

The Consequences of Being Forced to Vote: Evidence from Brazil's Dual Voting System*

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Abstract

This paper evaluates how the act of voting affects citizens. The identification relies on the Brazilian dual's voting system - voluntary and compulsory - whose exposure is determined by date of birth, proving an exogenous shift in an individual's likelihood to vote. Using data from a self-collected survey, we find that the obligation to vote has significant and sizable effects on making citizens more informed and ideologically polarized. Moreover, we find that first voting experience is the most important one. Exposure to one compulsory election has a permanent effect on individual preferences, equivalent to the effect of aging four years. Further voting experience has smaller, if any, additional impact on citizens.

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1 Introduction

Most countries are democracies, in which seems consensual that elections should be decided by the population. However, from an individual’s point of view, the chance of any singular vote to be pivotal is zero. The question of why people vote¹ is as intriguing as how and whether the voting process transforms citizens. Does voting change individuals into more politically involved and informed citizens? Is this effect permanent or relevant?

The answers are less clear in the context of a forced democracy imposed by compulsory voting legislation. This system is in place in 14.5% of countries;² although it ensures more representativeness, it is a controversial matter that it brings better election outcomes in counting the ballots of those that otherwise would rather abstain from the political process.

This paper explores compulsory voting legislation to understand how the act of voting affects citizens and bring input to the discussion of forced voting. In order to overcome unobservable correlations between voting and preferences, we explore the dual voting system of Brazilian legislation, in which individuals between 16 and 18 years old are entitled to vote but not required to, while those older than 18 are legally required to vote.³ This legislation provides an exogenous shift in an individual’s likelihood to vote, which is used to identify causal effects of voting. The data come from a self-collected survey conducted during the week following the 2010 Brazilian Presidential Election. It consisted of a comprehensive set of demographic and political preference questions and a political quiz to evaluate respondents’ levels of political information.

In the first part of this paper, we estimate immediate effects of voting—that is, of being exposed to compulsory legislation—in a regression discontinuity fashion by comparing political behavior among age groups around the threshold that determines the exposure to different electoral institutions. First, we estimate the impact of the

¹See Coate and Conlin (2004), Feddersen (2004).

²<http://aceproject.org/about-en>

³The voting enforcement mechanism is explained in Section 2.

compulsory legislation on turnout.⁴ These estimates are new and contribute to a vast-
the political science literature. We then estimate the impact of the legal requirement
to vote on political preferences. Previous studies find that the act of voting polar-
izes individuals (Meredith 2009) and reinforces their preferences about candidates and
parties (Mullainathan and Washington 2009). Most of these studies are based on US
data and explore age differences that determine voting eligibility status. It is plausible
that the opportunity to vote affects those that are willing to participate in elections.
The estimated effects of democracy reported in this paper are more compelling and
unanticipated as they are based on the exposure to the compulsory voting system.

Next , we investigate the causal link between voting turnout and information. It is
well documented that voters are better informed than non-voters and are more likely
to vote when provided with information (Gentzkow 2006; Lassen 2005 and Banerjee *et*
al 2010). Part of the literature explains this phenomenon based on strategic voting ab-
stention (Feddersen and Pesendorfer 1996; Battaglini, Morton and Palfrey 2008). Less
informed citizens delegate to informed ones the decision of whom to elect. However, it
is an empirical question whether when forced to vote, people acquire costly information
and get involved in the political process.

The experimental evidence is scarce and mixed.⁵ In a field experiment, Loewen,
Milner and Hicks (2008) provided monetary incentives to a randomly assigned group
conditioning on whether they vote. They found that this group did not become more
informed than the control group, that was not imposed any incentive to vote. Seebauer
and Grosser (2006) studied this relationship in the laboratory with a voting game using
costly private information. They found that participants were significantly more likely
to acquire costly information when they were forced to vote than when they had the
opportunity to abstain.

⁴See Lijphart (1997) for a literature review.

⁵The correlation between compulsory voting and information acquisition has been studied by En-
gelen and Hooghe (2007), Czesnik (2007) and Ballinger (2007) in a cross-country context; they find no
relationship.

Adding to the literature, this is the first paper that studies the relationships between compulsory voting, turnout, information acquisition and preferences in a large scale election under natural incentives faced by individuals. Comparisons are made among similar individuals that face the same politicians and presumably differ only by their date-of-birth and consequently voting requirements. Hence, we are able to identify the impact of the requirement to vote using a clear quasi-experimental design through a regression discontinuity (RD) approach. As a complement to this analysis, we conduct instrumental variable regressions (IV) using exposure to the compulsory system as an instrument for voting turnout in order to identify local average treatment effects of the requirement to vote.

We find that the requirement to vote increases turnout by 16 to 28 percentage points (p.p.) among the population. Results from IV regressions and RD graphical inspection suggest that unlikely voters are the ones affected by the voting legal requirement: they become more politically engaged and informed. This effect is sizable, turning non-voters as informed as their counterpart once they are forced to vote. These educational effects are larger among individuals from lower socio-economic status, which are less informed and politically engaged.

In the second part of the paper, we test whether these voting effects are permanent and whether they vary with more voting experience by examining how the number of experienced compulsory elections correlates with individual political preferences. To separate the effect of voting experience from aging, we conduct regressions controlling for year-of-birth fixed effects and alternative specifications using year-of-birth polynomials as control variables. While previous works investigate if and how past political experiences affect subsequent turnout (Denny and Doyle 2009; Gerber, Green, and Shachar 2003; Plutzer 2002), there is little evidence on whether the level of political engagement fostered by voting turnout varies with voting experience or is permanent over individual life cycle (Prior 2010; Sears and Funk 1999.)

We find that the first voting experience is the most important. After exposure to one compulsory election, citizens become more ideological polarized. This effect is

permanent and equivalent to the effect of aging in approximately four years. Further voting experience has smaller, if any, impact on individual political preferences. These results point to the important role of voting, even when imposed, in increasing individuals' knowledge and involvement with politics. These results are new and relevant to fully comprehend how democracy affects society⁶ and the consequences of compulsory voting.⁷

This paper proceeds in four sections. In Section 2, we explain the Brazilian electoral institution and describe the data. In Section 3, we present the results relating to the effect of being forced to vote on information and ideology. Next, we estimate frequency and permanent effects of voting on political preferences. We conclude in Section 4.

2 Data

2.1 Some Background on the Brazilian Election System

Democratic elections are currently held every second year in Brazil. In Brazil, voting is compulsory for literate individuals between the ages of 18 and 69 (henceforth, referred as under CS); voting is voluntary for illiterates and for those aged 16 to 17 and those 70 and over (henceforth, referred as under VS). All voters must register; when individuals who are required to vote fail to do so and fail to provide justification to the electoral authority, they must pay a small fine.⁸

Stronger sanctions are applied to those who fail to justify their absence for three consecutive elections: they are not allowed to issue or renew their passports and national

⁶Some literature looks at the effect of democratic institutions on cooperation, e.g. Dal Bo, Foster and Putterman (2010) and Sutter, Haigner and Kocher (2010).

⁷There is a vast literature related to this topic as summarized by Lijphart (1997). He informally discusses the distributive advantages related to the increase in turnout. Other studies discuss welfare implications related to this possible change in election outcomes using a theoretical framework (Krasa and Polborn 2005, Krishna and Morgan, 2011).

⁸In 2011, the fee was between R \$1.06 (US \$0.66) and R \$3.51 (US \$2.19), which is equivalent to 0.29% of the average income in the country according to IBGE, Population Census 2010.

identity cards and also become ineligible for public education, public jobs, cash transfer programs and credit by financial institutions maintained by the government. The legal requirement refers to showing up at the polls; all voters have the option of casting an invalid vote (this option is available on the ballot).

Mandatory voting was introduced in Brazil in 1932, when the country's first Electoral Code was created following the Revolution of 1930.⁹ In 1964, a coup d'état initiated a period of 21 years of military rule in the country, during which the regime controlled the electoral process according to its interests through a series of institutional acts, constitutional amendments, laws and decrees. Direct elections for president, governors and mayors of strategic municipalities were suspended, and existing political parties were again extinguished. A new transition to democracy began in 1985, when a constitutional amendment re-established direct elections in the country, reinstating the right to vote (rather than the obligation) for those older than 18 and extending it to illiterates. In 1988, the current Brazilian Constitution was promulgated, adopting compulsory voting for literate individuals between 18 and 69 years of age and voluntary voting for citizens who are illiterate, over 70 years of age, or between 16 and 18 years of age (TSE).¹⁰

One can claim that voting is not in fact compulsory in Brazil, since the option of justifying the absence is available. However, this practice is not commonly used. According to records from Tribunal Superior Eleitoral (TSE), in the 2006 Presidential

⁹One of its principles of the Revolution was the moralization of the electoral system. One of the first acts of the provisional government was the creation of a commission to reform the electoral legislation. Advances in the electoral legislation were subsequently included in the Constitution of 1934; in 1937, however, a new constitution was imposed by President Vargas extinguishing the Electoral Justice, dissolving the existent political parties and suspending direct elections. The deposition of President Vargas in 1945 marked the redemocratization of the country, with the reestablishment of the Electoral Justice and the restoration of rights suppressed in 1937. Voting once again became mandatory for all citizens over 18, except for military officers and citizens over 65 years (illiterates were not allowed to register).

¹⁰www.tse.jus.br/internet/ingles/historia_eleicoes/eleicoes_brasil.htm

Elections, 83% of the total electorate opted to turn up at the polls instead of justifying an absence.¹¹

Official records only give information about turnout and only at the aggregate level. An analysis like the one proposed in this study demands survey collection. This took place in the week immediately after the first round of the 2010 Presidential Elections (October 3th). At that time, there were three main candidates running for election: Jose Serra, Marina Silva and Dilma Rousseff. Their share of votes in the first round were 32.6%, 19.3% and 46.9%, respectively, accounting for 98.8% of total valid votes.¹²

2.2 Survey, Sample and Descriptive

A total of 5,559 students were surveyed in their classrooms between October 4th and October 7th, 2010. We conducted the survey among individuals who face either compulsory or voluntary voting systems. The survey was conducted amongst students in three types of institutions - public high schools, a preparatory school for college admission, and a large university, in 109 classrooms in the city of São Paulo, Brazil.¹³

In conducting the surveys, the same procedure was applied across all institutions: an interviewer entered the classroom about 15 minutes before the end of a class, read an introductory script, and distributed the questionnaires to all students. They had 10 to 12 minutes to individually answer the questions.¹⁴

In every classroom, four types of questionnaires containing exactly the same ques-

¹¹This includes Brazilians living abroad or in cities different than where they are registered. Brazilians can only vote in the states in which they are registered, and they can only vote in person. According to TSE, 40.78% of Brazil's residents that justified their absence in the 2006 Election were living in different states from where they were registered.

¹²In the 2010 Election, no candidate received more than 50% of the valid votes in the first round, so there was a runoff between the two leading candidates. In the second round, Dilma Rousseff beat Jose Serra by 12.2 p.p.(56.1% versus 43.9%).

¹³São Paulo is the largest metropolis in Brazil and among the cities with the highest income per capita in the country.

¹⁴After returning the completed questionnaire, students received an information sheet containing more details on the research and contact information for the authors.

tions but in different orders were randomly distributed to students in order to prevent cheating. We believe the collected data are reliable. Most students agreed to answer the survey, and 94% of the respondents declared to have answered it in a serious manner.¹⁵

The survey consisted of a comprehensive set of questions about demographics, political inclination, vote, media consumption, sentiments towards voting and a political quiz to evaluate the respondents' levels of political knowledge. Through this paper, we examine five main political outcome variables.

The first outcome measures the propensity to acquire information about politics: -whether the respondent always reads the politics section in his or her preferred media outlet (always reads about politics). The second outcome is the respondent's actual knowledge about politics, measured by the performance in the political quiz (*quiz score*).¹⁶ The third is based on the performance in one of the quiz questions. The outcome is an indicator for whether individuals were able to correctly distinguish which is the most right-wing party among two extreme alternatives (*distinguish right-wing party*).¹⁷

The fourth outcome is a measure of individuals' sentiments towards voting. We asked: "If you were not required to vote in the 2010 Election, would you have voted?" We classified those who answered negatively to the question as *Averse to vote*. The fifth outcomes are based on students' ideological position. In addition to their self-reported political orientation (left, center or right-wing), we asked if they have a preference for a political party.

Table 1 shows turnout rates (as a fraction of total population) by age group for

¹⁵Respondents had been told they could skip any question, but the vast majority of students answered them. Regarding one sensitive question (whether they had voted and for), only 1.26% abstained from answering; 0.27% chose the alternative.

¹⁶The quiz consisted of 13 questions. Twelve were about the three main candidates running in the presidential elections. More specifically, there were three open-ended questions about the previous political experience of each of the candidates, and four multiple-choice questions about policies previously implemented or supported by the candidates.

¹⁷The alternatives were DEM (Democratatas) and PSOL (Partido Socialismo e Liberdade).

Brazil and within the sample. Turnout rates are higher among individuals that face a compulsory system, and the sample’s self-reported turnout is similar to that of the country.

Table 1: Turnout - Brazil

Group Age	Turnout %	
	Brazil	Sample
16	17.7	17.64
17	42.6	39.71
18 to 20	82.6	85.64

Note: Brazil’s turnout is from TSE and IBGE

The sample is comprised partly of high school seniors from three public high schools: Escola Estadual Professor Ascendino Reis, Escola Estadual Rui Bloem and Escola Estadual Professor Leopoldo Santana. The second sample is composed of students taking a preparatory course for college admission exams (cursinho) at Anglo Vestibulares. These are referred to as Anglo students. They are mostly high school seniors or students who just finished high school but have not yet been admitted to college. While public high school and Anglo students have similar ages, they differ in socioeconomic characteristics, the latter group being more affluent. The last sample consists of freshmen from the Universidade de São Paulo (USP). We surveyed freshmen from the following majors: History, Sociology, Business Administration, Economics, Physics, Architecture, Law, Mathematics and Literature. This sample of students is older. From the 5,559 surveys collected, 3,703 were completed by Anglo students, 728 by public high-school students and 1,128 by college students. In the Appendix, Table A describes the socioeconomic and political outcomes for these three samples.

Table 2 shows a comparison of respondents’ behavior and characteristics according to their voting turnout decisions in the 2010 Presidential Elections. Out of the 5,559 students surveyed, 77.08% declared to have voted in the 2010 Presidential Election.

The first part of the table describes the comparison for the whole sample. Voters are better informed, more politically polarized (more likely to self-declare as right- or left-wing), more likely to declare a preference for a political party and less averse to voting than non-voters. Note that voting turnout is positively correlated with exposure to the compulsory voting system, which at least in part explains why voters are older than non-voters in the sample.

The second part of Table 2 shows a comparison between voters and non-voters among respondents who were subject to voluntary voting legislation in the 2010 election cycle (between 16 and 18 years old). They correspond to 19.91% of the 5,444 students in the sample that intelligibly reported their date of birth. Similarly to the pattern observed for the whole sample, (voluntary) voters consume more political information than non-voters and display better political knowledge (in terms of political quiz score). They are more politically polarized and more likely to declare a preference for a political party than non-voters. In terms of demographic characteristics, among those subject to the voluntary system, voters are slightly older and more likely to be white and to have a mother with a college degree.

Table 2: here

Differences between voters' and non-voters' preferences and attitudes can cause and/or be caused by voting. In order to overcome this endogeneity issue and estimate the causal effects of voting on behavior, we explore the exposure to the compulsory legislation using a regression framework.

3 Results

3.1 Effects of Being Forced to Vote

In this section, we present the results of the immediate impact of the compulsory voting legislation. We restrict the sample to individuals that could potentially face up to one compulsory election in order to estimate the effect of just being forced to vote. First, we present results from a regression discontinuity framework and graphical evidence suggestive of a causal effect of forced voting on turnout and on other political outcomes. Then, we conduct IV regressions to quantify the effects.

3.1.1 Regression Discontinuity Results

We use a sharp regression discontinuity framework comparing individuals whose age is around the threshold that determines the change from the voluntary to the compulsory voting system.¹⁸ We estimate the following equation:

$$y_i = \gamma + m(S) + \beta_1 1(S > 0) + u_i \quad (1)$$

where y_i is the outcome of individual i , $m(S)$ which is a continuous function of S , that is the distance between the 2010 Election Day and the date the individual had turned or will turn eighteen, $1(S > 0)$ is an indicator equal to one if the respondent was required to vote on 2010 Election Day and u_i is a random error term. We estimate (1) assuming a lower order polynomial functional form for $m()$ that is flexible on each side of the cutoff, and clustered standard errors on classrooms. Additionally, we estimate the effects controlling for demographic observable variables.

¹⁸The sharp RDD design is equivalent to the case in which respondents have perfect knowledge about their voting rights and obligations. In an earlier version of this paper, we estimated causal effects of voting in the context of "fuzzy RDD." We tested whether political outcomes responded to the perception of the obligation to vote, when this variable was instrumented by the exposure to compulsory voting. The results are similar and have the same qualitative implications as the ones presented in this section.

A possible concern is that the results may be sensitive to outcome values for observations far away from the cutoff that determines the change in voting system. For this reason, our estimates only use data within a bandwidth of 15 months from the cutoff dropping individuals that faced more than one compulsory election or that had not yet had the opportunity to vote.

The identification relies on the orthogonality assumption between age and unobservables (such as political preferences that determine individuals' political outcomes) for those close to turning 18 (under VS) or those who have just turned 18 (under CS) by election time. This assumption cannot be entirely verifiable. However, it can easily be rejected. As discussed by Lee and Lemieux (2009), a simple test is to fit regressions for possible confounding variables and test for jumps at $S=0$. We estimate (1) using several covariates, such as demographic characteristics (X_i) as the endogenous variable. Table 3 shows the results. Coefficients were not statistically significant for any of the variables, and the size of the estimated coefficient for the threshold is small, except for previous voting experience. The 2010 Election was the first opportunity for all respondents in this sample to vote in a presidential election. Nonetheless, only the group older than 18 had the opportunity to vote in the 2008 local elections. The predicted fraction of second time voters in the right-side of the threshold is 5.4% higher than in its counterpart. The fact that local elections are not as renowned as presidential elections and that the fraction of second time voters is small in comparison to the change in turnout (as it will be shown in Table 4, Figure 2) gives some confidence that this is not a relevant confounding.

Table 3: here

Another concern is that since the survey participation was voluntary, this could result in non-random sorting across the threshold (i.e. the choice of participating in

the survey correlates with participation in the election). In this case, a jump in the number of observations around the threshold would occur. Figures 1A and 1B show a plot with the number of observations by S and the percentage of observations with non-missing reporting values in any of the characteristics controlled in the main regressions, respectively. There are no visible discontinuities around the threshold for both of these variables.

Figures 1A and 1B *here*

Turning to the results, we first perform a simple graphical analysis to check for discontinuities at the 18-year threshold. Figure 2 plots turnout (as a share of population) by age on Election Day. Dots indicate average turnout in a month interval, and we include a predicted line based on a second order polynomial flexible on each side of the cutoff for ease of visualization. The vertical line indicates the 18-year threshold, i.e. those under compulsory voting legislation. While turnout raises progressively with age for individuals younger than 18, this pattern disappears after exposure to the compulsory voting legislation; there is a clear spike in turnout among those at the age of 18. This suggests an effect on the compulsory legislation on voting turnout and that the legal obligation to vote affects the majority of non-voters.

Figure 2 *here*

The regression results are consistent with Figure 2 (Table 4, Column 1), indicating a predicted hike in turnout as a share of voting age-population at the 18-year threshold. This is observed both in specifications using data within a bandwidth of 15 months from the cutoff, which is the optimal one, and in regressions using a bandwidth of 6 months. The estimates for the effect of compulsory voting on turnout vary between 16.2 and 27.8 p.p., depending on the specification. These numbers are higher than previous estimates.¹⁹ Note that this effect is estimated in a country where most of the adult population votes, and it might be a lower bound number for the effect. Those under a

¹⁹Using aggregate data in cross-country comparisons, Jackman (1987) and Power (1995) estimate

voluntary voting system are potentially exposed to some positive peer effect from the remaining population.²⁰

Table 4: here

Columns (2)-(6) in Table 4 present the results for other political outcomes. The coefficients related to the 18-year threshold are statistically significant for some specifications, suggesting an improvement in the political quiz performance, an increase in the likelihood to be able to distinguish the most right-wing party and an increase in the likelihood of a preference for a political party. However, these results are not robust to alternative specifications or choice of bandwidth. This is mostly confirmed by graphical evidence in the Appendix (Panel B).

It is important to note that these regressions only identify average impacts for the population. These results may be masking heterogeneous effects among (voluntary) voters and non-voters. For example, the obligation to vote might cause adverse effects on individuals that vote voluntarily or encourage non-voters to engage in politics. We proceed by looking for graphical evidence. Figures 3A to 3F are similar to Figure 4 but plot political outcomes decomposing the sample into the three groups: (i) voluntary non-voters, (ii) voluntary voters and (iii) compulsory voters.

Figures 3A to 3F *here*

the magnitude of this effect to be between 10 and 15p.p. Hirczy (1994) finds that that the turnout in Carinthia, Austria increases 3p.p. in comparison to other Austrian provinces after the adoption of compulsory voting. He also finds that the abolition of compulsory voting in Netherlands in 1970 caused a drop on 10 p.p. in turnout.

²⁰Previous studies find evidence of social pressure on voting. People react to the incentive of complying with social norms by becoming more likely to vote. This evidence was found in field experiments in the US (Gerber et al, 2008) and in a natural experiment in Switzerland (Funk, 2010).

Consistent with previous findings for the US (Degan and Merlo 2011), (voluntary) voters are more informed and ideologically polarized than non-voters. The graphs also show that voters are more knowledgeable about politics (Figure V1), less averse to vote (Figure V2) and are more likely to declare a preference for a party (Figure B).

Noteworthy, the group of voters in a compulsory system is a combination of both these two previous groups (Table 4, Figure 2). There is a clear discontinuity between political outcomes of non-voters and voters around the cutoff, while none is visible among voters exposed to different systems. This suggests that the compulsory voting legislation makes non-voters more informed and polarized. This is in line with the view that one of the benefits of compulsory voting regards its potential "to serve as an equivalent form of civic education and political stimulation" (Lijphart 1997, p. 10). On the other hand, the fact that no change is visible among voters around the cutoff suggests that being forced to vote do not affect those that decide to vote without facing the legal requirement.²¹ The next section reports estimates for these effects.

3.2 Instrumental Variable Analysis

In this section, we perform IV regressions to estimate the effect of voting on information acquisition and political preferences using the exposure to the compulsory voting system as an instrument for turnout. This variable is highly correlated with

²¹In the same spirit of Figures 3, we conducted separate RD regressions for groups that fit into predicted categories of high and low willingness to vote. In determining these groups, we assumed that the probability of voluntary voting in the classroom is homogeneous and determined by the voting frequency of classmates younger than 18. Students in classrooms in which less than 30% (more than 50%) of classmates younger than 18 voted were classified as low (high) probability to vote. The results, available under request, confirm the intuition provided in the Figures 3. Among the group assumed to have high probability to vote, the coefficients related to exposure to the compulsory voting system are close to zero and not statistically significant for any of the investigated outcomes. For the group assumed to have low probability to vote, the coefficient coefficients related to exposure to the compulsory voting system are statistically different from zero, with magnitude close to the ones presented in Figures 3.

turnout but conditional on year-of-birth; variation on the exposure to the compulsory system should not, by itself, increase political engagement.²²

In the presence of heterogeneous effects, this method estimates the average treatment effect for individuals who change their treatment status (i.e. become voters) because they react to the instrument (Imbens and Angrist, 1994; Oreopoulos 2006). We estimate the following equations:

$$\text{First Stage: Vote Turnout}_i = \eta_0 + \gamma_1 1(S_a > 0) + \varpi_i$$

$$\text{Second Stage: } y_i = \nu_0 + \gamma_2 \text{Vote Turnout}_i + \beta X_i + \epsilon_i$$

Table 5A reports IV estimates of the effect of the legal requirement to vote on citizens' political behavior. The results are consistent with the intuition provided in Figures 6. Column 1 shows that being forced to vote increases by 18.1% the propensity of citizens to read about politics in the media and enhances their political knowledge. To ease interpretation, we normalize the quiz score to have mean zero and standard deviation of one.²³ Column 2 shows that, when forced to vote, citizens improve their performance in the political quiz by 0.57 standard deviations. The magnitude of this effect is striking. Considering that the score of non-voters is, on average, 0.57 lower than that of voters under VS. Assuming no impact of the compulsory legislation on VS voters, we conclude that the difference in political information (proxied by the quiz score) between voters and non-voters vanishes after both groups are exposed to the compulsory system.

Tables 5A and 5B *here*

²²Unless month of birth conveys unobservable individual characteristics correlated with political participation, we conduct regressions for the whole sample using political behavior as an endogenous variable and month of birth dummies as controls. We do not detect any systematic pattern indicating that citizens born between October and December differ from those born between January and September.

²³By subtracting the mean and dividing by the standard deviation.

The increase in political knowledge is also observed in our alternative measure, is, whether individuals were able to correctly distinguish the most right-wing party among two alternatives. Citizens become 35.4% more likely to correctly distinguish the right answer after being forced to vote (Table 5A, Column 3). The increase in political knowledge might trigger an increase in polarization. The results show that the exposure to the compulsory legislation leads to a decrease of 27.4% in the chance of self-declaring as center-oriented (Table 5A, Column 4) and an increase in 21.9% of individuals' probability to prefer a political party (Table 5A, Column 5).

Next, we report an analysis including the interaction of the vote variable with a socio-economic status variable. Table 5B shows that, like in the United States (Benabou, 2000), socioeconomic status is a determinant of individuals' level of political involvement. This table also shows that having a mother with college degree (proxied for high income) is positively associated with having higher levels of political knowledge and with having a higher propensity to read about politics. Individuals whose mothers have a college degree are also more ideologically polarized. They are 24.4% less likely to self-declare as center-oriented, and their performance in the political quiz is 0.53 standard deviations higher than those of other individuals.

We find that individuals from lower socioeconomic status react more to the compulsory voting legislation by becoming more informed and more ideologically polarized. Table 5B shows the results for regressions including an interaction of the vote variable with a dummy indicating that the mother of the individual has a college degree. While individuals whose mothers have a college degree improve their political quiz performance by 0.433 ($=0.872-0.439$) when forced to vote, those whose mother does not have a college degree have their quiz score enhanced by 0.872 (Column 1). The same pattern appears for the propensity to read about politics and to the alternative measure of political knowledge. Additionally, the obligation to vote reduces the probability of self-declaring as center-oriented by 42.4% among citizens from lower socioeconomic classes (Column 4) and only by 20.1% among others.

The effects estimated in this section reflect the immediate impact of the exposure to

compulsory voting. These effects may or may not dissipate or change with more voting experience over the individual’s life cycle. We address this issue in the next section.

3.3 Frequency and Permanent Effects of Voting on Political Preferences

In order to estimate frequency effects and test whether they are persistent, we exploit variation in the number of compulsory election seasons experienced by individuals. We consider a broader age sample including all survey respondents²⁴

We start by investigating the marginal effects of each additional compulsory election faced by individuals. In this analysis, the main confounding factor is age. To circumvent this problem, we conduct regressions controlling for year-of-birth fixed effects (θ_a), estimating (2). As a result, the effects are identified by variation in individuals’ month of birth. For this specification, only frequency effects of voting are identified as the coefficients capture the effect, in the margin, of having faced an additional election.

$$y_i = \delta_0 + \delta_1 \text{OneElection}_i + \delta_2 \text{TwoElections}_i + \delta_3 \text{ThreeElections}_i + \delta_4 \text{FourElections}_i + \theta_a + \beta X_i + \varpi_i \quad (2)$$

The key independent variables are dummies indicating whether the respondent has been exposed to one (*OneElection*), two (*TwoElections*), three (*ThreeElections*) or four or more (*Four+Elections*) compulsory elections. Columns (1) to (3) in Table 6A present the results. Those exposed to one compulsory election are 6.5% less likely to be averse to vote than those who never experienced a compulsory election. Interesting, the dummies coefficient suggests that this relationship reverses with further voting experiences.

²⁴Since the data come from a survey conducted in classrooms and not from the general population, age can also convey information on other possible relevant unobservable characteristics. For this reason, as a robustness test, we conducted regressions excluding the oldest 10% and the youngest 10% in every classroom. The results are robust and did not change. The distribution of ages in the sample is presented in Table A in the Appendix.

Individuals exposed to more than four compulsory elections are 28.8% more averse to vote than those that were never exposed to the compulsory legislation.

Another form of political engagement is the alignment with a political party. Those exposed to one compulsory election are 5.78% more likely to declare a preference for a party than those that never faced a compulsory election. The same pattern occurs for polarization in terms of self-declaring as center-oriented. For this outcome, the size of the coefficient decreases with the increase of experienced compulsory elections, and they are not statistically significant, suggesting that the participation in the first election is the one more relevant in changing people' political preferences.

Tables 6A and 6B *here*

To understand whether these voting effects are lasting, we test whether the level of political outcomes changes permanently among individuals that experience compulsory elections. We constructed four dummies indicating whether the respondent has been exposed to at least one election, at least two elections, at least three elections or at least four elections. To control for an age effect, we include year of birth and year of birth squared as controls in these specifications. The results are reported in Table 6B. The sign of these coefficients suggest that with age, individuals become less averse to vote (Column 3), less likely to be center-oriented (Column 1) and more likely to prefer a political party (Column 2). The results also show that after being exposed to at least one compulsory election, individuals become 7.45% less likely to self-declare as center-oriented than those who have never experienced a compulsory election.

By using age as a comparison measurement for the size of this effect, we find that the effect of being exposed to at least one compulsory election is equivalent to aging in approximately 4 years in turning citizens into more politically polarized ($=-0.0745/0.0197$) and less averse to vote ($=-0.0777/0.0179$). The results reported in Tables 6A and 6B do not detect any effect of further voting (than the first vote) on polarization or aversion to vote.

4 Conclusion

Voting lies at the heart of democracy. This study investigates the effects of voting on people’s knowledge and political preferences. It circumvents the endogeneity problem and identifies the effects by exploring Brazil’s dual voting system, which provides a shift in individuals’ likelihood to vote. We explore a quasi-experimental design that exogenously assigns individuals to different voting systems.

We find large and significant effects of the legal requirement to vote on turnout (between 16 p.p. and 28 p.p.). These are larger than previous estimates and only represent a lower bound effect given the likely social pressure, since most of the adult population in the country votes. We find evidence consistent with an increase in citizens’ political involvement and level of information once they are forced to vote.

This paper adds to the discussion of compulsory voting. The most powerful argument in favor of this system is the distributive one, given the unequal political participation of lower socioeconomic classes under voluntary voting (Lijphart, 1997). We find that the self-educational effects related to the obligation to vote are larger among individuals from a lower social economic status, suggesting that policies that encourage voting can be a way to decrease political apathy, especially among the poor. The results also weaken some other arguments against the controversial compulsory legislation, such as “bad voting” from those that otherwise would abstain from the political process²⁵ or the consequences of violating individual’s freedom in imposing the voting requirement. We find that unlikely voters are the ones who react to the voting obligation in a significant and relevant manner. Also, citizens change their minds about the voting process once they experience a compulsory election, becoming less averse to vote.

The positive effects of voting seem to be permanent and related to one-time voting. Further experience has smaller, if any, additional impact on citizens. These results, on the other hand, put in question the need for adopting a compulsory system in order

²⁵ “High Turnout would be a disaster” New York Times (11/ 11/2011).

to foster political involvement among the population. This set of results is new and relevant to public policy. It advises policy makers to promote policies which encourage voting and allocate effort and resources to the group of “never-been-voters.”

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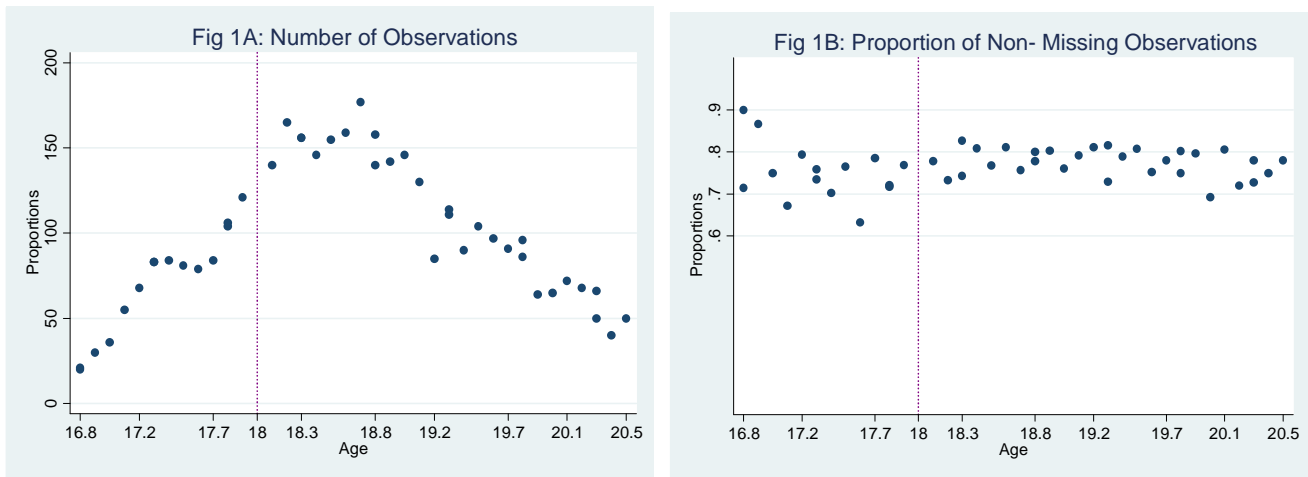
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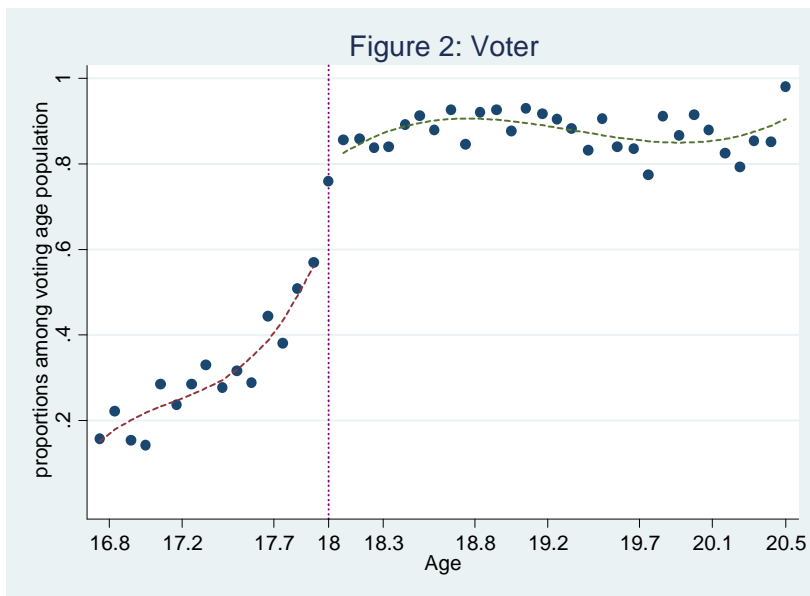
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Figures 1



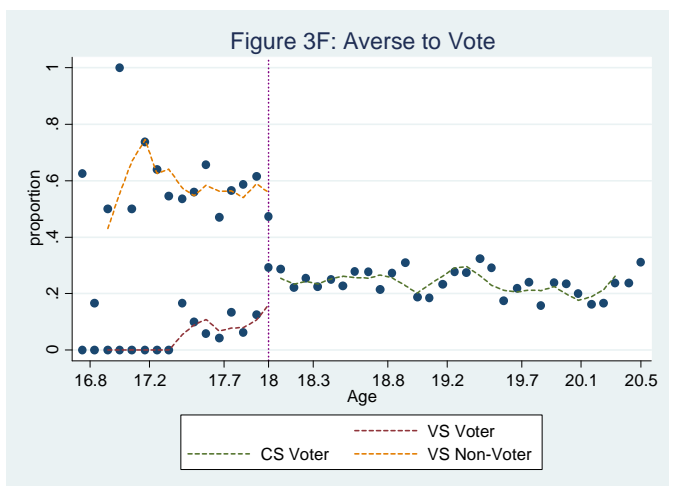
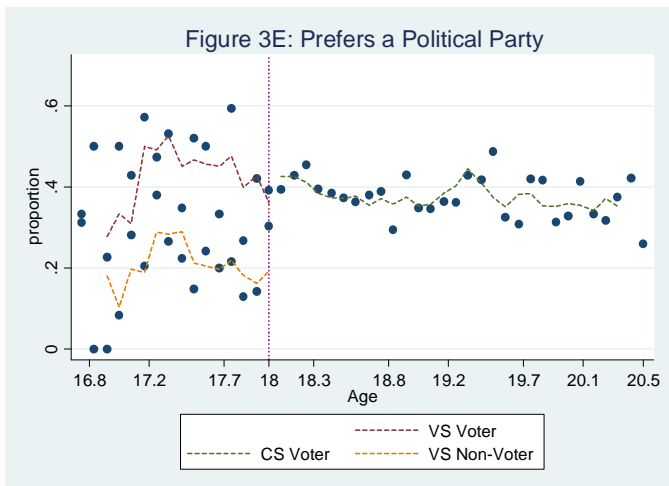
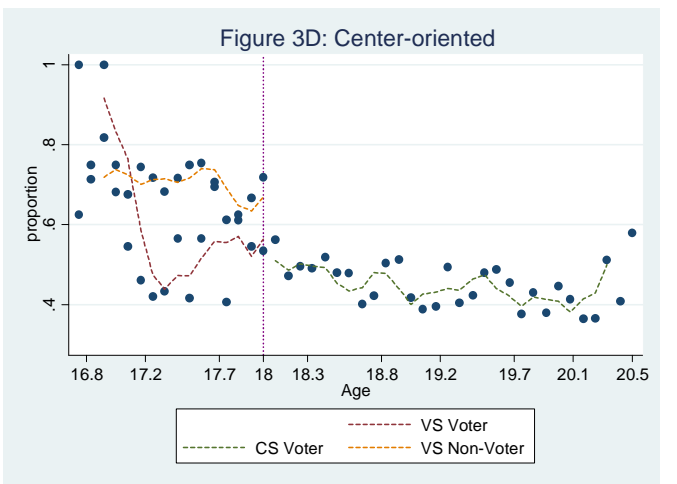
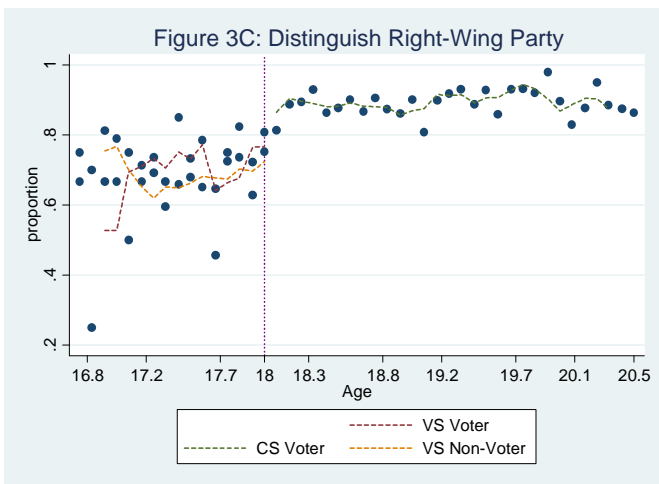
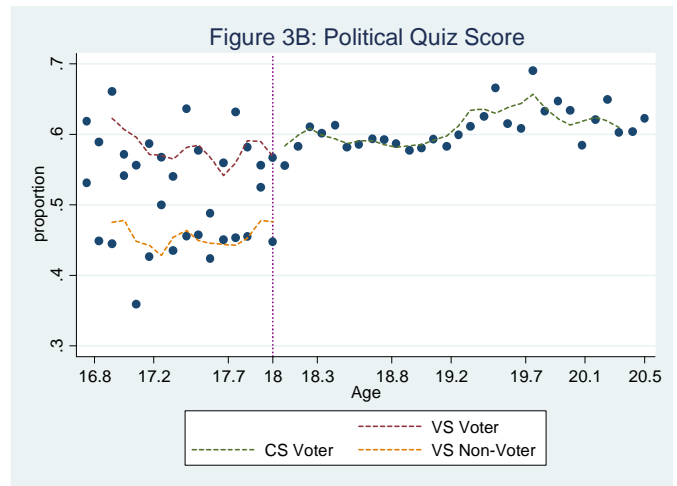
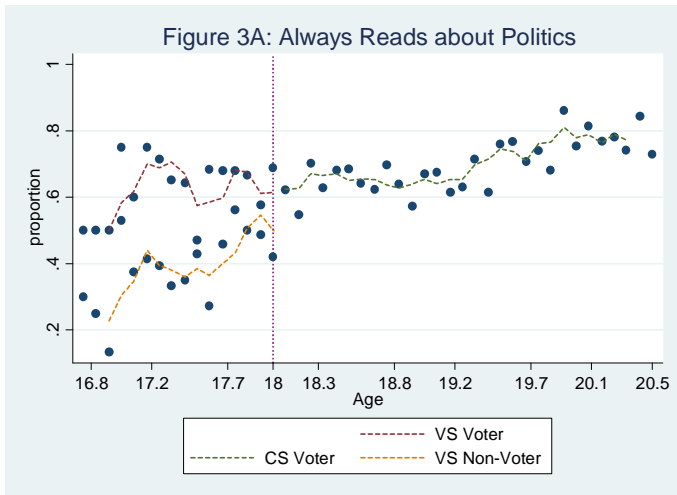
Notes: Dots in Figure 1A indicate the number of respondents with a distance from the cutoff within one month. Dots in Figure 1B indicate the ratio between the total number of non-valid answers and the total number of respondents from the cutoff within one month.

Figure 2



Notes: Dots indicate average turnout in a one month interval. The curve is predicted from a second order polynomial flexible on each side of the 18- year threshold.

Figures 3



Notes: Dots indicate average turnout in a one-month interval. The curve is predicted from a 3-month moving average calculated separately for the each of the three categories (VS voters, VS non-voters and CV voters).

Table 2 - Outcomes and Characteristics of Individuals According to Turnout Decision

	Voter	Non-Voter	Difference	S. e. Diff
Outcomes				
All Sample				
<u>Information</u>				
Political Quiz Score (% correct answers)	60.62 [19.42]	50.94 [21.27]	9.68	*** 0.64
Always read the politics section in favourite media outlet (%)	69.86	56.28	13.58	*** 1.85
Able to distinguish which party is right oriented (%) (among two extreme choices)	88.11	77.46	10.64	*** 1.30
<u>Political Inclination</u>				
Left-wing	28.05	20.15	7.90	*** 1.44
Center	46.06	58.29	-12.15	*** 1.63
Right Wing	25.88	21.64	4.24	*** 1.41
Has a political party preference (%)	38.99	23.96	15.03	*** 1.53
<u>Requirement to vote and Aversion to vote</u>				
Older than 18 (Required to Vote) (%)	90.17	45.89	44.27	*** 1.14
Averse to Vote (%)	22.95	45.31	-22.36	*** 1.69
Number of Observations	4250	1264		
Sample: Younger than Eighteen Years Old				
<u>Information</u>				
Political Quiz Score (% correct answers)	57.39 [18.34]	45.62 [20.49]	11.76	*** 1.23
Always read the politics section in favourite media outlet (%)	62.28	41.50	20.78	*** 3.76
Able to distinguish which party is right oriented (%) (among two extreme choices)	72.52	69.23	3.29	3.39
<u>Political Inclination</u>				
Left-wing (%)	22.53	14.17	8.36	*** 2.42
Center (%)	54.43	70.22	-15.79	*** 3.04
Right Wing (%)	23.03	15.60	7.40	*** 2.48
Has a political party preference (%)	43.76	20.99	22.76	*** 2.79
<u>Characteristics</u>				
Age	16.96	16.90	0.07	*** 0.02
Female (in %)	59.85	61.77	-1.92	3.09
White (in %)	74.69	66.51	8.17	*** 2.92
Live with a parent (in %)	94.78	95.97	-1.20	1.33
Mother as a college degree (in %)	55.16	44.78	10.38	*** 3.17
Number of Observations	672	410		

Notes: 1) Standard errors are in brackets. 3) *Significant at the 10 percent level, **Significant at the 5 percent level.

Table3 - Estimated Discontinuities in Pre-determined Characteristics

White	0.0053 [0.0397]
Female	-0.059 [0.0441]
<u>Mother Education</u>	
Fundamental School or less	-0.0277 [0.0275]
High School graduate	-0.012 [0.4045]
College graduate or more	0.0397 [0.0372]
Mother has a political party preference	0.0252 [0.0550]
Live with a parent	0.0264 [0.0326]
Attend Church	-0.05 [0.0411]
Plan to apply to College	0.0084 [0.0349]
Responded seriously to the survey	0.0043 [0.0234]
Voted before the 2010 Election	0.041 [0.0181]**

Notes: The sample is composed by students born between June, 1990 and January, 1994; that were born up to 15 months away from the cutoff. Standard errors, clustered by classroom are in brackets.

Entries are estimated regression discontinuities at $S=0$, from models that include quadratic controls for S fully interacted with a dummy for age 18 or older. Other controls include dummies indicating whether the respondent is a USP, Anglo or a Public School student.

**Significant at the 5 percent level.

Table 4 - Effects of the Compulsory Voting Legislation on Turnout, Political Information and Preferences - RDD Results

	Coefficient on Turning 18 (Required to Vote)					
	Outcomes					
	Turnout	Political Quiz Score	Able to distinguish the most right-wing party	Prefers a Political Party	Center Oriented	Averse to Vote
<i>Bandwidth: 15 months</i>						
Linear regression on both sides of discontinuity	0.2787 [0.0313]**	0.1099 [0.0656]*	0.1013 [0.0380]**	0.0535 [0.0349]	-0.0282 [0.0306]	0.0052 [0.0344]
Second order polynomial on both sides of the discontinuity	0.2008 [0.0440]**	0.0615 [0.0687]	0.0609 [0.0485]	0.0926 [0.0494]*	-0.0422 [0.0493]	-0.017 [0.0599]
Third order polynomial on both sides of the discontinuity	0.1619 [0.0601]**	0.0579 [0.1019]	0.0355 [0.0613]	0.0606 [0.0655]	-0.0523 [0.0628]	-0.0633 [0.0772]
N	3053	3059	2652	3037	2978	2322
<i>Bandwidth: 6 months</i>						
Linear regression on both sides of discontinuity	0.189 [0.0485]**	0.0571 [0.0046]	0.0692 [0.0497]	0.0779 [0.0492]	-0.0431 [0.0500]	-0.0237 [0.0560]
Second order polynomial on both sides of the discontinuity	0.1761 [0.0631]**	0.0046 [0.1120]	0.0035 [0.0709]	0.029 [0.0704]	-0.0336 [0.066]	-0.0669 [0.0902]
N	1500	1502	1300	1492	1459	1118

Notes: 1) Standard errors, clustered by classroom are in brackets. Entries are estimated regression discontinuities at S=0, from models that include polynomial controls for S fully interacted with a dummy for age 18 or older. Other controls include dummies indicating whether the respondent is a college student, female, white, whether he/she has voted before and indicators for mother education. 2) *Significant at the 10 percent level, **Significant at the 5 percent level.

Table 5A -Effects of Forced Voting on Political Outcomes- IV Regressions

	(1)	(2)	(3)	(4)	(5)	(6)
	Always read about politics	Political Quiz Score	Distinguish the right-wing party	Center Oriented	Has a party preference	Aversion to Vote
Vote	0.1808 [0.1064]*	0.5777 [0.1974]**	0.3543 [0.1229]**	-0.2738 [0.1032]**	0.2193 [0.0898]**	-0.1861 [0.1162]
R2	0.072	0.1067	0.062	0.0512	0.0121	0.0246
N	2607	3783	3306	3690	3756	2950

Table 5B -Effects of Forced Voting on Political Outcomes. Interactions. IV Regressions

	(1)	(2)	(3)	(4)	(5)	(6)
Vote	0.3071 [0.1246]**	0.8717 [0.1992]**	0.4999 [0.1221]**	-0.4244 [0.0926]**	0.2032 [0.1056]**	-0.0783 [0.1357]
Vote * Mother has college degree	-0.1906 [0.0827]**	-0.4388 [0.1659]**	-0.2126 [0.0707]**	0.223 [0.0881]**	0.0239 [0.0754]	-0.1899 [0.1026]*
Mother has a college degree	0.1307 [0.0627]**	0.5305 [0.1316]**	0.2221 [0.0586]**	-0.2424 [0.0699]**	0.0491 [0.0563]	0.1156 [0.0826]
R2	0.0737	0.1093	0.0657	0.0536	0.0122	0.0262
N	2607	3783	3306	3690	3756	2950

Notes:1) The dependent variable *Aversion to vote* is a dummy indicating whether the respondent would prefer not to vote if he was not required to. The variable Center-oriented is a dummy indicating whether the respondent self-declared his/her political position to be center as opposed to left- or right-wing. The variables *Political Quiz Score* and *Distinguish the right-wing party* are explained in Section 2.2.

2) The sample is composed by students born between October, 1990 and January, 1994; that faced up to one compulsory election. 3) Standard errors, clustered by classroom are in brackets. Controls include year of birth fixed effects, dummies indicating whether the respondent is a college student, female, white, whether he/she has voted before and indicators for mother education. 4) *Significant at the 10 percent level, **Significant at the 5 percent level.

Table 6A - Effects of Voting on Political Preferences - Frequency Effects

	Outcomes		
	Center Oriented	Prefers a Political Party	Aversion to Vote
	(1)	(2)	(3)
Number of Experienced Compulsory Elections			
Zero (omitted)			
One	-0.0637 [0.0298]**	0.0573 [0.0267]**	-0.0648 [0.0355]*
Two	-0.0606 [0.0406]	0.0151 [0.0509]	-0.0462 [0.0510]
Three	-0.0531 [0.0927]	0.0127 [0.0914]	0.05811 [0.0859]
Four or More	-0.0067 [0.1570]	0.0306 [0.1769]	0.2888 [0.1302]**
Year of Birth- fixed effects	yes	yes	yes
R2	0.057	0.0198	0.0321
Number of Observations	4712	4783	3896

Table 6B - Effects of Voting on Political Preferences - Permanent Effects

	Outcomes		
	(1)	(2)	(3)
Number of Experienced Compulsory Elections			
Zero (omitted)			
At least one	-0.0745 [0.0288]**	0.0247 [0.0226]	-0.0777 [0.0264]**
At least two	0.0085 [0.0207]	-0.0443 [0.0230]**	0.0053 [0.0269]
At least three	0.0449 [0.0422]	0.0418 [0.0540]	0.0092 [0.0349]
At least four	-0.0276 [0.0563]	-0.0032 [0.0674]	0.0544 [0.0607]
Year of Birth Adjusted	0.0197 [0.0080]**	-0.01204 [0.0096]	0.0179 [0.009]**
Year of Birth Adjusted Squared	0.002 [0.0001]	0 [0.0002]	0.00004 [0.0002]*
R2	0.0511	0.0136	0.0219
Number of Observations	4712	4783	3896

Notes: 1) Same as notes 1 and 3 from Table 5. 2) The sample is composed by students born between October, 1944 and January, 1994.

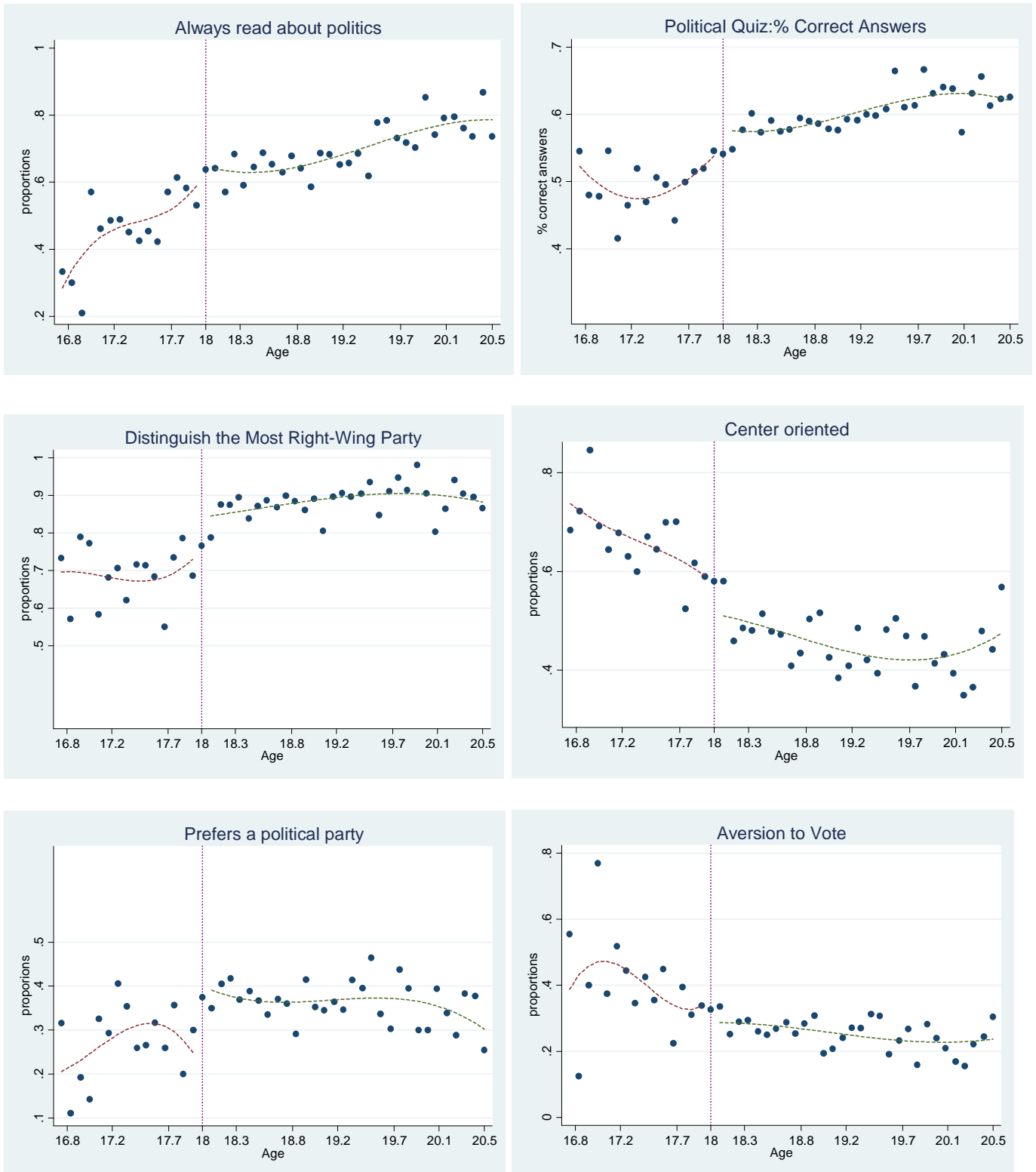
3) *Significant at the 10 percent level, **Significant at the 5 percent level.

Table A - Summary Statistics

Outcomes	Total	Samples		
		Public High Schools	Anglo	USP
<u>Information</u>				
Political Quiz Score (% correct answers)	58.37 [22.37]	44.3 [20.93]	58.29 [18.48]	67.73 [20.66]
Always reads the politics section in favourite media outlet (%)	66.97	45.19	62.35	100.00
Able to distinguish which party is right oriented (%) (among two extreme choices)	85.37	56.87	87.15	94.12
<u>Political Inclination</u>				
Left-wing (%)	26.43	14.39	23.88	42.33
Center (%)	48.65	75.11	47.39	36.55
Right-wing (%)	24.92	10.49	28.73	21.12
Has a political party preference (%)	35.63	26.99	36.19	39.48
<u>Requirement to vote and Aversion to vote</u>				
Older than 18 (Required to Vote) (%)	80.09	16.04	87.75	96.48
Averse to Vote (%)	26.95	38.88	27.24	20.30
Voted (%)	77.08	39.72	80.78	89.21
<u>Age</u>				
16 or younger	4.04	10.23	3.34	2.05
17	18.18	73.98	11.19	2.46
18	35.27	14.18	42.56	25.64
19	21.54	1.17	24.41	26.26
20 or older	20.97	0.44	18.49	43.59
<u>% of Total Sample</u>				
Public High Schools	13.09			
Anglo	66.59			
USP	20.28			
Declared to have responded seriously to the survey (%)	93.7	87.46	94.38	95.52
Number of Observations	5559	728	3703	1128

Note: Standard deviations are in brackets.

Appendix – Panel B



Notes: Dots indicate average turnout in a one-month interval. The curve is predicted from a second order polynomial flexible on each side of the 18- year threshold.