the year os 2016, several elections' results were against all expectations and polls predictions. Also, more research needs to be done on individuals' coordination and strategic effects regarding turnout. As Blais (2000) refers, the calculus of voting provides a rational framework for the turnout decision, but it is only partial. Strategic and more game theoretical frameworks could provide important tools to better understand voting motivations of the Portuguese electorate.

8 References

- Amaro de Matos, Joao, Pedro P. Barros, and Inacia Pacheco Pereira.** "The voting paradox and social networks: An empirical analysis." Available at SSRN 1354790 (2009).
- Andreoni, James.** "Impure altruism and donations to public goods: A theory of warm-glow giving." *The economic journal* 100, no. 401 (1990): 464-477.
- Ashenfelter, Orley, and Stanley Kelley Jr.** "Determinants of participation in presidential elections." *JL & Econ.* 18 (1975): 695.
- Battaglini, Marco, Rebecca B. Morton, and Thomas R. Palfrey.** "The swing voter's curse in the laboratory." *The Review of Economic Studies* 77, no. 1 (2010): 61-89.
- Bernhagen, Patrick, and Michael Marsh.** "The partisan effects of low turnout: Analyzing vote abstention as a missing data problem." *Electoral Studies* 26, no. 3 (2007): 548-560.
- Blais, Andre, and Christopher H. Achen.** "Taking civic duty seriously: Political theory and voter turnout." Unpublished manuscript (2010).
- Blais, Andre.** *To vote or not to vote?: The merits and limits of rational choice theory.* University of Pittsburgh Pre, 2000.
- Cameron, A. Colin, and Pravin K. Trivedi.** *Microeconometrics: methods and applications.* Cambridge university press, 2005.
- Cameron, Adrian Colin, and Pravin K. Trivedi.** *Microeconometrics using stata. Vol. 5.* College Station, TX: Stata press, 2009.
- Chiburis, Richard C., Jishnu Das, and Michael Lokshin.** "A practical comparison of the bivariate probit and linear IV estimators." *Economics Letters* 117, no. 3 (2012): 762-766.
- Conley, John P., Ali Toossi, and Myrna Wooders.** "Memetics and voting: how nature may make us public spirited." *International Journal of Game Theory* 35, no. 1 (2006): 71-90.
- Dale, Allison, and Aaron Strauss.** "Don't forget to vote: Text message reminders as a mobilization tool." *American Journal of Political Science* 53, no. 4 (2009): 787-804.
- de Matos, Joao Amaro, and Pedro P. Barros.** "Social norms and the paradox of elections? turnout." *Public Choice* 121, no. 1-2 (2004): 239-255.
- Downs, Anthony.** "An economic theory of political action in a democracy." *The journal of political economy* (1957): 135-150.

- Feddersen, Timothy J., and Wolfgang Pesendorfer.** "The swing voter's curse." *The American economic review* (1996): 408-424.
- Gerber, Alan S., Donald P. Green, and Christopher W. Larimer.** "Social pressure and voter turnout: Evidence from a large-scale field experiment." *American Political Science Review* 102, no. 01 (2008): 33-48.
- Geys, Benny.** "Explaining voter turnout: A review of aggregate-level research." *Electoral studies* 25, no. 4 (2006): 637-663.
- Gine, Xavier, and Ghazala Mansuri.** "Together we will: evidence from a field experiment on female voter turnout in Pakistan." World Bank Policy Research Working Paper 5692 (2011).
- Gray, Mark, and Miki Caul.** "Declining voter turnout in advanced industrial democracies, 1950 to 1997 the effects of declining group mobilization." *Comparative political studies* 33, no. 9 (2000): 1091-1122.
- Griffin, John D., and Brian Newman.** "Are voters better represented?." *Journal of Politics* 67, no. 4 (2005): 1206-1227.
- Jones, Andrew M.** *Applied econometrics for health economists: a practical guide.* Radcliffe publishing, 2007.
- Knack, Steve.** "Does rain help the Republicans? Theory and evidence on turnout and the vote." *Public Choice* 79, no. 1-2 (1994): 187-209.
- Magalhaes, Pedro.** "Redes sociais e participacao eleitoral em Portugal." *Analise Social* (2008): 473-504.
- Palfrey, Thomas R., and Howard Rosenthal.** "A strategic calculus of voting." *Public Choice* 41, no. 1 (1983): 7-53.
- Palfrey, Thomas R., and Howard Rosenthal.** "Voter participation and strategic uncertainty." *American Political Science Review* 79, no. 01 (1985): 62-78.
- Riker, William H., and Peter C. Ordeshook.** "A Theory of the Calculus of Voting." *American political science review* 62, no. 01 (1968): 25-42.
- Rosenstone, Steven J. Hansen, John Mark Steven J. Rosenstone, and John Mark Hansen.** *Mobilization, participation, and democracy in America.* Macmillan Publishing Company,, 1993.
- Sciarini, Pascal, Fabio Cappelletti, Andreas C. Goldberg, and Simon Lanz.** "The underexplored species: Selective participation in direct democratic votes." *Swiss Political Science Review* (2015).
- Ungureanu, Mihai, and Andra Roescu.** "Economic models of voting: an empirical study on the electoral behavior in Romanian 2012 parliamentary elections." *Theoretical and Applied Economics* 22, no. 3 (604), Autumn (2015): 63-74.
- Verba, Sidney, Kay Lehman Schlozman, and Henry E. Brady.** 1995. *Voice and Equality.* Cambridge, Massachusetts: Harvard University Press.