



# Learning to Vote in Democratic and Authoritarian Elections

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# **Learning to Vote in Democratic and Authoritarian Elections\***

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### *Abstract*

High levels of turnout are key to legitimacy in new democracies, ultimately contributing to their consolidation. However, little is known about the determinants of long-term electoral participation and the legacies of authoritarian elections. To investigate these legacies, we rely on socialization and institutional theories of turnout, which have not been tested in authoritarian settings. To test our expectations, we rely on newly harmonized public opinion data covering over 106 countries from 1975 to 2015, estimating generational differences in turnout. We show that the opportunity to participate in elections in the formative years positively affects later-life turnout. This finding is further confirmed using a design-based difference-in-difference approach, utilizing female suffrage in Greece as an identification strategy. However, the impact of these early opportunities on long-term habitual voting is conditional on the level of contestation of the elections experienced. Low levels of electoral competition, typical in authoritarian elections, can create jaded voters.

*Keywords:* Authoritarian elections, turnout, habit formation, political socialization.

# 1 Introduction

Does electoral participation today depend on whether people experienced elections in democracies or autocracies during their youth? Despite the steady rise of elections in authoritarian regimes over the last 100 years (see Figure 1), little is known about the effect and legacy of these kinds of elections on voters. In this article we focus on the development of individuals' regular participation in elections. High election turnout is considered one of the key requirements for democratic legitimacy and quality of political representation (Verba and Nie 1972: 309-18), which is particularly important in new democracies (Moehler and Lindberg 2009). Understanding the long-term legacies of authoritarian elections is hence an important contribution to the literature on democratic consolidation and more specifically political behavior.

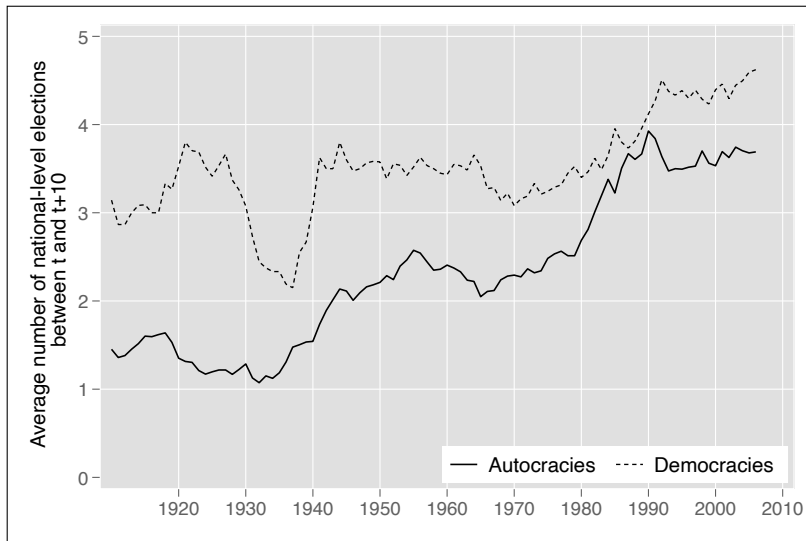
Despite the extensive evidence from established democracies that shows how voters' earliest experiences of elections shape their voting behavior for the rest of their lives (Plutzer 2002; Franklin 2004), we know very little about how early experiences of authoritarian elections shape long-term voting behavior.<sup>1</sup> With the rise of electoral authoritarianism since the end of the Cold War, elections are no longer dispensable but are the defining feature of today's autocracies (Schedler 2013). Figure 1 illustrates how holding elections is becoming ever more popular with today's authoritarian leaders. Here we plot the average number of national-level elections that were held in every 10-year period ( $t$  to  $t + 10$ ) for both democratic and autocratic regimes. Since the 1980s, holding elections in autocracies is nearly as common as it is in democracies. Today, citizens living in dictatorships will on average experience nearly 4 national-level elections during a 10-year period.

We are the first to use socialization and institutional theories to understand the long-term

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<sup>1</sup> In the last decade, a debate has developed on how the level of electoral choice (Landry, Davis and Wang 2010; Martinez i Coma and Morgenbesser 2020) and perceptions of election fairness (Birch 2010; Simpser 2012) impact voter turnout in autocracies, however, this literature has yet to assess the long-term impact of these factors on voter turnout habits. Most of these studies further focus on macro turnout trends only, while we avoid potential ecological fallacies by investigating individual-level turnout using a unique dataset.

**Figure 1:** Average number of national elections over time



*Source:* V-Dem, v8. *Note.* The measurement of election count is described in more detail below. We use the regime classification variable by V-Dem (`v2x_regime`, Coppedge et al. (2018: 219)).

impact of these authoritarian elections on turnout. Typically these theories are only tested in advanced democracies. The goal of this paper is hence to study the development of regular voting under democratic and autocratic elections. We thereby focus on the character of elections, rather than using democracies and autocracies as proxies. Elections in non-democratic regimes represent a great diversity of character, almost complying with democratic levels of competitiveness while other regimes opt for no contestation at all (see Figure 5.B below). Extending the scope of the theory to autocracies allows us to significantly increase the variation in election contexts and their long-term legacies. More specifically, we ask whether it is enough that voters have an opportunity to vote or must this opportunity have an intrinsic meaningfulness to have lasting effects on their voting behavior?

To answer this question, we use a novel cohort analysis approach which allows us to study the contemporary propensities to vote of numerous generations from across the world that came of age since the end of World War I. These generations had a variety of electoral experiences in their youth, ranging from democratic to autocratic elections; some experienced no elections in their formative years and some 10 or more. These elections vary from highly competitive to noncompetitive elections with single candidates, pre-selected

by an autocratic regime. The empirical analysis combines the macro data of Varieties of Democracy (V-Dem) (Coppedge et al. 2018) with individual-level data using a newly created harmonized public opinion dataset that combines 766 cross-national datasets from eight different studies (e.g. World Value Survey, Latino Barometer, European Social Survey). In total we study the individual voting behavior of about 800,000 survey respondents from 106 countries. This large-N approach is supplemented with a case study of Greece, where we use the introduction of female suffrage and a difference-in-difference approach to better causally identify the effects of electoral opportunities on turnout habit formation.

We show that the opportunity to participate in elections in the formative years matters. However, how these early opportunities shape long-term habitual voting depends on the competitiveness of the elections experienced. In fact, the less competitive elections a newly eligible voter experiences, the less likely this is person to become a habitual voter later in life. Uncompetitive elections create jaded voters. The legacy of uncompetitive authoritarian elections thus puts new democracies on shaky ground and at risk of backsliding. Understanding the implications of experiencing elections in a variety of regimes is particularly relevant today because elections are becoming as common in authoritarian regimes as in democracies (as shown in Figure 1).

The theoretical arguments and empirical findings of this paper make several contributions. Firstly, this paper contributes to the growing literature on authoritarian regimes by refocusing our attention on the role of ordinary citizens. Our theory and findings help us understand how citizens are shaped by the authoritarian experience and their role as voters in the context of electoral authoritarian systems. We speak to the literature that views authoritarian elections as “arenas” of ambiguous, and yet, real political conflict with varying levels of true uncertainty (Schedler 2013).

Secondly, our paper bridges the theoretical rift between the extensive political behavior literature developed in the democratic context and the ever-growing literature on authoritarian regimes. By synthesizing our understandings of democratic political socialization with that of authoritarian elections, our findings help us understand the legacies of authoritarian

elections and their specific character (opportunity and contestation) on political behavior in new democracies. Our findings also help us understand the long term implications of a gradual process of liberalizing elections thus informing the debates on whether autocracies should be encouraged to hold elections even if they are flawed (Donno 2013).

Thirdly, we contribute to the political behavior literature, particularly on voter turnout, by considering the impact of the full spectrum of electoral competition on voter turnout habit formation. The existing literature on voter behavior in democratic elections is constrained by baseline levels of electoral opportunities and political contestation: all democracies by definition hold elections and all meet a certain level of political competition. Thus by implication this literature only considers the marginal effects at the upper bounds of meaningful competition.

Lastly, our paper makes a methodological contribution by providing the first global study to investigate the long-term impact of authoritarian elections. Existing studies have been either case or regional studies (Linek and Petrúšek 2016), which provided important findings, but which are nevertheless limited in scope to explore the diversity of authoritarian elections. Our methodological large-N approach will hence facilitate further the development of truly comparative theory. Furthermore, we use an innovative identification strategy of a design-based difference-in-difference model to better identify the causal relationship postulated here.

## **2 Voter Motivation and Electoral Contestation in Autocracies**

How do citizens develop their habit of voting? From socialization theories we know that the formative years between childhood and adulthood are generally considered a key period during which citizens form their core political attitudes and behaviors. It is argued that citizens learn the habit of either voting or non-voting during these formative years, and that past behavior predicts present behavior (Plutzer 2002; Franklin 2004; Gerber, Green and Shachar 2003; Aldrich, Montgomery and Wood 2011). Young citizens, it is believed, are not yet set in their political ways and are, subsequently, more easily influenced by external



factors ([Sears and Valentino 1997](#)).

From this research on established democracies, we know that taking up the opportunity to vote as well as the meaningfulness of the first few elections after reaching voting age is crucial for establishing the life long habit of participating in elections. Electoral competition is especially important in this respect. High stake elections tend to attract more voters than elections where the outcome already is a foregone conclusion ([Vowles, Katz and Stevens 2017](#)). Rooted in rational choice theory, the closeness of an election is related to the extent to which citizens care or think that others care about the outcome of the election. The closer the election, the more unsure its outcome is and the more "meaningful" a vote becomes in the eyes of the voters. Measures of electoral competitiveness such as closeness of the race, margin of the victory and party polarization are considered to influence in particular young voters, especially in their first 2-3 elections ([Franklin 2004](#); [Smets and Neundorf 2014](#)).

"Electoral autocracies" are currently the modal regime type in the world.<sup>2</sup> Moreover, a significant proportion of the voting citizenry of today's democracies experienced their formative years before democratization.<sup>3</sup> As illustrated in [Figure 1](#), with the rise of electoral authoritarianism, an increasing proportion of citizens are experiencing or have experienced some form of authoritarian elections. Given that early electoral experiences of democratic elections have long-term effects on citizens' voting behavior, we might therefore expect that formative experiences of authoritarian elections will also continue to shape voters' behavior even if the regimes are long gone.

The literature on authoritarian elections primarily seeks to understand how elections help regimes retain power ([Magaloni 2006](#); [Gandhi and Lust-Okar 2009](#); [Blaydes 2010](#)). Recent literature, though, has increasingly drawn attention to how regimes use margins of

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<sup>2</sup> Based on the latest available data from V-Dem, 62 of the 179 included countries were classified as electoral autocracies in 2020. For a definition of these classifications see [Coppedge et al. \(2018: 219\)](#)

<sup>3</sup> Very few democracies today did not experience any period of autocracy in the last 80 years (assuming this as the average life-expectancy in democracies). Examples include the USA, UK, Canada, Australia, New Zealand, Ireland, Sweden, Finland, Denmark, and Norway. However, people living in these countries make only a minority of people globally.

victory (Schedler 2013) and high turnout to signal popular support and dominance (Simpser 2013; Linz 2000). Thus the role of citizens as voters has received less attention. While voter responses as passive targets of patronage or economic coercion are well-studied (Gandhi and Lust-Okar 2009; Pellicer et al. 2014), our understanding of how voters perceive and actively respond to the wider electoral context is much weaker and often contradictory. Even voters who engage in voting for purposes of patronage are still quite aware of the short-comings of the authoritarian elections and the lack of true competition (Lust 2009).

But how do perceptions of the election character affect turnout overall particularly among the wider citizenry who are not subject to targeted mobilization efforts? Schedler (2013: 265) notes the overall "counter-productive consequences" of electoral manipulation on citizen attitudes, particularly the legitimacy costs of manipulation (Schedler 2002, 2013; Birch 2011). Others suggest perceptions of poor election quality do not discourage voters (Wellman, Hyde and Hall 2018). Recent comparative empirical research examining the direction of wider contextual effects on overall voter turnout finds counter-intuitive effects. Martinez i Coma and Morgenbesser (2020) show that clientelism and increased competition might depress overall turnout, particularly in the presence of opposition boycotts. However, these effects have only been examined using aggregate data, limiting the unpacking of the underlying mechanisms.

So not only do we know little about the overall direction of the effects of election character on voter turnout, but we know even less about the long-term effects of being socialized in these contexts. As discussed above, the literature on voter turnout habit formation in democracies emphasizes factors that facilitate taking up the opportunities to vote, which relate to the perceived meaningfulness of an individual vote in context of more competition (Vowles, Katz and Stevens 2017). Consequently, turnout habit requires some kind of internal motivation to continue voting on the part of the voter. However, it is very much unclear how participation in noncompetitive elections can lead to habit formation. If voting in authoritarian contexts is driven by clientelism or (economic) coercion, one would expect that once either is absent, the incentives to continue voting disappear. Furthermore, the focus on

these limited and targeted mobilization factors and the 'subtle menu of electoral manipulation' (Schedler 2002, 2013) fails to consider the impact of the broader context of whether elections are held at all and their level of contestation - namely having a choice on a ballot matter.

## 2.1 Turnout Habit Formation and Election Characteristics

From the theory of habit formation in the democratic context we can derive two key factors: the opportunity to vote and perceived meaningfulness of that opportunity. Without both, the habit of voting will not form. Translating these ideas to the authoritarian context, the opportunity would appear to be the minimum necessary condition for habitual voting to form: in the absence of elections or the lack of suffrage, citizens do not have the chance to develop a habit.<sup>4</sup> We would expect cohorts that came of age without experiencing any elections to have lower turnout on average compared to all other cohorts (both those socialized in democracies and those socialized under authoritarian elections). We also expect that the more elections citizens had the opportunity to vote in their formative years, the higher their propensity to vote later on. Each election opportunity reinforces the learning of electoral participation and increases the expected habit formation. Thus we can summarize these expectations as following:

*H<sub>1</sub> - Election opportunity: The propensity to vote later in life positively increases with the number of electoral opportunities experienced in the formative years.*

The literature on turnout habit formation in democratic contexts focuses very much on what drives voters to take up the opportunity to vote. The defining feature of these factors, such as the closeness of the race and margins of victory, capture the salience of a given

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<sup>4</sup> Several authoritarian regimes, particularly during the Cold War, did not have any or very irregular elections (i.e. Francoist Spain, for example, held only two general elections and three referendums). Regimes such as China, only have local elections (Wang 2008). Even if regimes did hold elections, several regimes restricted suffrage. For example, Brazil and Mexico excluded illiterate people from the electorate so these people would have not had the chance to vote at all.

election; in other words the chance that an individual vote will have a decisive impact on the outcome of the election. If various factors are in place that incentivize people to vote in their formative years, as measured by the first few elections that they experience, then the grounds for habit formation are set. In the authoritarian context, elections vary in the level of actual political competition, thus in potential for uncertainty (Schedler 2013) and possibilities of future political openings. The degree of permitted contestation can range from semi-competitive elections with multiparty systems that exclude some parties (anti-system parties), but still allow some residual multiparty system with an opposition list. On the other end of the spectrum are regimes that are one-party systems with either multiple candidates per a seat or in the extreme only one candidate per a seat (Hermet, Rose and Rouquie 1978).

The ability to make a choice is most directly related to competitiveness of elections. In short, to exercise choice, voters need to be given more than one candidate to vote for, which importantly is clearly known to voters (unlike election fraud or other irregularities, which the regime can hide). So the greater the level of multiparty competition, the greater the scope for choice.<sup>5</sup> We set the bar low for the standard of choice. While voters may not enjoy full opportunities to formulate and signify their preferences (Dahl 1971: 71), elections with a narrow set of regime-approved choices offers more scope for exercising choice than elections with a single candidate.

Authoritarian elections also serve as means through which the regime can gather information about citizen preferences (Pop-Eleches and Robertson 2015), and this information can induce incumbents to make concessions to citizens (Little 2017). In so far as citizens are aware of the nature of elections as a conversation through which they can communicate with the regime, a vote will still hold meaning even if does not affect overall electoral out-

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<sup>5</sup> However, the level of available choice, namely the number of candidates and parties on the ballot, can be restricted by the incumbent regime through various more subtle means than outright bans on opposition parties and candidates (Schedler 2013: 84). These methods include intimidation and repression of opposition candidates as well as denying the opposition candidates media exposure and funding. In our empirical analyses presented below, we focus on multiparty competition, while using other factors of election competition to explore the robustness of our findings are presented in Appendix 11.

comes. Empirical evidence shows that the change from single to limited candidate choice elections in China has boosted efficacy among political interested citizens and discouraged non-voting (Shi 1999). In the Chinese context, the perception of choice as competition is enough to engage voters (Landry, Davis and Wang 2010). We hence expect that early experiences of competitive elections should reinforce habit formation. We can thus formulate the following hypothesis:

*H<sub>2</sub> - Election competition: The level of electoral competition during one's formative years positively reinforces the effects of electoral opportunities on the propensity to vote in later life.*

Both hypotheses stated here are general and their scope is not limited by distinctions between autocratic and democratic regimes. Instead we are interested in the characteristics of elections themselves - frequency and level of contestation - and their long-term impact on voters. Thereby we move beyond the usual dichotomy of political regimes.

### **3 Election opportunity: Female Suffrage as an Identification Strategy**

Even before we investigate how the *number* of opportunities influences voting habit formation, we need to consider whether having the opportunity to vote at all matters. We cannot directly test the effects of withholding the opportunity to vote during one's formative years in an experimental setting, however we can leverage the granting of female suffrage as a quasi-experimental scenario to test how the absence or presence of opportunities to vote in one's formative years affects the propensity to vote later in life. This approach allows us to observe the effects of opportunity to vote in formative years more directly and explicitly. To achieve this we will use a design-based difference-in-difference model using female suffrage as an identification strategy (Dinas and Stoker 2014; Angrist and Pischke 2008). In this section, we first outline this approach in detail, before presenting the results of Greece, our case study. These results will provide internal validity, testing H1, while a large global analyses

in the next section further provides external validity of H1 as well as an empirical test of H2, thus overcoming the shortcomings of the otherwise powerful difference-in-difference design.

### 3.1 Identification Strategy

We define the "treatment" as being allowed to vote during the formative years. Throughout the analyses, we define formative years as the age 20-29 years old, thus capturing the crucial years after voters usually reach the voting age.<sup>6</sup> Thus the "treatment effect" of having the opportunity to vote is the difference between the propensity to vote later in life of people who did have suffrage in their formative years and those who did not. We expect that female suffrage is creating a cohort effect, with pre-suffrage women to be less likely to vote (once they are allowed) than the generations of women who came of age with suffrage and hence enjoyed election opportunities.

However, these two different generations will also be of different age, with the pre-suffrage cohorts always being older than the post-suffrage generations. In order to estimate the correct treatment effect of election opportunity, we need to account for the well established life-cycle effects on turnout (Smets 2012). This issue is normally addressed by applying a standard Age-Period-Cohort (APC) model, which solves the colinearity problem between these three time effects (Neundorf and Niemi 2014). In this case, a simple version of an APC model for female suffrage would distinguish between pre-suffrage and post-suffrage cohorts of women and will control for age and current period "shocks":

$$Pr(y_i = 1) = \alpha + \gamma(Cohort_{post-suff}) + \sum_{t=2}^T \phi_t(Year_i) + \sum_{m=2}^M \theta_m(Age_i) + \varepsilon_i, \quad (1)$$

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<sup>6</sup> There is no precise estimate of the age boundaries of the formative period in one's life-cycle, but most authors argue that young people up to the age of 30 are most impressionable (Mannheim 1952; Alwin and Krosnick 1991; Neundorf and Niemi 2014). The literature on the formation of voting habits suggests that it takes about 13 years (e.g. three national elections) for people's likelihood to vote for a certain party to stabilize (Franklin 2004; Smets and Neundorf 2014).

In this model the pre-suffrage female cohort serves as the reference category, thus  $\gamma$  captures the "treatment effect" of having suffrage in one's formative years. However the "estimated treatment effect" will include also the effect of other changes in the socialization context in the formative years before and after the introduction of female suffrage, in other words cohort variant unobservables.<sup>7</sup> For example, changes in voter registration rules or political attitudes could have coincided with female suffrage. To ensure our estimate of the treatment effect is unbiased we need a control group that was exposed to the same possible confounding contextual factors (Dinas and Stoker 2014; Pischke 2007; Card and Krueger 1993). In this case we use men as they were exposed to all the same environmental changes as the group eligible for treatment, namely women. Men and women who belong to the same generation are hence the equal in all respects except for the eligibility for the treatment, namely the introduction of suffrage during the formative years. By adding men as a control group we can subtract the effect of other possible changes between socialization contexts - such as educational expansion and economic growth - from our estimated treatment effect. The choice of men within the same country is a particularly powerful strategy, as both men and women in the same country will be exposed to the same electoral and regulatory environment.

By adding the control group, we supplement our between cohort comparison (just women) with a within cohort comparison (between men and women). The difference in turnout of men socialized in the periods before and after the introduction of female suffrage accounts for any generational (or aging) differences in the propensity to vote that result from a change in the socialization contexts other than the introduction of female suffrage. In effect this design is comparable to a difference-in-difference identification strategy, where we do not observe individuals before and after a treatment, but rather cohorts of voters that were exposed to the same electoral contexts when growing-up.

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<sup>7</sup> This is the equivalent of time variant unobservables for observations of the same unit over time like a US state used in the well-known study by Card and Krueger (1993). In our case the "same unit" is women, and pre- and post-treatment observations of women, are pre- and post-suffrage cohorts of women.

## 3.2 Case study: Greece

We choose Greece as our country case in which to apply our difference-in-difference identification strategy.<sup>8</sup> Greece has a long history of regular elections beginning in the 19th century, and since the beginning of the 20th century all men were given unrestricted suffrage. Women were given unrestricted suffrage in 1956. Greece is an ideal case for applying our approach because at each stage suffrage was expanded fully without a gradually lifting of voting eligibility criteria such as property or literacy. Thus before the introduction of female suffrage, we know that no women could vote, but all men could. Whereas after the introduction of suffrage in 1956, we know all women had equal voting rights to men, thus post-1956, both men and women were treated equally.

To ensure that we know exactly what “treatment” each cohort experiences in their formative years and to prevent blurring of distinct cohort experiences, we clearly demarcate the cohorts that experience full suffrage during all of their formative years from those that experienced full suffrage in some of their formative years and those cohorts that experienced only male suffrage. So our “anchor” cohort is those born from 1935 to 1944 (Cohort 4). Greeks born in 1935 would have turned 21 in 1956 in time to start voting when full female suffrage was introduced and would be the first birth-year to experience the maximal dose of equal suffrage in their formative years (FY). We then group cohorts going forwards and backwards in 10-year cohorts:

- **Cohort 1:** Birth 1900-1914; No FY with equal suffrage
- **Cohort 2:** Birth 1915 or 1924; No FY with equal suffrage
- **Cohort 3:** Birth 1925-1934; Part of FY with equal suffrage
- **Cohort 4:** *Birth 1935-1944; First cohort to experience equal suffrage in all FY*
- **Cohort 5:** Birth 1945-1954; Equal suffrage in all FY
- **Cohort 6:** Birth 1955-1964; Equal suffrage in all FY

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<sup>8</sup> The detailed introduction of the data and variables used here are outlined in the section below, on the global analyses.



- **Cohort 7:** Birth 1965-1974; Equal suffrage in all FY
- **Cohort 8:** Birth 1975-1984; Equal suffrage in all FY
- **Cohort 9:** Birth 1985-onwards; Equal suffrage in all FY

Our final model thus becomes,

$$\begin{aligned}
Pr(y_i = 1) = & \alpha + \beta_1 Female_i + \beta_2 Educ_i + \sum_{j=2}^7 \theta_j (Cohort_{i,j+1}) \\
& + \sum_{j=2}^7 \gamma_j (Cohort_{i,j+1}) * (Female_i) \\
& + \sum_{t=2}^{10} \phi_t (Year_{i,t+1}) + \sum_{m=2}^7 \theta_m (Age_i) + \varepsilon_i,
\end{aligned} \tag{2}$$

The quantities of interest are the  $\gamma_k$  coefficients which capture the unbiased "treatment effect" of having suffrage in one's formative years. The reference categories are the youngest (9th) cohort, the youngest 10-year age category (30-39 years old)<sup>9</sup>, and the first available survey year (1979). Even though men and women would have experienced very similar environments in their formative years particularly in terms of election characteristics, earlier cohorts would not have equal access to education. In so far as education might influence turnout habit formation, for example through social network formation, we control for education to achieve greater parity in treatments.

We expect that when a certain cohort of men and women had equal suffrage (namely equal opportunity) in their formative years there should be no gender gap in turnout: therefore for that cohort the coefficient on the interaction term between gender and cohort  $\gamma_k$  should be zero reflecting their equal treatment. Thus we expect to see a gender gap in turnout for cohorts in which only men had suffrage, but no gender gap for cohorts with equal suffrage.

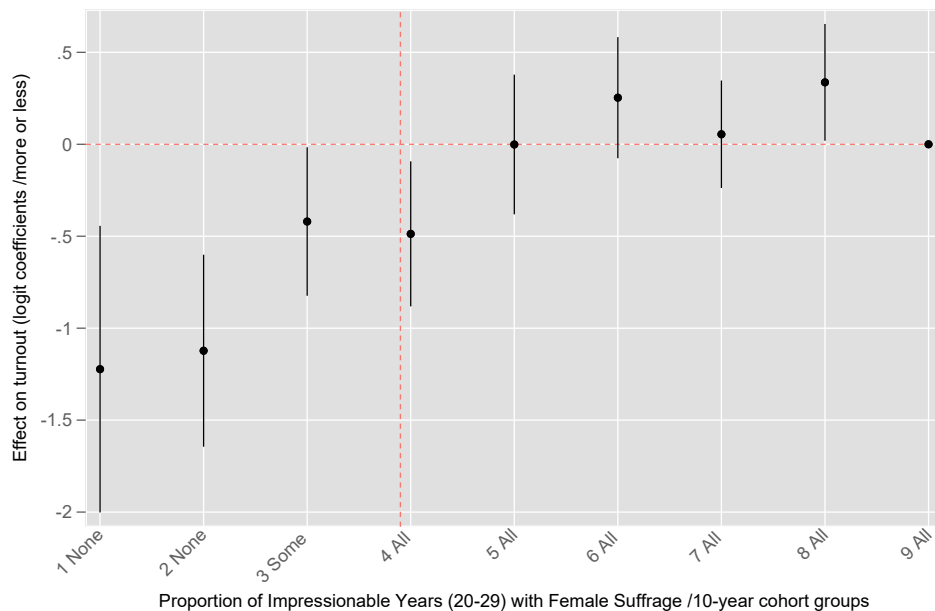
Figure 2 plots the  $\gamma_k$  coefficients (see model 2), which directly show the presence of a

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<sup>9</sup> As we are interested in capturing turnout "post-treatment", we look at people who have completed their formative years as we do for the global analysis. Therefore all respondents aged below 30 are excluded from the analysis.

gender gap. Looking at the coefficient for the interaction term rather than marginal effects of gender ensures that we also take into consideration whether the gender gap could be affected by fluctuations in turnout among men rather than women. We can clearly see that for cohorts in which only men had suffrage in their formative years, women are less likely to vote later in life. Whereas cohorts in which men and women received equal suffrage rights in their formative years, the gender gap is either smaller or non-existent. These findings clearly suggest that when women have equal opportunities to vote to men in their formative years, the propensity to vote later in life is equalized across genders.<sup>10</sup>

**Figure 2:** Gender Gap in Voter Turnout for Pre- and Post-Female Suffrage Cohorts (in Greece)



*Note:* Cohorts after red line, experienced maximum dose of full suffrage in formative years. The results of the full model, including all coefficients are reported in Appendix 1.1.

Also all the post-democratization cohorts, those who started voting after 1974 when the military dictatorship fell, (cohorts 6 onwards) display a lack of gender gap; this indicates that there is no underlying long-term mechanism that might be driving increasing turnout levels

<sup>10</sup> These effects of equal treatment hold true even for the cohorts that had their formative years under the military dictatorship (1967-1974) when both men and women had equal suffrage but no elections were held; for this cohort there is no gender gap as expected under conditions of equal treatment across genders. See Appendix 1.3.

among women such as changing political norms.<sup>11</sup> If there was an underlying mechanism then we would expect female turnout to eventually overtake turnout among men, reversing the gender gap. However, less expectedly, the immediate post-suffrage cohorts still display a slight gender gap. This maybe because of maternal socialization: the first cohort of women to receive suffrage would have no role models among older women.<sup>12</sup>

To assess the robustness of these results we test the main assumption underlying difference-in-difference analysis, namely the parallel trends assumption. Under this assumption, trends in the outcome variable before treatment should be the same across treatment and control groups. In the case of our analysis, this means that men and women experienced parallel trends in turnout behavior before treatment. According to this assumption, before-treatment men and women should respond the same way to electoral characteristics and other period shocks and both genders should also experience the same life-cycle processes.

We assess these assumptions of parallel period and ageing in two ways: descriptively and through the estimation model. Firstly, we look descriptively at the relationships between ageing, periods and the propensity to vote for the pre-suffrage cohorts (both genders follow the same patterns, see Appendix 1.2). Next we relax the parallel ageing and period effects assumptions in the model by allowing each element in turn to vary across genders.<sup>13</sup> The results hold overall, although when the parallel ageing effects are allowed to vary, the gender gap for the oldest cohort loses significance as it has very few observations. In Appendix 1.3 we replicate this entire analysis for Greece using more a nuanced cohort grouping that

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<sup>11</sup> We tease out these effects of these contextual periods in Appendix 1.3. The results are even clearer: when men and women have equal opportunities including no elections, there is no gender gap.

<sup>12</sup> This same pattern where the immediate post-suffrage cohort still displays a gender gap has also been found in the American context for the first cohort to receive female suffrage after 1920 (Dinas and Stoker 2014).

<sup>13</sup> To allow ageing to vary across genders in the first model, age categories are interacted with gender. Then to allow period effects to vary across gender, we interact survey years with gender in a second model. The results remain the same. Next using estimations from the previous models, we also show the predicted probabilities of voting for men and women across periods and age categories, see Appendix 1.2 for more details. The results show that men and women respond the same way to period effects and ageing. Also, we examined whether there are other plausible political and social changes that coincided with the introduction of female suffrage in Greece that could provide alternative explanations. We have found no other plausible changes as explained in Appendix 1.3.

correspond to the various phases of more and less competitive elections that Greece went through in the 20th century, including the period of the military dictatorship during when no elections were held. The results consistently show then when men and women have equal opportunities to vote there is no gender gap - a gender gap only appears when men had opportunities to vote in their formative years but women did not.

Based on these findings we confirm H1. Having the opportunity to vote has a long-term positive effect on turnout.

## **4 Election Opportunity and Competition: A Global Analysis**

In this section, we present a global test of both hypotheses, including generations from 106 countries that came of age since the end of World War I. The analyses confirm the findings of our difference-in-difference models, presented above, providing further external validity in confirmation of H1. Despite the power of a difference-in-difference model as a causal identification strategy, we could not assess the effects of variation in the number of opportunities on turnout habit formation nor whether the level of competitiveness of these election opportunities matters.<sup>14</sup> We further present an empirical test of both hypotheses.

The analysis presented below models individual turnout for people aged 30 or older (post-formative years) as a function of the election context in which she got socialized. The models presented here only include cohorts, which had full voting rights during their entire formative years.<sup>15</sup>

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<sup>14</sup> Firstly to attempt this we would need more survey data on pre-suffrage cohorts both in Greece and other countries which does not exist. And secondly, comparing gender gap differences between country contexts would raise issues of accounting for other confounding factors apart from variation in number of opportunities and competition. We therefore now turn to the alternative global regression analysis which allows us to look at the effects of variation on these two factors.

<sup>15</sup> We use the V-Dem variable “Share of population with suffrage” (`v2x_suffr`) to determine universal suffrage.

## 4.1 Individual-level Data

To test our hypotheses, we merge existing, publicly available survey data from 106 countries, including well-established democracies as well as current and former dictatorships. We chose the datasets that have been designed to be fielded in several countries, which ensures that questions are less country-specific but rather to travel across borders. The newly created harmonized public opinion dataset combines 766 (country x wave x study) existing surveys.<sup>16</sup> We harmonized the data of the following public opinion studies (including the years that they were fielded):<sup>17</sup>

- World Values Survey (WVS), 1981-2014
- International Social Survey Project (ISSP), 2002-2013
- Asian Barometer (ANB), 2001-2014
- Afrobarometer (AFB), 1999-2015
- Americas Barometer (AB), 2004-2014
- European Social Survey (ESS), 2002-2014
- Eurobarometer (EB), 1970-2002
- Comparative Study of Electoral Systems (CSES), 1996-2015

Pooling together all these datasets gives us about 800,000 respondents for which we have valid data on the dependent variable - turnout - and all control variables. The different survey questions included in the diverse datasets were harmonized so that a joint analysis is possible. More details on the question of harmonization decisions can be found in Appendices 4 and 5.<sup>18</sup>

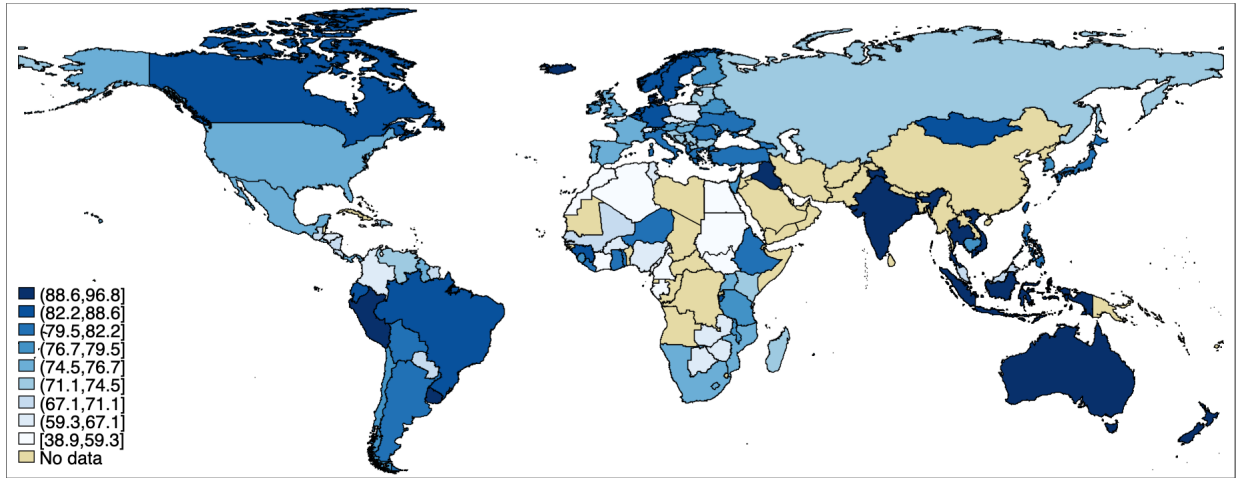
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<sup>16</sup> Appendix 3 lists all countries and provides country profiles, including the average turnout, the oldest and youngest birth years included in the analysis, the years that surveys were fielded in each country and average scores on key macro election variables during respondents formative years. Entries only include respondents 30 and older, parallel to the inclusion criteria for the main models presented in Table 1.

<sup>17</sup> In order to capture potential study-design effects, the models presented below include dummy variables for each of these studies. These study fixed-effects (FE) also capture any specific question wording effects by introducing study-specific intercepts.

<sup>18</sup> More details about the data harmonization process can also be found here: [website excluded for author anonymity]

**Figure 3:** Average country turnout levels (in %)



Source: Harmonized global public opinion data. Diverse sources.

#### 4.1.1 Measuring Turnout

Our dependent variable is measured using self-reported turnout in the last national election, which in most cases refers to legislative elections and in some to presidential elections. The variable is measured as a dummy variable with 1=turnout; 0=abstention.<sup>19</sup> Figure 3 gives us an illustration of average turnout across the 106 countries that are included in our sample. Darker shades indicate higher average turnout across all surveys for which data is available for each country. From this figure, no clear pattern emerges. Some old established democracies such as Canada or Scandinavian countries have high turnout, while others have just average to low turnout. The interesting descriptive finding relates however to current autocracies or new democracies. Countries such as Iraq, Vietnam and Indonesia exhibit high turnout, while turnout in African countries is generally quite low. From Figure 3 it is inconclusive whether democracies and autocracies produce different voting patterns.

<sup>19</sup> The aggregated survey and official turnout levels by country and survey year correlate by  $R = 0.60$ , with an average of 7% over-reporting. Official election turnout is based on data by IDEA and NELDA (see Coppedge et al. 2018: 79). It is well documented that turnout is over-reported in surveys (Karp and Brockington 2005). The difference between average reported and actual turnout is only weakly correlated with levels of democracy ( $R = -0.13$ ) and logged GDP/per Capita ( $R = -0.18$ ). We therefore do not believe that our paper suffers from any additional biases than any other survey-based turnout study.

### 4.1.2 Individual-level Control Variables

Smets and Van Ham (2013) provide a meta-analysis of the individual-level effects that affect turnout. We are able to control for the most important covariates, including age, age<sup>2</sup>, gender, education level (primary or less, secondary, post-secondary)<sup>20</sup> and a dummy variable whether a respondent is working as opposed to being unemployed, retired or any other reason.<sup>21</sup>

## 4.2 Measuring Election Characteristics

In order to capture the nature of national elections we rely on data from the Varieties of Democracy (V-Dem) project, version 8 (Coppedge et al. 2018a).<sup>22</sup> The unit of observation in our sample is country-year (1920-2015), for the 106 countries for which we have survey data. The starting year of 1920 implies that the oldest respondents in our survey were born in 1900 and turned 20 in 1920.

First of all, we need to measure **election opportunities**, which citizens had during their formative years. This is captured by counting the number of (first-order) legislative and presidential elections that a voter was exposed to between the ages of 20 and 29. This count variable is generated using the sum of the cumulative number of lower chamber (V-Dem: v2e1locumul) and presidential elections (V-Dem: v2e1prescumul), which measure for every country how many elections took place since 1900 (Coppedge et al. 2018a: 77). For

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<sup>20</sup> For this we use the categorical variable that measures a person's highest educational degree. In some datasets education was measured as years of education or age of leaving school. The coding scheme to classify respondents into the three education groups based on this is explained in Appendix 5. Combining the education variables (categorical and measured from years) leaves only 2% still missing.

<sup>21</sup> Unfortunately, it is not possible to control a person's income or economic well-being beyond working, as the measures were too diverse to be harmonized.

<sup>22</sup> V-Dem is based on expert surveys, which cover in total about 400 indicators. Each country-year variable is coded by at least five experts, which are a mix of country nationals and country-topic experts. The final variables and indices are estimated using a Bayesian Item Response Model. More on the methodology of V-Dem can be found in Coppedge et al. (2018b). A recent comparison of the V-Dem data with the Polity2 and Freedom House data, shows that V-Dem outperforms the other two (Boese 2019), especially in terms of transparency and data construction.

every year, we subtracted the 10-year leap from the current election count. The election opportunity (EO) is hence calculated as:

$$EO_c = \text{Election count}_{c+10} - \text{Election count}_c$$

The value of  $EO_c$  is matched to every individual in the survey data when she was 20 years old, whereas  $c$  represents the age of 20 for every birth-cohort  $c$ . For example, if a country had 3 elections between 1960 and 1969, everyone who was aged 20 in 1960 would get an EO value of 3. In our set of 106 countries, the range of election opportunities of individuals ranges from 0 to 15 national elections that took place during their formative years.<sup>23</sup> As in less than 1% of cases, countries hold more than 8 national elections in a 10-year period, we truncate the variable at 8.<sup>24</sup>

Figure 4 illustrates our election opportunity measure for three countries. As an established democracy, the USA has very stable election counts, which varies between 7 and 8 for every 10-year period, depending on when the mid-term election fell. This implies that the election opportunities to participate in national elections is the same for all generations that came of age in the USA since 1920. The picture looks very different in Chile and Spain, which both experienced periods of autocratic rule. Franco did not allow for any elections, which implies that generations that came of age between 1936 and 1956 did not have any opportunities to vote during their formative years. Generations that followed had some opportunities to vote towards the later years of their formative period. Based on our theory

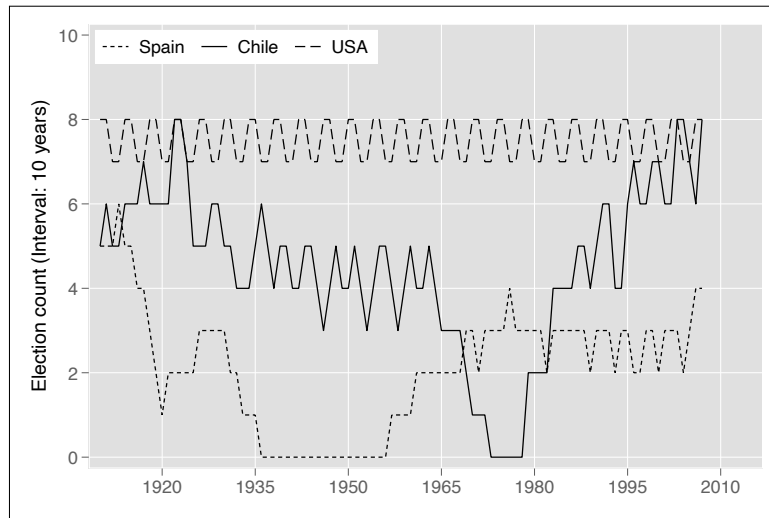
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<sup>23</sup> On average respondents experienced 3.6 elections during their formative years. 58 country-cohorts experienced no election at all between 20-29 of age. These cohorts come from 28 countries and on average only 2 cohorts per country are affected. In our individual-level data, 16,356 of respondents in this group have reported turnout today. As this group is very small, we refrain from dichotomizing this key variable to those without and with any number of elections during their formative years. However, when re-running M1 from Table 1 using this dummy variable, we replicate our main findings of a positive direct effect of having the opportunity to vote on later-life turnout ( $\beta = 0.014$ ; s.e. = 0.003), indicating a turnout difference of 1.4 percentage points between those that experienced no versus those that did experience elections during their formative years.

<sup>24</sup> As we show in Appendix 7, if we use the original variable, ranging from 1-15 and model the effect of election opportunity on turnout in a non-linear way, the positive linear effect plateaus at about 8 elections and the slightly declines. Examples of countries that had more than 10 elections in a 10-year period are: Germany (1923-32), France (1964-73) and Serbia (1990s and 2000s).



**Figure 4:** Number of national-level elections over time



Source: V-Dem, Coppedge et al. (2018a).

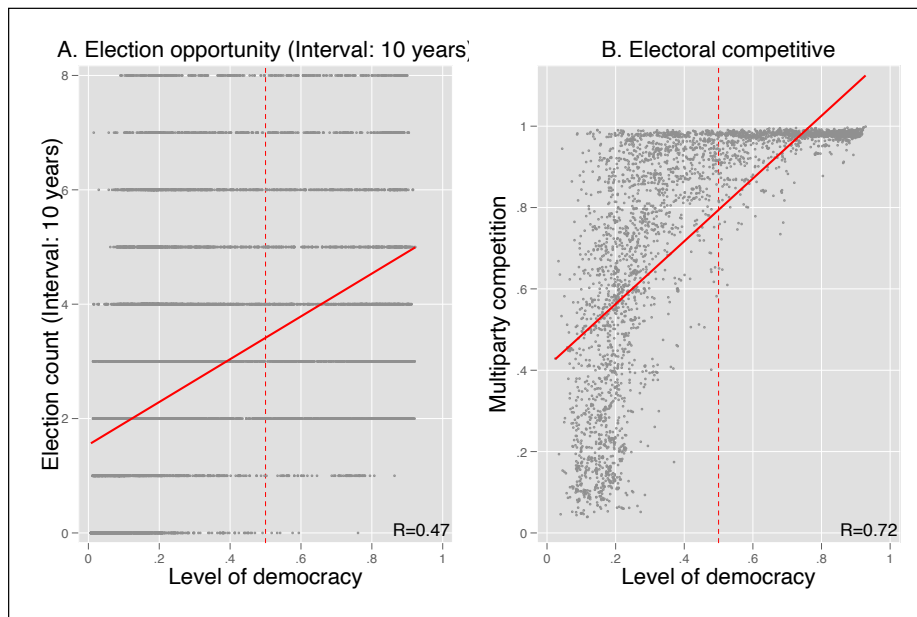
we would expect these generations to have significantly lower turnout rates than the Spanish voters that came of age before or after Franco. We see a similar picture for Chile, where Pinochet who was officially in power between 1973 and 1990 and who did not allow for national elections to be held. Based on our measure, elections have been used very regularly before and after Pinochet's rule.

As argued above, having the opportunity to vote might not be sufficient to induce a habit formation of voting. We hence explore the effect of the **electoral competitiveness** (EC), using an indicator that measures whether an election was multiparty and offered a meaningful choice to voters (V-Dem: `v2elmulpar`).<sup>25</sup> The variable ranges between 0 and 1, where higher values indicate more competitive elections. In the data analysis below we measure  $EC_c$  using 10-year averages for competitiveness of elections and match the value to respondents' formative years, when they were between 20-29 years old.

Lastly, for descriptive reasons and for analyses presented in the robustness section, we

<sup>25</sup> There are several other indicators that could be used to measure competitiveness of elections. However, we refrain from using closeness of the election or official turnout as a main variable to measure contestation, as it is doubtful how reliable election results are in authoritarian contexts (Simpser 2013). However, we use these available (potentially biased) data to replicate our findings. The results are reported in Appendix 12.

**Figure 5:** Correlations election context and level of democracy

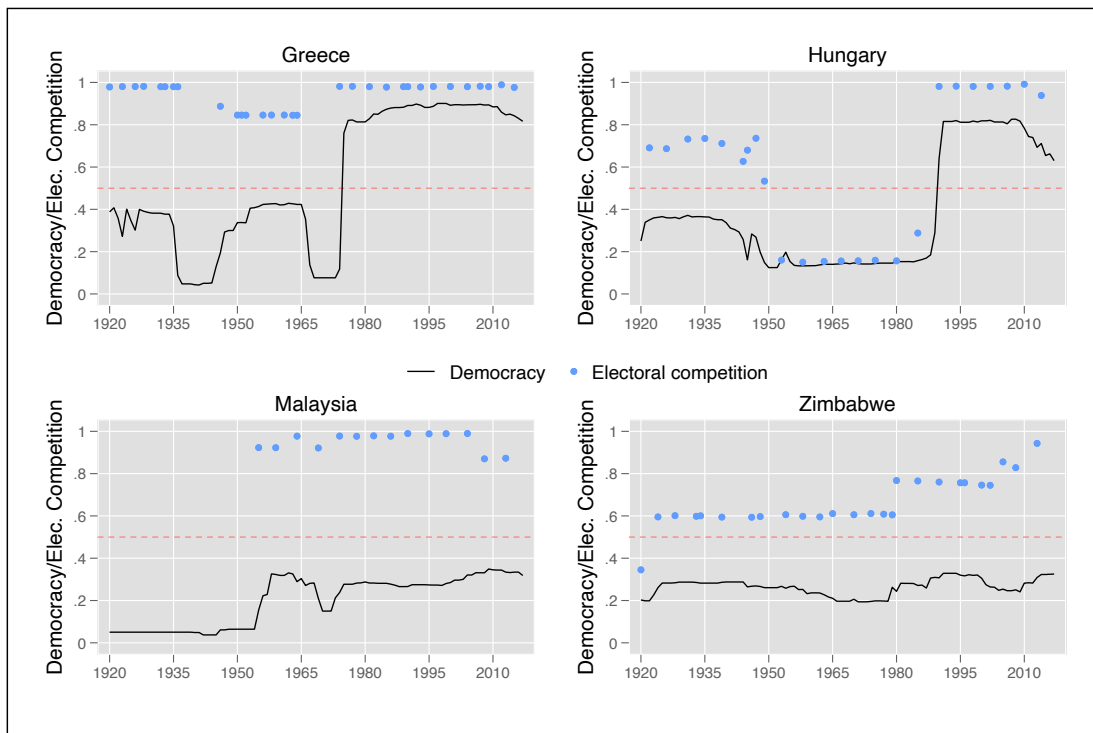


Source: V-Dem, 2018 (Coppedge et al. 2018a).

distinguish countries to be democratic or autocratic using the level of electoral democracy (V-Dem: `v2x_polyarchy`, ranging from 0 to 1, whereas higher values indicate more democratic) as well as a dichotomous variable to capture the regime type (V-Dem: `v2x_regime`). For the latter we group cases as autocratic if they are classified as either closed or electoral autocracies based on the V-Dem coding. The exact measurements and definitions of these macro variables are included in Appendix 6.

Before turning to the results predicting individual turnout and the impact of the election context, we further explore whether elections in autocracies and democracies differ, as assumed here. Figure 5 plots the election context against the level of democracy in a country. Each dot in the two scatterplots represents a country-year observation. The bold line illustrates the correlation between the two variables. The first graph plots the level of democracy against the election opportunity using the election count in every 10-year interval. There is a moderate positive relationship between these two variables ( $R=0.47$ ), as democracies (historically) tend to hold more national elections. However, the figure also shows considerable variation, with some autocracies (value below 0.5) holding numerous elections as well. Fig-

**Figure 6:** Country examples of election context



Source: V-Dem, 2018 (Coppedge et al. 2018a).

Figure 5.B illustrate the relationship between the level of democracy and electoral competition. Democracies appear to be more likely to hold multiparty elections ( $R=0.72$ ). Per definition, democracies score very high on competitiveness of elections, however the plot shows considerable diversity in terms of contestation in autocracies, which is what motivates this paper. Some autocracies score close to 1 on the item, indicating very high electoral competition.

To give some qualitative examples of meaningful elections in autocracies we picked four cases, which represent different types of authoritarian elections. Figure 6 plots electoral competition as well as the level of democracy for Greece (A), Hungary (B), Malaysia (C), and Zimbabwe (D). Greece and Hungary represents an example of mainly European countries, which held relatively competitive elections in the inter-war period, while the political system as a whole was not yet democratic. Malaysia and Zimbabwe are examples of (post-)Colonial legacies, which introduced a tradition of multiparty elections, while after independence being dominated by one-party authoritarian regimes (Case 2004; Sithole 1997). Malaysia is running competitive elections since its independence in 1957, despite its overall

low level of democracy. In Zimbabwe, elections were quite competitive during British colonial power until 1980 and even increased in levels of competitiveness after independence to signal legitimacy of the ZANU-PF power (Bratton 2008).

#### 4.2.1 Macro Controls

A vast literature, predominantly studying democracies, has shown that turnout is affected by the political and economic context (Geys 2006). We therefore include the following macro controls, measured at the time of the survey: Turnout in last election (V-Dem: v2eltrnout), average closeness of (last) parliamentary/presidential election(s),<sup>26</sup> current level of (electoral) democracy (V-Dem: v2x\_polyarchy), log GDP per Capita (based on Maddison Project Database 2018), and the log population (based on Clio Infra (clio-infra.eu)).

### 4.3 Statistical Model: Linear Regression

To predict the outcome variable - self-reported turnout in the last national election - we use a simple linear regression model.<sup>27</sup> The model can be expressed as:

$$y_{it} = \alpha + \beta_1 EO_c + \beta_2 EC_c + \beta_3 EO_c \times EC_f + \sum_{m=4}^M \beta_m * X_{mi} + \sum_{l=1}^L \gamma_l * Z_{lc} + \sum_{c=2}^{106} \gamma_c * C_c + \sum_{t=2}^{32} \gamma_t * T_t + \sum_{s=2}^8 \gamma_s * S_s + \varepsilon_i, \quad (3)$$

where the probability to turnout ( $y_{it} = 1$ ) is a function of a person's individual-level controls  $X$  and the electoral context under which she was socialized.  $\beta_1$  captures the direct effect of election opportunity ( $EO_c$ ) during a voter's formative years on her voting habit

<sup>26</sup> To create this variable we calculated the difference between party/candidate that received most votes and runner-up using the V-Dem variables: v2ellovtlg - v2ellovtsm. Data in-between elections was held constant to the closeness of the last election.

<sup>27</sup> In Appendix 7 we further replicate the main model - M4 - using logistic regression models, which have been criticized for their strict assumptions.

formation, which tests hypothesis 1. Further,  $\beta_3$  captures the proposed moderating effect of the electoral competition ( $EC_c$ ) on the impact of election opportunity during respondents' formative years  $c$ . If  $\beta_3$  is positive and significant, hypothesis 2 would be confirmed. Further,  $\beta_2$  estimates the direct effect of the competitiveness of elections on a voter's long-term voting behavior. Model (1) further includes country (C), survey year (T), and study (S) fixed effects, as well as a series of macro controls  $Z$  to capture the current context of a country that impacts individuals' electoral participation.

As we are particularly interested in the identification of generational differences in turnout and whether these can be explained by varying electoral context during each generation's formative years, we pay particular attention to the identification of the cohort effect, which in our model is captured by the proxy variables of the election context during a generation's formative years. We further control for the non-linear age effect (including age and age<sup>2</sup>) as well as the period effects, by including period dummies of the survey year. More on the identification of these age, period, cohort effects in [Neundorf and Niemi \(2014\)](#).

We are confident that our key explanatory variables - election opportunity and competitiveness - are exogenous to the current mobilization of voters and hence the outcome variable. As these variables are measured during a respondents formative years (aged 20-29), increasing the competitiveness of elections (at  $t$ ) will only have an impact on voter mobilization in the future (through habit formation). This is why our models only include people that are 30 and older to clearly separate past election contexts from contemporary electoral behavior.

In the next section we will test whether the level of electoral competition is a precondition for voting habit formation among citizens or whether simply having the opportunity to participate in an election is sufficient.

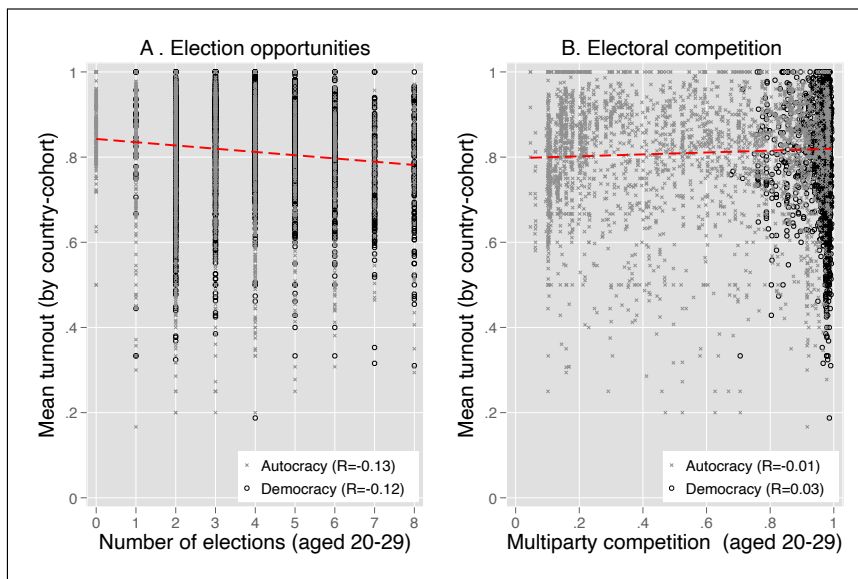
## 4.4 Results: Global Analysis

We present the results in three steps. First, we explore the relationship between current turnout and respondents' formative socialization context descriptively. Secondly, we present the direct effects of the election context on the formation of turnout habit. Thirdly, we investigate the moderating effect of election competition on the impact of voting opportunities on the formation of turnout habits.

### 4.4.1 Descriptive results

We first explore the relationship between current turnout and respondents' formative socialization context descriptively. Figure 7 plots the average turnout for each birth year per country (age  $\geq 30$ ) against our two key variables. As with our models below, we only include cohorts, which enjoyed 100% suffrage during their formative years. Figure 7.A investigates the descriptive relationship between turnout and election opportunity, while Figures 7.B explores the relationship between turnout and the competitiveness of elections. All election variables are averaged across respondents' formative years, aged 20 to 29.

**Figure 7:** Average turnout (by country-cohort) and socialization election context



*Note:* We calculated average turnout for each birth year in each country in the data when respondents are above 29.

The figure shows that the bivariate correlations between turnout and election context is weak to moderate. It appears that descriptively more election opportunities as well as more competitive elections during a respondent's formative years leads to slightly lower turnout in later life. This is somewhat surprising and will be tested more rigorously in the statistical models below. Figure 7 again confirms that the range of competitiveness is truncated in democracy, but less so in autocracies, where respondents in our sample growing-up during autocratic times have experienced a much larger variation in electoral contestation than their peers in democracies.

#### 4.4.2 Election opportunities and turnout

Table 1 presents the results predicting respondents' current turnout level. Model 1 and 2 first present the baseline models, where we only control for age, which is essential as we are interested in investigating the generational differences in turnout, which are proxied by the socialization election context. The baseline models further include country, year and study fixed effects, which make these models very restrictive, focusing on the intra-country variation in electoral socialization experiences. First we turn to the election opportunity hypothesis. Model 1 tests how the opportunity to vote (or the absence of elections) during a respondent's formative years affect her turnout in later life.<sup>28</sup> Model 1 confirms the positive impact of election opportunities on later-life turnout habits. Every additional election that a voter was exposed to during her formative years, increases the likelihood of participating in elections by 0.001, which translates into 0.1 percentage points.

In Model 2, we add our variable capturing electoral competition, focusing firstly on the direct effect of these on turnout habits and secondly, we scrutinize the robustness of the election exposure effect. Overall, there is no direct effect of the level of competitiveness.

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<sup>28</sup> We also investigate the functional form of the effect. Based on our results, the effect is slightly curve-linear. Socialization contexts of more than nine election experienced during the 10-year formative years, lead to election fatigue. As argued above, as there is only very few cases of these high election count, we truncate out main variable at 8 election. The predicted turnout levels are presented in Appendix 8.

**Table 1:** Linear regression predicting individual-level turnout by socialization election context

	Baseline		Full specification	
	Model 1	Model 2	Model 3	Model 4
Age (30+)	0.012*** [0.000]	0.012*** [0.000]	0.012*** [0.000]	0.012*** [0.000]
Age2	-0.000*** [0.000]	-0.000*** [0.000]	-0.000*** [0.000]	-0.000*** [0.000]
<u>Socialization context</u>				
Election opportunity	0.001*** [0.000]	0.001** [0.000]	0.001*** [0.000]	-0.010*** [0.001]
Election competition		-0.004 [0.003]	-0.003 [0.003]	-0.034*** [0.005]
Elec. Opportunity x Elec. Competition				0.013*** [0.002]
Individual-level controls			✓	✓
Macro-level controls			✓	✓
Country FE	✓	✓	✓	✓
Study FE	✓	✓	✓	✓
Year FE	✓	✓	✓	✓
Intercept	0.464*** [0.012]	0.469*** [0.013]	0.238** [0.097]	0.269*** [0.097]
N of respondents	786,625	770,210	770,210	770,210
R <sup>2</sup>	0.066	0.067	0.075	0.075

*Significance levels:* \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . *Source:* Global Harmonized Public Opinion data and V-Dem. *Note:* The table reports coefficients and standard errors based on a linear model. Individual-level controls: gender, education, working. Macro-level controls (all measured at time of survey): level of electoral democracy, closeness of the election, macro turnout at last election, logged GDP per Capita, logged population. Coefficients are reported in Appendix 7, which further replicates the results of M4 using logistic regression.

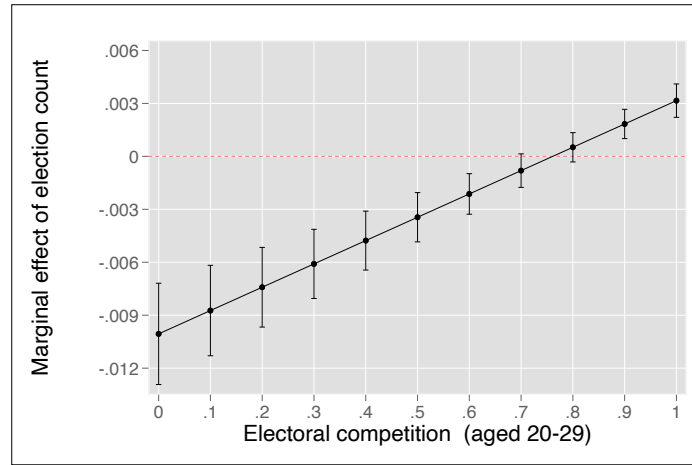
These core findings are robust when adding individual and macro-level controls (Model 3).<sup>29</sup>

Based on the results presented in this section, we can conclude that having the opportunity to vote during one's formative years has a direct effect on later-life turnout habits (H1). This confirms our findings presented in the first empirical selection using Greece as a case study and female suffrage as an identification strategy.

<sup>29</sup> Coefficients for the control variables are listed in Appendix 7. Results are as expected. Turnout exhibits a strong positive impacts of education and working. As has been documented, economically more developed countries exhibit lower turnout rates. Interestingly, the current level of democracy does not affect individual-level turnout. This confirms the efforts of non-democratic regimes to boost turnout if they hold elections, which makes turnout levels in autocracies and democracies indistinguishable.



**Figure 8:** Marginal effects of election count on turnout by electoral competition (during formative years)



*Note:* The predicted values are based on Model 4, presented in in Table 1. 95% confidence intervals.

#### 4.4.3 Election opportunity and competition

We further test whether the election experience effect is conditional on the competitiveness of the elections. In order to test this, we interact the number of elections that a respondent was exposed to during her formative years with the electoral competition experienced during that time. The results of these interactions are plotted in Figure 8 and are based on Model 4, presented in Table 1. Here we plot the marginal effects of election opportunity over the level of electoral competition.

When we condition the effect of election opportunity on whether these elections were competitive or not, we find a clear heterogeneous effect of election opportunities on turnout habit formation. As we see in Figure 8, the slope of the marginal effects of election count significantly changes based on whether elections during one’s formative years were competitive or not. The figure implies that respondents who were exposed to noncompetitive elections are actually less likely to turn out in later life. The positive habit formation effect can only be found in cases when elections are clearly multiparty. The result of this interaction model implies that habit formation of election opportunities during a voter’s formative years are only positive in countries with competitive elections. Authoritarian elections that

are noncompetitive could hence suppress levels of turnout in later life.

Lastly, we can compare the relative impact of the election context on turnout habits. Generations that grew-up under noncompetitive elections (multiparty = 0), experiencing one versus the maximum of eight, reduces the propensity to vote today by about 8 percentage point. On the other extreme, those that grew-up under perfect multiparty elections, experiencing one or eight elections, will increase turnout by 2.5 percentage points. To compare the magnitude of these effects, we plot the predicted values for other covariates for comparison (based on M3) in Appendix 9. For example, we know from extensive research that education has a very strong and persistent effect on turnout ([Smets and Van Ham 2013](#)). Based on the model, the predicted difference between those with only primary education and those who have a university degree is 8 percentage point difference, which is about the same as those strong as the socialization effect of electoral opportunities under noncompetitive elections. Further, our effect size of election opportunities of 2.4 percentage points under competitive elections is comparable to the impact of the closeness of the election, which is measured as the current election on current turnout. As demonstrated by [Geys \(2006\)](#), the closer the election outcome, the higher is turnout. Our findings confirm the pattern.

#### **4.4.4 Sensitivity Analyses**

Figure 8 plots the most important finding of our global analysis, confirming hypothesis 2. To test the robustness of our findings, we scrutinize our results in several ways. Firstly, we investigate whether the relationship between election opportunity and competitiveness is driven by advanced liberal democracies in our sample. We therefore re-estimated the models on a reduced sample of about 350,000 respondents from 94 countries, excluding all cohorts that grew-up in a liberal democracy, the highest category based on the V-Dem regime classifications. Based on this reduced sample, presented in Appendix 10, we confirm that the electoral context in non-liberal countries has strong long-term effects on voter's electoral participation.

Secondly, in Appendix 11 we replicate the main findings, using two alternative specifi-

cations of formative years. First, we reduce the length of the formative years to five years from 20-24 (which for most voters would only include their first election) and second, we increase the length to 15 years from 20-34. The results are weaker (especially when reducing the formative years to only 20-24), but overall confirm hypothesis 2.

Thirdly, we test the sensitivity of our findings to the use of a single item measure of election competitiveness. We hence replicate the main models using various other indicators of the quality and meaningfulness of elections, as listed in Table 2.<sup>30</sup> The results of these additional tests are presented in Appendix 12 and the findings largely confirm our findings, especially when using closeness of elections, EMB independence, opposition intimidation, and whether elections were overall free and fair. The results are reversed for vote-buying and when using the NELDA measure for opposition harassment. The findings, for example, suggest that more vote-buying during one's formative years has a long term positive impact on the propensity to participate in elections.<sup>31</sup> These two items are the least correlated with our measure of multiparty competition ( $R=0.168$  for vote-buying and  $R=0.256$  for the NELDA measure; see Appendix 12.2), indicating that the two variables might capture another dimension of the election than contestation.

In sum, using a global, historical approach, we demonstrate that having the opportunity to vote in elections has a long-term positive impact on individual's propensity to participate in elections. However, this is only the case if elections are meaningful, which is always the case in democracies, but can also be the case in dictatorships. If elections are noncompetitive, holding elections can have a negative impact on turnout habit formations and create jaded voters.

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<sup>30</sup> Details about each variables and their coding are provided in Appendix 12.1 All measured as average scores during a respondent's formative years (aged 20-29).

<sup>31</sup> This is a fascinating finding and could indicate that this form of mobilization leads to a habit formation, similar to the intrinsic motivation of influencing the election outcome, as assumed contestation affects long-term turnout habits. Future research should further explore this finding.

**Table 2:** Overview of alternative measures for election contestation

Measure	Expected impact on election contestation	Source	Results confirmed
Closeness of the election	Overwhelming margins of victory indicate low uncertainty and a foregone outcome	V-Dem	yes
Vote buying	Quality of election: Votes might not reflect genuine support	V-Dem	no
Electoral fraud	High levels of fraud: Opposition has a diminished chance of winning	V-Dem	weakly
Independence of the Election Management Body (EMB)	Without an independent EMB, the outcome can be systematically disadvantaging the opposition	V-Dem	yes
Opposition intimidation Harassment of the opposition	Affect the level playing field of the election, disadvantaging the opposition	V-Dem NELDA	yes no
Campaign public finance	No access of opposition to publicly financed campaign will imbalance the competition	V-Dem	weakly
Election overall free and fair	Affect how much the outcome reflects the will of the people	V-Dem	yes

## 5 Conclusion

Traditionally, in the literature on authoritarianism, elections have been viewed as a threatening source of uncertainty for autocratic leaders (Schedler 2013), and as something they would only permit out of necessity. However, as the unabated continued rise of electoral authoritarianism shows, ever more authoritarian regimes are holding elections, which means ever more citizens experience elections in their formative years. So understanding the effects these experiences have on voting behaviour in long-term is ever more crucial. These effects will have implications both for our understanding of electoral authoritarian resilience as well as democratization and potential for backsliding.

In this paper, we examine whether early experiences of authoritarian elections have habit forming effects, and whether the meaningfulness of these elections has a modifying effect on individuals' turnout propensities. We find that indeed the opportunity to vote promotes the development of habitual voting as the extensive literature on democratic voting would suggest. People who grew up in autocracies, such as Franco's Spain which did not hold regular elections, are far less likely to vote later in life compared with people who grew up in Mexico, where regular elections were held.

However, the meaningfulness of these elections does have an important modifying effect. Increased opportunities to vote reinforce habit formation more strongly in new democracies with increasing contestation of elections. The strongest modifier of the habit forming effects of electoral opportunities is the level of true political competition. In fact, under autocracies that have no meaningful political competition, in other words regimes that pre-select a single candidate for each office, increased experiences of such elections has deleterious effects on habit formation: the more experiences of uncompetitive elections a newly eligible voter has in her formative years, the less likely is this voter to become a habitual voter later in life.

Our finding that increased experiences of meaningless, that is uncompetitive, elections suppresses the formation of habitual voting has strong implications for future transitions to democracy. Ruling with the use of elections is becoming an increasing popular method among authoritarian leaders today. Elections appear to be more than simply a concession to political pressures ([Simpser 2013](#)). In the past, dictators such as Hitler demonstrated dominance by making people participate in mass rallies. Today dictators make people pretend to be democratic voters. However, as we have shown here, just giving people the opportunity to participate in elections is not enough to turn them into habitual voters. The true competition between parties and candidates in elections is an important pre-requisite to make the election opportunity meaningful. As an ever great proportion of citizens experience elections for the first time in poor quality elections, in any future transitions to democracy, the majority of citizens in these countries may be reluctant and jaded participants in democratic elections. To put it simply, adjusting from elections as a stage-managed spectacle to a real means of allocating the power to govern may not come easily to today's authoritarian citizens.

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## Supplementary Information

# Learning to Vote under Democratic and Authoritarian Election

## Contents

<b>1</b>	<b>Introduction</b>	<b>3</b>
<b>2</b>	<b>Voter Motivation and Electoral Contestation in Autocracies</b>	<b>6</b>
2.1	Turnout Habit Formation and Election Characteristics . . . . .	9
<b>3</b>	<b>Election opportunity: Female Suffrage as an Identification Strategy</b>	<b>11</b>
3.1	Identification Strategy . . . . .	12
3.2	Case study: Greece . . . . .	14
<b>4</b>	<b>Election Opportunity and Competition: A Global Analysis</b>	<b>18</b>
4.1	Individual-level Data . . . . .	19
4.1.1	Measuring Turnout . . . . .	20
4.1.2	Individual-level Control Variables . . . . .	21
4.2	Measuring Election Characteristics . . . . .	21
4.2.1	Macro Controls . . . . .	26
4.3	Statistical Model: Linear Regression . . . . .	26
4.4	Results: Global Analysis . . . . .	28
4.4.1	Descriptive results . . . . .	28
4.4.2	Election opportunities and turnout . . . . .	29
4.4.3	Election opportunity and competition . . . . .	31
4.4.4	Sensitivity Analyses . . . . .	32
<b>5</b>	<b>Conclusion</b>	<b>34</b>
<b>1</b>	<b>Difference-in-difference - Greece</b>	<b>41</b>
1.1	Estimates of main diff-diff models plus relaxed parallel trends assumption . . . . .	41
1.2	Descriptive and predicted period and age trends . . . . .	43
1.3	Alternative cohort specification . . . . .	45
<b>2</b>	<b>Country profiles - Global analyses (N=106)</b>	<b>48</b>
<b>3</b>	<b>Question wording of turnout</b>	<b>51</b>
<b>4</b>	<b>Harmonizing education levels</b>	<b>52</b>
<b>5</b>	<b>Macro variables (Coppedge et al. 2018a)</b>	<b>53</b>
5.1	Elections multi-party (v2elmulpar) . . . . .	53
5.2	Electoral democracy index (v2x_polyarchy) . . . . .	53

5.3	Regimes of the world (v2x_regime) . . . . .	54
<b>6</b>	<b>Full results: Table 1</b>	<b>55</b>
<b>7</b>	<b>Non-linear effect of election opportunity on predicted turnout</b>	<b>56</b>
<b>8</b>	<b>Effect size - Predicted values for education and closeness of election</b>	<b>57</b>
<b>9</b>	<b>Robustness tests for interaction effects: Reduced sample - Only non-liberal country-cohorts</b>	<b>58</b>
<b>10</b>	<b>Robustness tests - Changing length of formative years</b>	<b>59</b>
<b>11</b>	<b>Robustness tests - Changing measures of election quality and meaningfulness</b>	<b>60</b>
11.1	Definition of variables . . . . .	60
11.2	Correlations between multiparty elections and additional measures . . . . .	64

# 1 Difference-in-difference - Greece

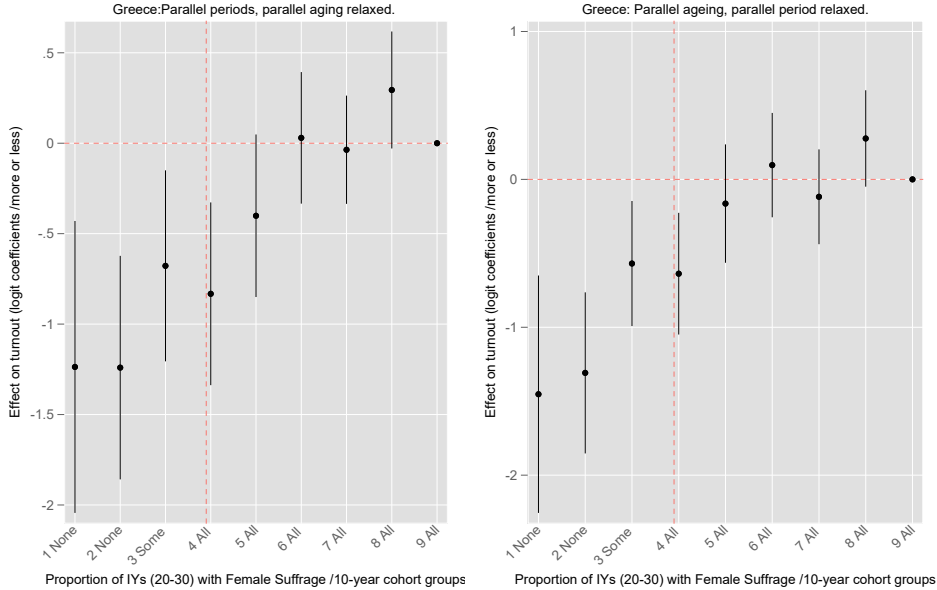
## 1.1 Estimates of main diff-diff models plus relaxed parallel trends assumption

**Table A.1: Diff-in-Diff Models (Greece)**

	Main		Parallel Age Relaxed		Parallel Period Relaxed	
	Coefficients	s.e.	Coefficients	s.e.	Coefficients	s.e.
Female	0.001	[0.134]	0.156	[0.175]	0.039	[0.257]
1.cohort	2.829***	[0.341]	2.837***	[0.349]	2.959***	[0.346]
2.cohort	2.829***	[0.248]	2.893***	[0.273]	2.937***	[0.254]
3.cohort	2.378***	[0.195]	2.531***	[0.225]	2.467***	[0.199]
4.cohort	2.371***	[0.192]	2.567***	[0.215]	2.465***	[0.196]
5.cohort	1.896***	[0.172]	2.122***	[0.187]	1.995***	[0.178]
6.cohort	1.324***	[0.140]	1.446***	[0.147]	1.421***	[0.146]
7.cohort	0.631***	[0.119]	0.681***	[0.120]	0.732***	[0.126]
8.cohort	0.046	[0.119]	0.069	[0.120]	0.084	[0.122]
9.cohort (Ref.)						
Female#1.cohort	-1.223***	[0.398]	-1.237***	[0.412]	-1.453***	[0.409]
Female#2.cohort	-1.123***	[0.266]	-1.241***	[0.315]	-1.308***	[0.278]
Female#3.cohort	-0.420**	[0.206]	-0.678**	[0.269]	-0.569***	[0.216]
Female#4.cohort	-0.487**	[0.201]	-0.832***	[0.258]	-0.638***	[0.210]
Female#5.cohort	-0.001	[0.194]	-0.401*	[0.229]	-0.164	[0.204]
Female#6.cohort	0.253	[0.168]	0.030	[0.186]	0.097	[0.180]
Female#7.cohort	0.054	[0.149]	-0.036	[0.153]	-0.118	[0.164]
Female#8.cohort	0.337**	[0.162]	0.294*	[0.165]	0.277*	[0.166]
Ages 30-39 (ref)						
Ages 40-49	-0.134*	[0.078]	-0.306***	[0.111]	-0.134*	[0.078]
Ages 50-59	-0.100	[0.104]	-0.229	[0.152]	-0.107	[0.104]
Ages 60-69	-0.076	[0.122]	-0.261	[0.187]	-0.079	[0.122]
Ages 70-79	-0.706***	[0.129]	-0.618***	[0.214]	-0.703***	[0.130]
Ages 80 and up	-1.010***	[0.062]	-0.925***	[0.085]	-1.007***	[0.062]
1988 (ref.)						
1989	0.365***	[0.118]	0.367***	[0.118]	0.259	[0.169]
1990	0.651***	[0.128]	0.657***	[0.128]	0.458**	[0.183]
1991	0.373***	[0.125]	0.380***	[0.125]	0.263	[0.179]
1992	0.436***	[0.126]	0.443***	[0.126]	0.322*	[0.180]
1993	0.833***	[0.131]	0.842***	[0.131]	0.769***	[0.188]
1994	0.889***	[0.123]	0.896***	[0.123]	0.761***	[0.174]
1995	0.610***	[0.145]	0.620***	[0.145]	0.594***	[0.207]
2002	0.656***	[0.122]	0.669***	[0.122]	0.692***	[0.177]
2004	0.810***	[0.125]	0.825***	[0.125]	0.789***	[0.182]
2008	0.836***	[0.129]	0.849***	[0.129]	0.930***	[0.185]
2009	1.399***	[0.155]	1.418***	[0.155]	1.497***	[0.219]
2010	0.301**	[0.123]	0.313**	[0.123]	0.278	[0.174]
Ages 40-49#Female			0.314**	[0.152]		
Ages 50-59#Female			0.233	[0.204]		
Ages 60-69#Female			0.307	[0.243]		
Ages 70-79#Female			-0.125	[0.264]		
Ages 80 and up#Female			-0.154	[0.114]		
1989#Female					0.208	[0.236]
1990#Female					0.381	[0.256]
1991#Female					0.216	[0.250]
1992#Female					0.23	[0.252]
1993#Female					0.127	[0.262]
1994#Female					0.268	[0.247]
1995#Female					0.034	[0.289]
2002#Female					-0.045	[0.239]
2004#Female					0.053	[0.244]
2008#Female					-0.152	[0.246]
2009#Female					-0.182	[0.300]
2010#Female					0.057	[0.232]
Primary Education (ref.)						
Secondary Education	-0.344***	[0.057]	-0.347***	[0.058]	-0.344***	[0.058]
Tertiary Education	0.183***	[0.067]	0.183***	[0.067]	0.180***	[0.067]
Constant	0.376**	[0.181]	0.279	[0.191]	0.342	[0.216]
Observations	23,109		23,109		23,109	

*Significance levels:* \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . *Source:* Global Harmonized Public Opinion data and V-Dem. *Note:* The table reports coefficients and standard errors based on a linear model.

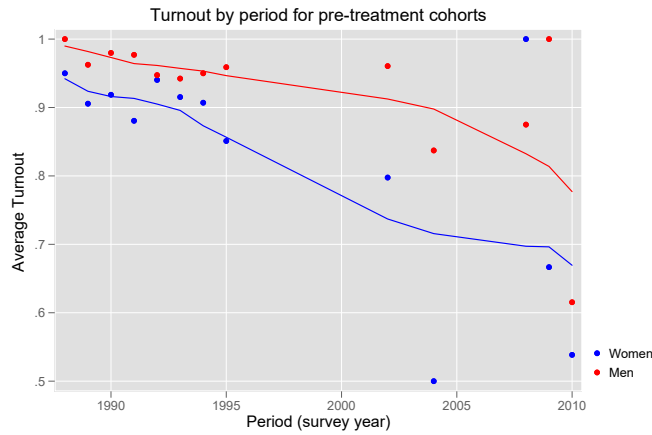
**Figure A.1:** Gender Gap Turnout in Greece: Relaxing Parallel Ageing and Period Effects



*Note:* The logit model coefficients are shown for the interactions between gender and cohort from two models. The first model (results shown in first panel) includes interaction between age and gender. The second model (results shown in first panel) includes an interaction between periods (survey-years) and gender. Cohorts after red line, experienced full suffrage in formative years.

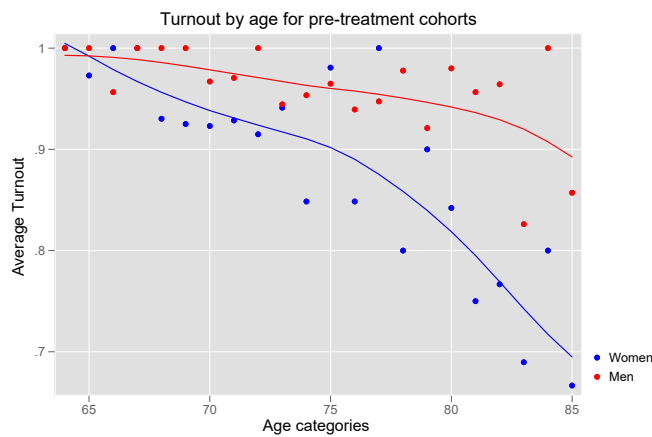
## 1.2 Descriptive and predicted period and age trends

**Figure A.2:** Descriptive: period trends turnout by Gender in Greece: for pre-treatment cohorts



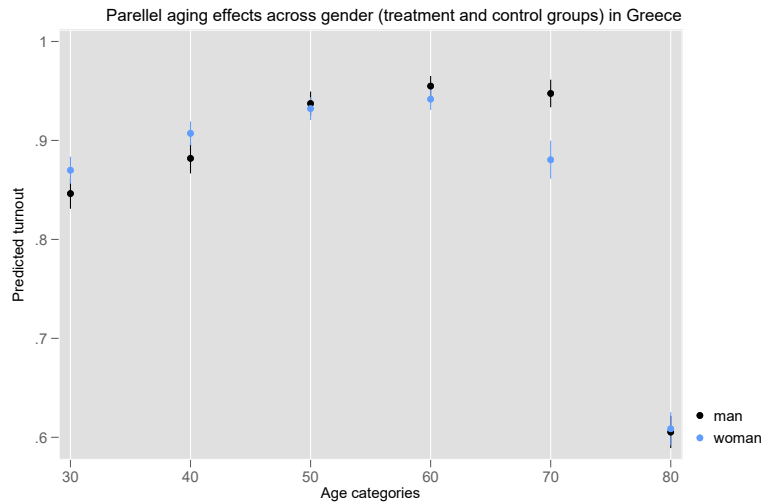
*Note:* Here we want to see that the pre-treatment cohorts respond the same way to period effects. This confirmed by the parallel curves for men and women over survey years.

**Figure A.3:** Descriptive: age trends turnout by Gender in Greece: for pre-treatment cohorts



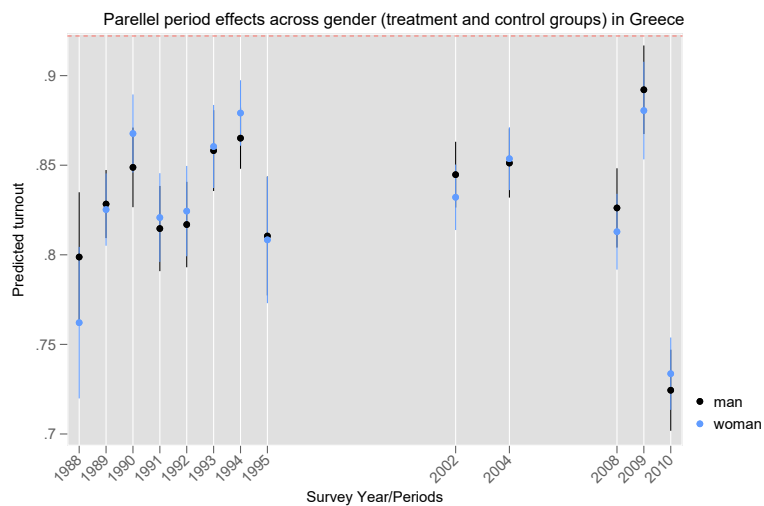
*Note:* Here we want to see pre-treatment cohorts behave the same way over the life-cycle. Again the life-cycle trends for pre-treatment men and women are similar.

**Figure A.4:** Predicted turnout by Gender in Greece: parallel aging relaxed



*Note:* Predicted probabilities of voting estimated using logit with interaction between age categories and gender allowing age effects to vary by gender. Similar predicted probabilities across gender confirm parallel ageing assumption.

**Figure A.5:** Predicted turnout by Gender in Greece: parallel period relaxed



*Note:* Predicted probabilities of voting estimated using logit with interaction between period effects (survey-years) and gender allowing period effects to vary by gender. Similar predicted probabilities across gender confirm parallel period assumption.

### 1.3 Alternative cohort specification

Additionally Greece went through phases of partial democracy followed by reversal, so we can also verify that changes in the level of meaningfulness do not impact the effect of treatment of suffrage in impressionable years. We divide the pre-suffrage cohorts to capture two levels of meaningfulness: inter-war Greece had high multiparty competition, whereas in the post-World War II era, multiparty competition was quite constrained (see Figure 3). Likewise we split the post-suffrage cohorts to capture different levels of meaningfulness: limited multiparty competition immediately after suffrage, and full multiparty competition after democratization in 1974. We further sub-divide the post-1974 cohorts to capture any general cohort trends in turnout.

Furthermore, to ensure we know exactly what kind of "treatment" each cohort experiences in their formative years and to prevent overlap and thus blurring of distinct cohort experiences we do two things. Firstly, we select only birth years that experiences at least two electoral opportunities in their formative years (from voting eligible age to age 29). The literature shows that the character of the first two election experiences most efficiently explains propensity to vote later in life, whereas the first election on its own is a weak predictor (Smets and Neundorf 2014). Next, we exclude birth year cohorts that overlap two types of electoral experiences in their formative years (e.g. people born from 1926 to 1931 who experienced elections both before and after female suffrage). So any cohorts that are yet to finish their formative years (turn 30) when a new type of electoral experience take effect are excluded. The reference categories are the youngest (7th) cohort and the first available survey year (1979). We also control for education.

- **Cohort 1:** Birth 1900-1914; First 2 votes in elections between 1920-36 (Male suffrage only, semi-competitive elections)
- **Cohort 2:** Birth 1916-1925; First 2 votes in elections between 1946-56 (Male suffrage only, non-competitive elections)
- **Cohort 3:** Birth 1932-1942; First 2 votes in elections between 1956-64 (Full suffrage, non-competitive elections)
- **Cohort 4:** Birth 1943-1946; Eligible to vote and in FYs during military junta 1967-1974 (Full suffrage, but no elections)<sup>32</sup>
- **Cohort 5:** Birth 1947-1961; First voted 1974-1980 (Full suffrage, competitive elections)
- **Cohort 6:** Birth 1962-1975; First voted 1981-1993 (Full suffrage, competitive elections)
- **Cohort 7:** Birth 1976-1996; First voted 1993-2015 (Full suffrage, competitive elections)

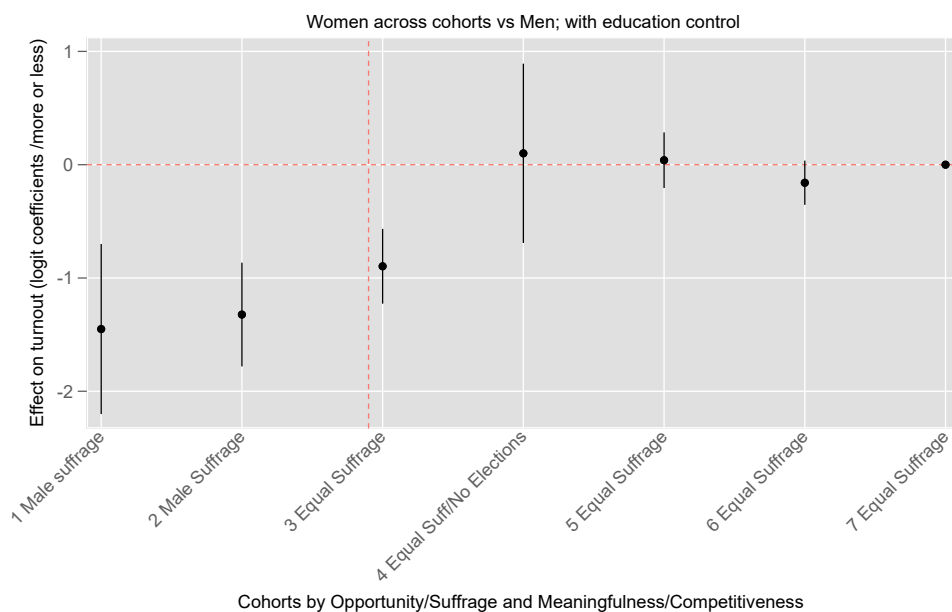
Figure A.6 display plots of the  $\gamma_k$  coefficients which directly show the presence of a gender gap. These findings clearly confirm our main analysis that when women have equal

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<sup>32</sup> This cohort is very small including only 3 birth-year cohorts, however it serves as a valuable test of whether equal treatment of any type, even no electoral opportunities, closes the gender gap in turnout.

opportunities to vote to men in their formative years, the propensity to vote later in life is equalized across genders. These effects of equal treatment hold true even for the cohorts that had their formative years under the military dictatorship (1967-1974) when both men and women had equal suffrage but no elections were held; for this cohort there is no gender gap as expected under conditions of equal treatment across genders. Also all the post-democratization cohorts, those who started voting after 1974 when the military dictatorship fell, (cohorts 5 onwards) display a lack of gender gap; this indicates that there is no underlying long-term mechanism that might be driving increasing turnout levels among women such as changing political norms.

**Figure A.6:** Gender Gap in Voter Turnout for Pre- and Post-Female Suffrage Cohorts (in Greece)

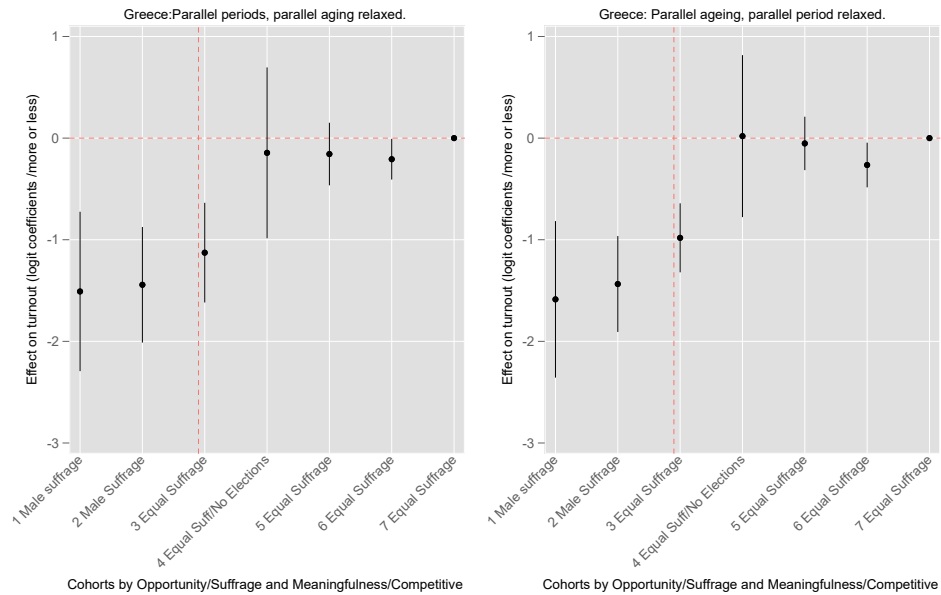


*Note:* Cohorts after red line, experienced maximum dose of full suffrage in formative years.

We also investigate whether any other political, social, or economic changes may have coincided with the introduction of female suffrage and could provide an alternative explanation for the closing of the gender gap in turnout. We consider factors that typically affect turnout such as education and workforce participation (Smets and Van Ham 2013). Female workforce actually declined in the decades following the introduction of female suffrage in 1956 (Kottis 1990) and participation only went up from the 1980s (Karamessini 2013). With regards to equal access to education, overall Greece has had historically high rates of education, but the major change in equal access to education occurred in 1976 when the years of compulsory education were increased to 9 meaning that all children had to complete secondary education. Prior to change boys were more likely to drop out of schooling than women; thus if the education gap closed it may have been because higher secondary education completion among men (Tsakloglou and Cholezas 2005). In our model we control for individual education levels, so gender differences in education are accounted for. Finally legal changes relating to gender equality such as equal pay were all introduced in the late 1980s. To the best of our knowledge there are no other factors that could



**Figure A.7: Gender Gap Turnout in Greece: Relaxing Parallel Ageing and Period Effects**



*Note:* The logit model coefficients are shown for the interactions between gender and cohort from two models. The first model (results shown in first panel) includes interaction between age and gender. The second model (results shown in first panel) includes an interaction between periods (survey-years) and gender. Cohorts after red line, experienced full suffrage in formative years.

have changed at the same time as the introduction in suffrage and caused the gender gap in turnout to decline.

## 2 Country profiles - Global analyses (N=106)

Country	N of obs.	Turnout (mean)	Birth years		Survey year		Average macro data (during formative years)		
			min	max	min	max	N of elec.	Multiparty	Democracy
Albania	1,648	0.90	1945	2000	2005	2012	4.09	0.42	0.27
Algeria	1,460	0.58	1960	2005	2013	2015	3.75	0.63	0.27
Argentina	3,203	0.85	1945	2000	2006	2010	5.64	0.95	0.55
Australia	6,988	0.98	1960	1995	1996	2007	4.09	0.98	0.87
Austria	9,217	0.85	1925	2005	1995	2014	5.43	0.98	0.86
Belarus	185	0.73	1990	1995	2001	2008	6.05	0.60	0.39
Belgium	24,763	0.92	1945	2005	1979	2014	3.19	0.98	0.84
Bolivia	1,746	0.86	1950	1995	2008	2008	4.84	0.93	0.53
Botswana	1,834	0.75	1960	2000	2005	2014	2.01	0.96	0.70
Brazil	3,225	0.92	1985	2000	2002	2014	6.14	0.99	0.86
Bulgaria	12,225	0.75	1945	2000	2001	2012	3.64	0.37	0.31
Burkina Faso	1,515	0.79	1955	2005	2007	2015	3.17	0.95	0.41
Burundi	1,337	0.92	1960	2000	2012	2014	1.73	0.79	0.21
Cambodia	802	0.92	1955	2000	2012	2012	1.74	0.69	0.23
Cameroon	1,131	0.69	1960	2005	2013	2015	3.75	0.81	0.29
Canada	9,135	0.89	1960	2000	1997	2010	2.90	0.98	0.86
Chile	4,524	0.88	1970	2000	2002	2010	3.04	0.97	0.44
Colombia	5,045	0.78	1955	2000	2005	2014	6.16	0.90	0.51
Costa Rica	3,947	0.73	1950	2000	2008	2014	5.24	0.99	0.85
Côte d'Ivoire	1,427	0.73	1955	2000	2013	2014	3.77	0.67	0.35
Croatia	6,346	0.79	1945	2000	2006	2013	2.65	0.54	0.22
Cyprus (G)	5,351	0.92	1960	2000	2002	2012	4.19	0.90	0.68
Czech Rep.	16,841	0.68	1925	2005	1996	2014	2.12	0.30	0.31
Denmark	27,517	0.95	1920	2000	1979	2014	3.99	0.97	0.89
Dominican Rep.	6,421	0.85	1940	2000	2006	2014	5.46	0.84	0.48
Ecuador	3,086	0.95	1975	2000	2008	2012	7.85	0.97	0.72
Egypt	2,699	0.56	1955	2005	2008	2015	6.20	0.36	0.21
El Salvador	3,836	0.82	1940	2000	2008	2014	5.78	0.79	0.34
Estonia	10,339	0.65	1925	2000	2004	2014	3.00	0.42	0.31
Ethiopia	409	0.93	1960	1995	2007	2007	1.70	0.56	0.22
Finland	19,964	0.85	1925	2005	1995	2014	4.65	0.98	0.84
France	29,371	0.82	1945	2005	1979	2014	6.77	0.97	0.85
Gabon	599	0.56	1955	2005	2015	2015	4.44	0.79	0.31
Georgia	2,342	0.84	1935	2000	2009	2013	4.08	0.47	0.24
Germany	43,395	0.88	1920	2005	1979	2014	2.57	0.71	0.62
Ghana	3,945	0.88	1950	2000	2005	2014	3.76	0.96	0.42
Great Britain	33,175	0.82	1920	2005	1979	2014	2.63	0.98	0.82
Greece	13,663	0.90	1950	2000	1988	2010	3.05	0.94	0.61
Guatemala	3,559	0.81	1965	2000	2008	2014	6.70	0.66	0.41
Guinea	1,285	0.89	1955	2005	2013	2015	2.69	0.62	0.21
Haiti	4,025	0.74	1950	2000	2008	2014	6.01	0.69	0.29
Honduras	3,816	0.72	1955	2000	2008	2014	4.33	0.76	0.44
Hungary	15,478	0.79	1925	2005	1998	2014	3.05	0.45	0.32

Country	N of obs.	Turnout (mean)	Birth years		Survey year		Average macro data (during formative y		
			min	max	min	max	N of elec.	Multiparty	Democrac
Iceland	3,372	0.95	1940	2000	2007	2013	3.94	0.97	0.86
India	1,654	0.92	1950	2000	2006	2013	2.82	0.95	0.70
Indonesia	3,514	0.95	1955	2000	2006	2011	2.49	0.67	0.28
Iraq	942	0.93	1980	1995	2006	2006	2.94	0.25	0.12
Ireland	28,743	0.86	1920	2005	1988	2014	3.94	0.98	0.83
Israel	14,676	0.85	1945	2005	2002	2014	3.35	0.98	0.72
Italy	9,459	0.92	1945	2000	1979	2012	2.42	0.98	0.77
Jamaica	4,043	0.68	1940	2000	2008	2014	2.23	0.94	0.61
Japan	12,668	0.84	1945	2000	1996	2013	3.43	0.98	0.83
Kenya	3,344	0.87	1960	2000	2005	2014	4.09	0.75	0.33
Latvia	5,937	0.74	1940	2000	2002	2013	3.19	0.44	0.30
Lesotho	1,814	0.80	1965	2000	2005	2014	1.16	0.96	0.28
Liberia	1,567	0.86	1945	2005	2012	2015	2.92	0.83	0.31
Lithuania	7,313	0.68	1935	2005	1997	2014	4.07	0.42	0.30
Madagascar	1,636	0.85	1955	2000	2005	2013	4.71	0.76	0.35
Malawi	2,886	0.89	1960	2000	2005	2014	3.51	0.80	0.38
Malaysia	2,268	0.82	1955	2000	2006	2011	2.27	0.98	0.28
Mali	2,476	0.80	1955	2000	2005	2014	5.58	0.64	0.37
Mauritius	1,810	0.90	1955	2000	2012	2014	2.25	0.99	0.79
Mexico	14,397	0.82	1950	2000	1997	2014	5.02	0.77	0.41
Moldova	716	0.73	1940	1995	2006	2006	3.52	0.43	0.25
Mongolia	1,748	0.92	1945	2000	2006	2010	4.13	0.62	0.41
Morocco	1,519	0.57	1960	2005	2007	2015	1.86	0.93	0.23
Mozambique	2,396	0.85	1975	2005	2005	2015	3.01	0.95	0.33
Namibia	1,045	0.85	1985	2000	2006	2014	4.00	0.97	0.67
Netherlands	32,105	0.89	1920	2005	1979	2014	2.87	0.98	0.83
New Zealand	9,727	0.93	1920	2000	1996	2010	3.34	0.98	0.85
Nicaragua	3,576	0.82	1955	2000	2008	2014	3.47	0.81	0.45
Niger	1,330	0.87	1955	2005	2013	2015	5.11	0.75	0.39
Nigeria	2,720	0.74	1980	2005	2005	2015	4.38	0.96	0.34
Norway	27,442	0.90	1920	2000	1990	2014	2.48	0.97	0.86
Panama	3,965	0.86	1945	2000	2008	2014	4.26	0.80	0.48
Paraguay	3,429	0.80	1960	2000	2008	2014	4.55	0.79	0.40
Peru	4,025	0.96	1980	2000	2006	2014	6.67	0.96	0.56
Philippines	5,305	0.87	1975	2000	2002	2013	4.61	0.87	0.51
Poland	19,578	0.69	1920	2005	1997	2014	3.89	0.39	0.36
Portugal	10,878	0.74	1975	2005	1985	2014	5.86	0.96	0.86
Romania	6,447	0.83	1935	1995	1996	2009	3.61	0.42	0.28
Russia	18,222	0.79	1935	2000	1999	2013	3.51	0.37	0.21
Sao Tome and Principe	566	0.85	1975	2005	2015	2015	5.01	0.96	0.57
Senegal	1,518	0.83	1945	2000	2005	2013	4.12	0.87	0.56
Serbia	771	0.81	1945	1995	2005	2005	2.77	0.58	0.18
Sierra Leone	1,240	0.81	1955	2005	2012	2015	3.87	0.82	0.33
Singapore	1,259	0.66	1965	2000	2006	2010	2.70	0.86	0.38
Slovakia	9,704	0.78	1925	2000	2002	2013	2.69	0.30	0.30
Slovenia	14,153	0.79	1945	2005	1996	2014	2.31	0.51	0.23
South Africa	2,491	0.78	1995	2005	2006	2015	2.00	0.98	0.75

Country	N of obs.	Turnout (mean)	Birth years		Survey year		Average macro data (during formative years)		
			min	max	min	max	N of elec.	Multiparty	Democracy
South Korea	9,708	0.80	1945	2000	2000	2013	4.37	0.91	0.49
Spain	31,690	0.82	1930	2005	1985	2014	1.91	0.78	0.45
Sweden	19,535	0.90	1925	2000	1995	2014	3.16	0.98	0.86
Switzerland	11,081	0.58	1970	2000	1999	2014	2.50	0.97	0.88
Taiwan	4,641	0.91	1945	1990	1996	2004	2.84	0.47	0.19
Tanzania	3,735	0.88	1960	2000	2005	2014	4.00	0.68	0.40
Togo	1,200	0.90	1955	2000	2012	2014	4.52	0.61	0.27
Trinidad and Tobago	3,327	0.78	1945	2005	2006	2014	2.62	0.96	0.71
Tunisia	1,589	0.69	1960	2005	2013	2015	4.00	0.42	0.20
Turkey	6,108	0.93	1930	2005	2004	2013	2.65	0.94	0.55
Uganda	3,678	0.89	1960	2005	2005	2015	2.75	0.51	0.27
Ukraine	9,389	0.86	1935	2000	1998	2012	3.73	0.36	0.21
Uruguay	8,048	0.96	1930	2000	2004	2014	3.83	0.95	0.65
Viet Nam	2,695	0.93	1945	2000	2005	2010	2.32	0.26	0.18
Zambia	2,266	0.77	1960	2000	2005	2014	4.39	0.73	0.40
Zimbabwe	2,722	0.80	1975	2000	2005	2014	4.17	0.77	0.29

### 3 Question wording of turnout

Data	Question wording
Latino-barometer	In the last presidential election what did you do? 1 I voted in the last election; 2 I decided not to vote in last election; 3 I was prevented from voting in the last election; 4 I didn't have time to vote; 5 didn't vote for other reasons; 6 wasn't registered; 8 I don't remember what I did. 2006: Did you vote in the last election? In the last election, which of the following did you do? 1 I voted in last election; 2 I decided not to vote; 3 was stopped from voting in the last election; 4 didn't have time to vote; 5 didn't vote for other reasons; 6 wasn't registered to vote.
WVS	Wave 5: Did you vote in your country's recent elections to the national parliament? 0 no 1 yes
ISSP	Did you vote at the last national elections? 1 Yes; 2 No.
Americas Barometer	Did you vote in the last presidential elections of [year]? 1 Voted; 2 did not vote
Asian Barometer	In talking to people about elections, we often find that a lot of people were not able to vote because they were away from home, they were sick or they just didn't have time. How about you? Did you vote in the election [the most recent national election, parliamentary or presidential] held in [year]? 1 yes; 2 no; 7 not applicable; 8 don't remember
Afro-barometer	S Africa: With regard to the most recent [1999] national elections, which statement is true for you? Zambia: 1996. Others: Understanding that some [Maliens] choose not to vote, let me ask you: did you vote: Ghana: In the general elections of December 1996? Mali: In the presidential election of May 1997? Tanzania: In the presidential election of October 2000? Nigeria: In the presidential election of February 1999? Uganda: In the presidential election of May 1996? 0 I did not vote; 1 I decided not to vote; 2 unable to vote; 3 I voted; 4 no election in my area; 5 can't remember. Wave 3: With regard to the most recent national elections, which statement is true for you? 1 you voted in the election; 2 you decided not to vote; 3 you could not find the polling station; 4 you were prevented from voting; 5 you did not have time to vote; 6 did not vote for some other reason; 7 you were not registered. Wave 5: With regard to the most recent national election in [20XX], which statement is true for you? 0=You were not registered to vote, 1=You voted in the elections, 2=You decided not to vote, 3=You could not find the polling station, 4=You were prevented from voting, 5=You did not have time to vote, 6= You did not vote because you could not find your name in the voters' register, 7=Did not vote for some other reason, 8= You were too young to vote
ESS	Some people don't vote nowadays for one reason for another. Did you vote in the last [country] national election in [month/year]? 1 yes; 2 no; 3 eligible to vote
CSES	1 respondent voted in the election; 2 respondent didn't
Euro-barometer	WHICH PARTY DID YOU VOTE FOR AT THE LAST GENERAL ELECTION IN (YEAR OF LAST GENERAL ELECTION)? Codes 1-990 political party; 995 = blank-spoil-vote; 996=vote not vote.

## 4 Harmonizing education levels

**Assumption** : Kids start school with 6

- Primary: 6 years old + 8 of school = 14 years old
- Secondary: 6 years old + 14 years of school (max) = 20 years old
- Post-Secondary: Secondary: 6 years old + 15 years of school (min) = 21+ years old

### Data

- Eurobarometer
  - Var = What age did complete your education [1-22+]
  - Recoding
    - Primary = up to 14; Secondary = 14/20; Tertiary = 21+
  - No categorical question asked
- WVS
  - Var = What age did complete your education [1-99]
  - Recoding
    - Primary = 1-12; Secondary = 13/20; Tertiary = 21+
  - This is used to replace 10,482 missing on categorical variable. Hardly any missing left.
- EVS
  - Var = What age did complete your education [1-99]
  - Recoding
    - Primary = 1-12; Secondary = 13/20; Tertiary = 21+
  - This is used to replace 10,482 missing on categorical variable. Hardly any missing left.
- ESS
  - Var = Years of Full-Time education [0-56]
  - Recoding
    - Primary = 0-8; Secondary = 9/14.5; Tertiary = 15+
  - This is used to replace 73,184 missing on categorical variable. Hardly any missing left.

## 5 Macro variables (Coppedge et al. 2018a)

### 5.1 Elections multi-party (v2elmulpar)

- Question: Was this national election multiparty?
- Responses:
  - 0: No. No-party or single-party and there is no meaningful competition (includes situations where a few parties are legal but they are all de facto controlled by the dominant party).
  - 1: Not really. No-party or single-party (defined as above) but multiple candidates from the same party and/or independents contest legislative seats or the presidency.
  - 2: Constrained. At least one real opposition party is allowed to contest but competition is highly constrained — legally or informally.
  - 3: Almost. Elections are multiparty in principle but either one main opposition party is prevented (de jure or de facto) from contesting, or conditions such as civil unrest (excluding natural disasters) prevent competition in a portion of the territory.
  - 4: Yes. Elections are multiparty, even though a few marginal parties may not be permitted to contest (e.g. far-right/left extremist parties, anti-democratic religious or ethnic parties).
- Scale: Ordinal, converted to interval by the measurement model.

### 5.2 Electoral democracy index (v2x\_polyarchy)

- Question: To what extent is the ideal of electoral democracy in its fullest sense achieved?
- Clarification: The electoral principle of democracy seeks to embody the core value of making rulers responsive to citizens, achieved through electoral competition for the electorate's approval under circumstances when suffrage is extensive; political and civil society organizations can operate freely; elections are clean and not marred by fraud or systematic irregularities; and elections affect the composition of the chief executive of the country. In between elections, there is freedom of expression and an independent media capable of presenting alternative views on matters of political relevance. In the V-Dem conceptual scheme, electoral democracy is understood as an essential element of any other conception of representative democracy — liberal, participatory, deliberative, egalitarian, or some other.
- Scale: Interval, from low to high (0-1).
- Aggregation: The index is formed by taking the average of, on the one hand, the weighted average of the indices measuring freedom of association thick (v2xfrassoctick), clean elections (v2xelfrefair), freedom of expression (v2xfreexpaltinf), elected officials (v2xelecoff), and suffrage (v2xsuffr) and, on the other, the five-way multiplica-

tive interaction between those indices. This is half way between a straight average and strict multiplication, meaning the average of the two. It is thus a compromise between the two most well known aggregation formulas in the literature, both allowing partial "compensation" in one sub-component for lack of polyarchy in the others, but also punishing countries not strong in one sub-component according to the "weakest link" argument. The aggregation is done at the level of Dahl's sub-components with the one exception of the non-electoral component. See more in Coppedge et al. 2018: 38.

### 5.3 Regimes of the world (v2x\_regime)

- *Question:* How can the political regime overall be classified considering the competitiveness of access to power (polyarchy) as well as liberal principles?
- Responses:
  - 0: Closed autocracy: No multiparty elections for the chief executive or the legislature.
  - 1: Electoral autocracy: De-jure multiparty elections for the chief executive and the legislature, but failing to achieve that elections are free and fair, or de-facto multiparty, or a minimum level of Dahl's institutional prerequisites of polyarchy as measured by V-Dem's Electoral Democracy Index (v2x\_polyarchy).
  - 2: Electoral democracy: De-facto free and fair multiparty elections and a minimum level of Dahl's institutional prerequisites for polyarchy as measured by V-Dem's Electoral Democracy Index (v2x\_polyarchy), but either access to justice, or transparent law enforcement, or liberal principles of respect for personal liberties, rule of law, and judicial as well as legislative constraints on the executive not satisfied as measured by V-Dem's Liberal Component Index (v2x\_liberal).
  - 3: Liberal democracy: De-facto free and fair multiparty elections and a minimum level of Dahl's institutional prerequisites for polyarchy as measured by V-Dem's Electoral Democracy Index (v2x\_polyarchy) are guaranteed as well as access to justice, transparent law enforcement and the liberal principles of respect for personal liberties, rule of law, and judicial as well as legislative constraints on the executive satisfied as measured by V-Dem's Liberal Component Index (v2x\_liberal).
- Recoded whereas autocracy is scores 0 and 1; democracy is score 2 and 3.

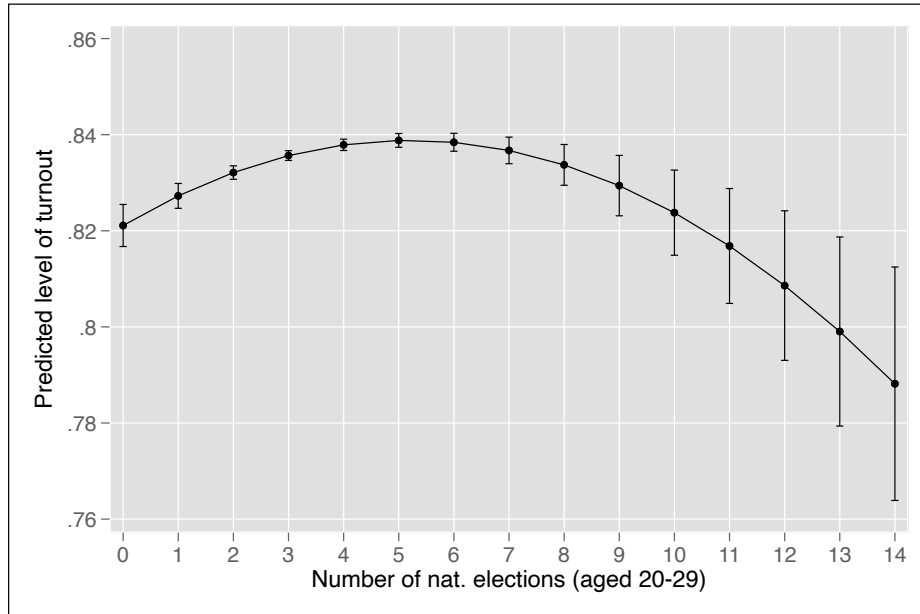


## 6 Full results: Table 1

	Baseline		Full specification		Logit
	Model 1	Model 2	Model 3	Model 4	Model 5
Age (30+)	0.012*** [0.000]	0.012*** [0.000]	0.012*** [0.000]	0.012*** [0.000]	0.095*** [0.002]
Age <sup>2</sup>	-0.000*** [0.000]	-0.000*** [0.000]	-0.000*** [0.000]	-0.000*** [0.000]	-0.001*** [0.000]
<u>Socialization context:</u>					
Election opportunity	0.001*** [0.000]	0.001** [0.000]	0.001*** [0.000]	-0.010*** [0.001]	-0.084*** [0.011]
Election competition		-0.004 [0.003]	-0.003 [0.003]	-0.034*** [0.005]	-0.061* [0.035]
Elec. Opportunity x Elec. Competition				0.013*** [0.002]	0.109*** [0.012]
<u>Individual-level controls:</u>					
Female			0.002** [0.001]	0.002** [0.001]	0.006 [0.007]
Education (ref: below secondary)					
Secondary			0.029*** [0.001]	0.029*** [0.001]	0.244*** [0.010]
Post-Secondary			0.077*** [0.001]	0.077*** [0.001]	0.655*** [0.011]
Working			0.034*** [0.001]	0.035*** [0.001]	0.257*** [0.008]
<u>Period controls (at t):</u>					
Level of democracy			0.012 [0.015]	0.012 [0.015]	0.036 [0.123]
Macro turnout			0.003*** [0.000]	0.003*** [0.000]	0.022*** [0.001]
Closeness of elec.			-0.000*** [0.000]	-0.000*** [0.000]	-0.002*** [0.000]
Log GDP per Capita			-0.017*** [0.004]	-0.018*** [0.004]	-0.170*** [0.036]
Log population			0.010* [0.006]	0.010* [0.006]	0.058 [0.043]
Country FE	✓	✓	✓	✓	✓
Study FE	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓
Intercept	0.464*** [0.012]	0.469*** [0.013]	0.238** [0.097]	0.269*** [0.097]	-2.002*** [0.738]
N of respondents	786,625	770,210	770,210	770,210	770,210
R <sup>2</sup>	0.066	0.067	0.075	0.075	0.084

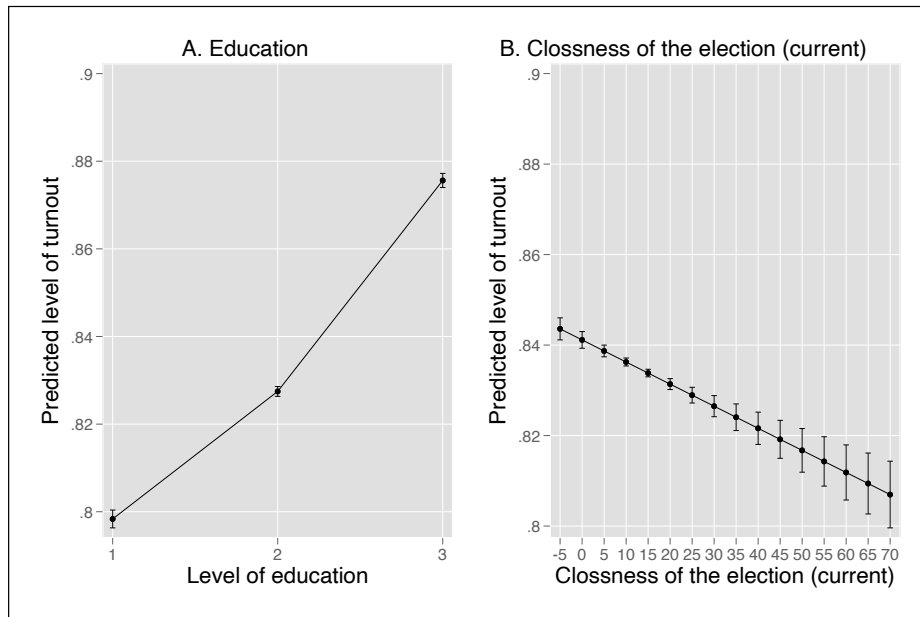
*Significance levels:* \*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1. *Source:* Global Harmonized Public Opinion data and V-Dem. *Note:* The table reports coefficients and standard errors based on OLS models. Model 5 uses logistic regression to replicate M4 of the main results.

## 7 Non-linear effect of election opportunity on predicted turnout



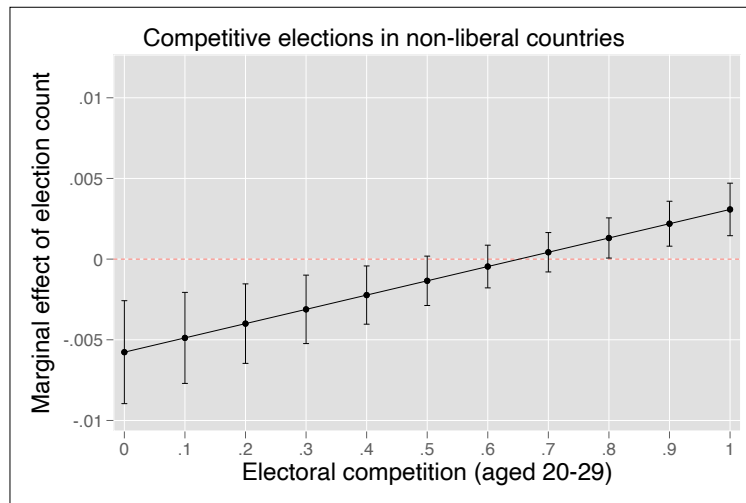
*Note:* The results are based on a fully specified linear regression, predicting turnout. Election count was included as a main effect as well as squared. The model further includes individual and macro-level controls, as well as country, year and study fixed effects. 95% confidence intervals.

## 8 Effect size - Predicted values for education and closeness of election



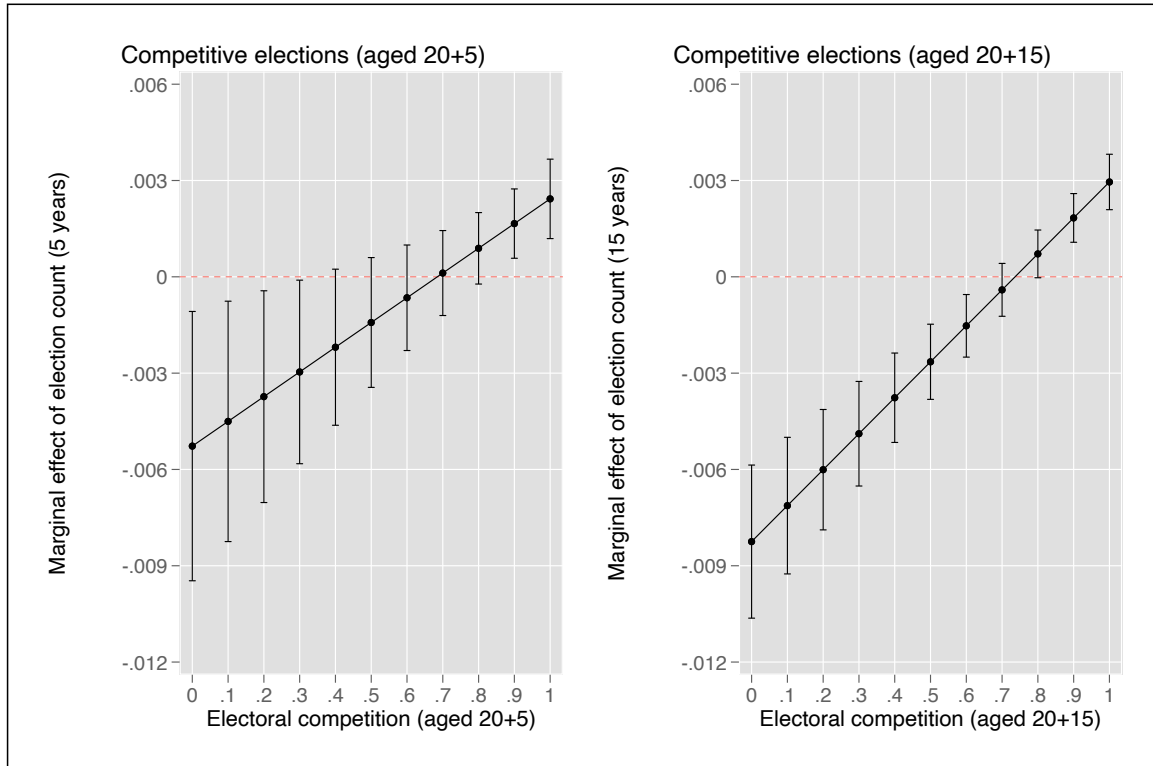
*Note:* The predictions are based on Model 3, presented in Table 1.

## 9 Robustness tests for interaction effects: Reduced sample - Only non-liberal country-cohorts



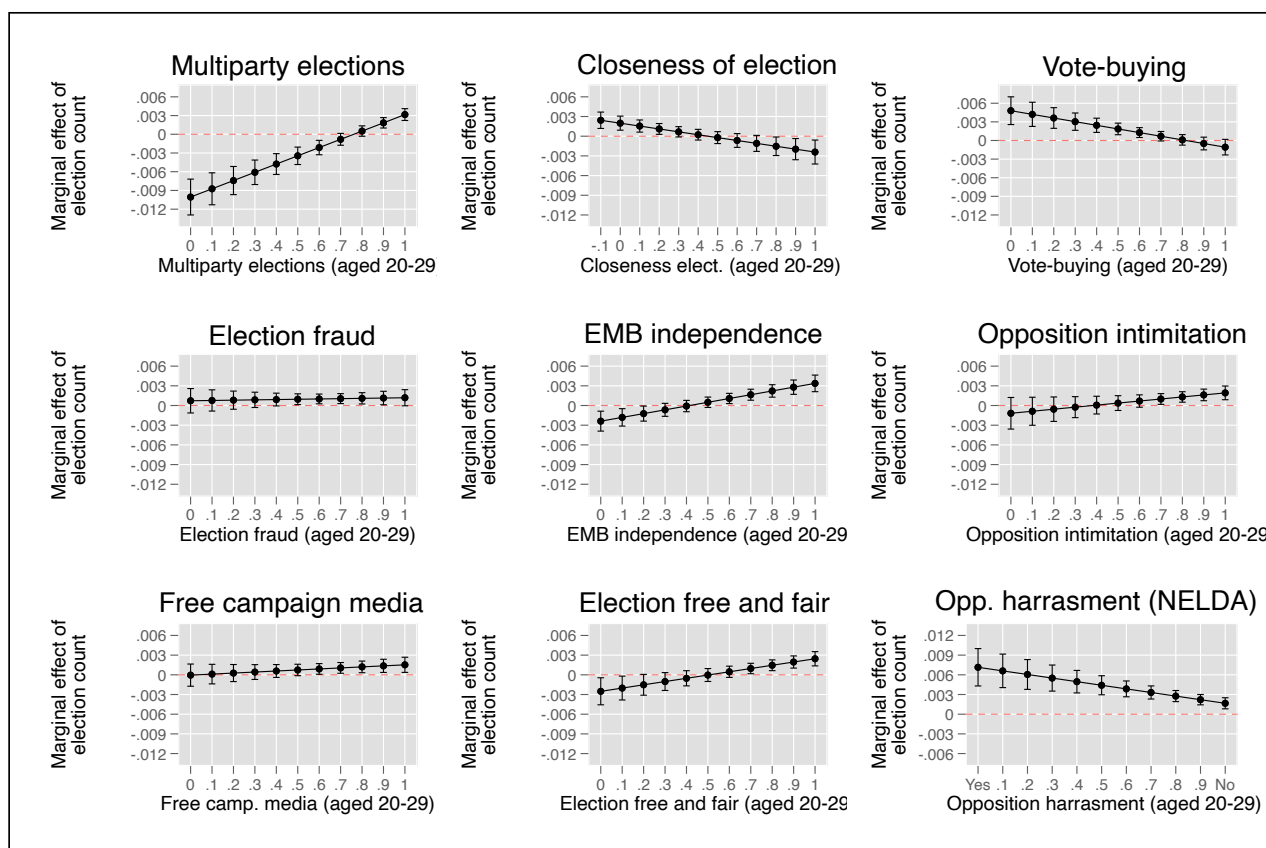
*Note:* The graph presents results of a reduced sample based on whether the country was (pre-dominantly) non-liberal during a respondent's formative years. Country-cohorts are divided into liberal democracies and non-liberal based on the regime classification variable by V-Dem (`v2x_regime`). The model controls for a full list of individual-level controls, current survey year macro controls, country, year and study fixed effects.

## 10 Robustness tests - Changing length of formative years



*Note:* The Figure replicates the results of Figure 7 of the manuscript, but using different socialization periods.

## 11 Robustness tests - Changing measures of election quality and meaningfulness



*Note:* The Figure replicates the results of Figure 7 of the manuscript, but using different measures for electoral competition. Higher values indicate more competitive and high quality elections, except for the measure of closeness of elections (measured as proportions of difference between first and second candidate/party).

### 11.1 Definition of variables

All variables were standardized to range from 0 to 1, where in most cases 1 refers to the highest quality and meaningful election. All variables were averaged for every ten years and then the value assigned to each birth year, when they were between 20 and 29 years old. Details of these variables can be found in Coppedge et al. 2018.

#### Vote-buying (V-Dem variable: v2elvotbuy)

- *Question:* In this national election, was there evidence of vote and/or turnout buying?
- *Clarification:* Vote and turnout buying refers to the distribution of money or gifts to individuals, families, or small groups in order to influence their decision to vote/not vote or whom to vote for. It does not include legislation targeted at specific constituencies, i.e., "porkbarrel" legislation.

- *Responses:*

0: Yes. There was systematic, widespread, and almost nationwide vote/turnout buying by almost all parties and candidates.

1: Yes, some. There were non-systematic but rather common vote-buying efforts, even if only in some parts of the country or by one or a few parties.

2: Restricted. Money and/or personal gifts were distributed by parties or candidates but these offerings were more about meeting an ‘entry-ticket’ expectation and less about actual vote choice or turnout, even if a smaller number of individuals may also be persuaded.

3: Almost none. There was limited use of money and personal gifts, or these attempts were limited to a few small areas of the country. In all, they probably affected less than a few percent of voters.

4: None. There was no evidence of vote/turnout buying.

### **Electoral fraud (V-Dem variable: v2elirreg)**

- *Question:* In this national election, was there evidence of other intentional irregularities by incumbent and/or opposition parties, and/or vote fraud?

- *Clarification:* Examples include use of double IDs, intentional lack of voting materials, ballotstuffing, misreporting of votes, and false collation of votes. This question does not refer to lack of access to registration, harassment of opposition parties, manipulations of the voter registry or vote-buying (dealt with in previous questions). Examples include use of double IDs, intentional lack of voting materials, ballot-stuffing, misreporting of votes, and false collation of votes. This question does not refer to lack of access to registration, harassment of opposition parties, manipulations of the voter registry or vote-buying (dealt with in previous questions)

- *Responses:*

0: Yes. There were systematic and almost nationwide other irregularities.

1: Yes, some. There were non-systematic, but rather common other irregularities, even if only in some parts of the country.

2: Sporadic. There were a limited number of sporadic other irregularities, and it is not clear whether they were intentional or disfavored particular groups.

3: Almost none. There were only a limited number of irregularities, and many were probably unintentional or did not disfavor particular groups’ access to participation.

4: None. There was no evidence of intentional other irregularities. Unintentional irregularities resulting from human error and/or natural conditions may still have occurred.

### **Independence of the Electoral Management Body (V-Dem variable: v2elembaut)**

- *Question:* Does the Election Management Body (EMB) have autonomy from govern-

ment to apply election laws and administrative rules impartially in national elections?

- *Clarification:* The EMB refers to whatever body (or bodies) is charged with administering national elections.
- *Responses:*
  - 0: No. The EMB is controlled by the incumbent government, the military, or other de facto ruling body.
  - 1: Somewhat. The EMB has some autonomy on some issues but on critical issues that influence the outcome of elections, the EMB is partial to the de facto ruling body.
  - 2: Ambiguous. The EMB has some autonomy but is also partial, and it is unclear to what extent this influences the outcome of the election.
  - 3: Almost. The EMB has autonomy and acts impartially almost all the time. It may be influenced by the de facto ruling body in some minor ways that do not influence the outcome of elections.
  - 4: Yes. The EMB is autonomous and impartially applies elections laws and administrative rules.

#### **Opposition intimidation (V-Dem variable: v2elintim)**

- *Question:* In this national election, were opposition candidates/parties/campaign workers subjected to repression, intimidation, violence, or harassment by the government, the ruling party, or their agents?
- *Clarification:* Other types of clearly distinguishable civil violence, even if politically motivated, during the election period should not be factored in when scoring this indicator (it is dealt with separately).
- *Responses:*
  - 0: Yes. The repression and intimidation by the government or its agents was so strong that the entire period was quiet.
  - 1: Yes, frequent: There was systematic, frequent and violent harassment and intimidation of the opposition by the government or its agents during the election period.
  - 2: Yes, some. There was periodic, not systematic, but possibly centrally coordinated — harassment and intimidation of the opposition by the government or its agents.
  - 3: Restrained. There were sporadic instances of violent harassment and intimidation by the government or its agents, in at least one part of the country, and directed at only one or two local branches of opposition groups.
  - 4: None. There was no harassment or intimidation of opposition by the government or its agents, during the election campaign period and polling day.

#### **Election free campaign media (V-Dem variable: v2elfrcamp)**



- *Question:* In this national election, did parties or candidates receive either free or publicly financed access to national broadcast media?
- *Responses:*
  - 0: Either no parties or only the governing party receives free access.
  - 1: Some parties in addition to the governing party receive free access.
  - 2: All parties receive free access.

#### **Election free and fair (V-Dem variable: v2elrfair)**

- *Question:* Taking all aspects of the pre-election period, election day, and the post-election process into account, would you consider this national election to be free and fair?
- *Clarification:* The only thing that should not be considered in coding this is the extent of suffrage (by law). Thus, a free and fair election may occur even if the law excludes significant groups (an issue measured separately).
- *Responses:*
  - 0: No, not at all. The elections were fundamentally flawed and the official results had little if anything to do with the 'will of the people' (i.e., who became president; or who won the legislative majority).
  - 1: Not really. While the elections allowed for some competition, the irregularities in the end affected the outcome of the election (i.e., who became president; or who won the legislative majority).
  - 2: Ambiguous. There was substantial competition and freedom of participation but there were also significant irregularities. It is hard to determine whether the irregularities affected the outcome or not (as defined above).
  - 3: Yes, somewhat. There were deficiencies and some degree of fraud and irregularities but these did not in the end affect the outcome (as defined above).
  - 4: Yes. There was some amount of human error and logistical restrictions but these were largely unintentional and without significant consequences.

#### **Harassment of the opposition (NELDA variable: e\_nelda15)**

- *Question:* Is there evidence that the government harassed the opposition?
- *Clarification:* If there was evidence of intentional government harassment of the opposition, a "Yes" was coded. Harassment may include detaining opposition leaders, disrupting opposition political rallies with state forces, and shutting down opposition newspapers.
- *Responses:*
  - 0: Yes
  - 1: No / not clear.

## 11.2 Correlations between multiparty elections and additional measures

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	R = Multiparty election x
Closeness of election	-0.743
Vote-buying	0.168
Election fraud	0.430
EBM independence	0.727
Opp. Intimidation	0.713
Free campaign	0.595
Election free and fair	0.748
Opposition harassment (Nelda)	0.256

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