**Compulsory voting and ethnic diversity increase invalid voting while
corruption does not: an analysis of 417 parliamentary elections in 73
countries**

Abstract: Invalid voting, meaning blank and spoiled ballots, is a regular phenomenon in democracies around the world. When its share is larger than the margin of victory or greater than the vote share of some of the large parties in the country, invalid voting becomes a problem for democratic legitimacy. This article investigates its determinants in 417 democratic parliamentary elections in 73 countries on five continents from 1970 to 2011. The analysis shows that enforced compulsory voting and ethnic fragmentation are strong predictors for invalid voting while corruption has less impact. Our findings suggest that the societal structure is crucial in understanding invalid voting as a problem for democratic legitimacy as greater social diversity seems to lead to either a greater rate of mistakes or lesser attachments of social groups to the democratic process. Thus, rising levels of invalid voting are not only concerning in themselves but also for the divisive factors driving them.

Keywords: invalid voting; legitimacy; democracy; corruption; ethnic fragmentation; compulsory voting

The act of voting is one of the central tenets of modern democracy. Through voting, people can directly influence who will become their political representatives and, thus, which political decisions will be made. When voters participate in this process in a meaningful way, they contribute to one of the central democratic mechanisms. However, not all voters contribute to this process; there are two common ways through which they can abstain: non-voting and invalid voting. Much has been written about non-voting; the analysis of voter turnout levels is a staple in political science.¹ Because “political scientists prefer to study voting behaviors that shed light on party identification and/or the allocation of political power” and valid voting provides more insights for such purposes,² the issue of invalid voting, meaning the share of blank or spoiled vote ballots, has so far received considerably less attention. While invalid voting has mostly been analyzed in single-country studies,³ there are good reasons for undertaking a global comparative study of this phenomenon.⁴

First, invalid voting is widespread and present in almost every election.⁵ This is a concerning phenomenon, as invalid voting “has serious implications for citizen support of the electoral process and, by extension, democratic legitimacy writ large”.⁶ Although there are several country and regional studies,⁷ global comparative evidence is scarce. The few comparative analyses have focused on a specific geographic area: either on Latin America alone⁸ or in combination with Eastern Europe⁹ or OECD democracies.¹⁰ While their findings are important, there is no theoretical reason to limit the scope of the analysis to a specific set of democracies. If the established theories have general explanatory power, they should hold context independently.

Second, while invalid voting used to be a negligible phenomenon in the countries at the center of election studies in the past (i.e. established Western democracies), its occurrence is frequent worldwide. For example, as we show below, over 25 percent of the electoral contests in the American continent have levels of invalid votes over 5 percent. Further, we

find incidences of invalid voting well over 10 percent, for instance in the 2009 Indonesian legislative elections. Connected to the level of invalid votes, Power and Garand rightly observe that “invalid votes may even affect the outcomes under certain rules”.¹¹ While the consequences of invalid voting levels are not the focus of this article, it is worth noting that in many elections invalid votes exceed the vote share necessary to win a parliamentary seat. In an extreme case, if ‘invalid voting’ competed for office, it would have won the Peruvian elections of 2006. More generally, in 21 percent of the elections analyzed in this study, the margin of victory was smaller than the share of invalid votes.

Finally, as invalid ballots are a constant in democratic elections, they need to be studied to gain a more complete view of electoral politics. If the number is substantial, “journalists, politicians, and scholars attempt to advance their preferred interpretations”.¹² Especially in countries where invalid votes are not negligible, understanding the factors that condition them is crucial to understanding electoral processes and outcomes. Considering all the above and building on and extending the existing explanatory frameworks, this article asks: *Which factors explain the share of invalid votes in democratic elections around the world?*

There are two main theoretical contributions of this article. The first contribution is straightforward: If established theories hold, they should do so globally and regardless of the context within which they are tested. As mentioned earlier, so far, previous comparative aggregate studies have been limited to specific regions. Given the global coverage of our analysis – 417 parliamentary elections in 73 democracies on five continents between 1970 and 2011 – we are able to test and draw generalized conclusions on the established theories of invalid voting. Second, we develop a comprehensive explanatory framework for invalid voting that includes institutions, society and politics¹³ by further developing explanatory factors in the institutional, societal and political frames that have not been jointly considered

in previous comparative analysis. Specifically, we suggest that the level of enforcement of compulsory voting, the level of ethnic fragmentation and the level of corruption affect invalid voting. Furthermore, we theorize that ethnic fragmentation and corruption are aggravated by each other as well as by compulsory voting.

We find that for explaining invalid voting levels at a global scale, the level of ethnic fragmentation is indeed a strong predictor of invalid voting, which is intensified by compulsory voting. Corruption, on the other hand, only has an effect in the presence of enforced compulsory voting and in interaction with ethnic fragmentation. The effect of ethnic fragmentation is theorized to be caused by systematic differences in democratic education or through lack of social cohesion. The lack of a direct effect of corruption indicates that its main theoretical mechanism—protest against the political elite and system—plays a less systematic role. Crucially, our results regarding ethnic fragmentation indicates that societal structures need to be taken into consideration when we discuss blank and spoiled votes.

The paper is structured as follows: The next section lays out the theoretical framework of institutions, society and politics. After examining issues of operationalization and data, the following section presents the results along the lines of the three explanatory frames of society, institutions and politics. We conclude by discussing the main findings and suggesting future lines of research.

The theoretical framework: institutions, society and politics

This section outlines the three main dimensions examined to explain invalid voting: institutions, societal aspects and politics. It is likely that these three explanatory dimensions affect invalid voting simultaneously,¹⁴ but we outline them separately for the purpose of clarity. Logically, these three dimensions resonate with the aggregate-level theories in turnout studies and, accordingly, our results are also put in context with those of the turnout

literature.¹⁵ Furthermore, we argue that comparative studies of invalid voting have so far neglected two factors that should be considered. Specifically, we theorize that invalid voting is increased by the societal factor of ethnic fragmentation and the political factor of corruption, and we hypothesize how they interact with compulsory voting.

The institutional approach

The institutional approach proposes that invalid voting responds to a combination of electoral rules and party-system configurations. Four elements of the institutional framework have been suggested to affect the number of invalid votes: district magnitude, number of parties, concurrency of parliamentary and presidential elections and compulsory voting. For the effect of the district magnitude and the number of parties (and their close relationship), two competing perspectives exist that lead to contradictory expectations. On one hand, a higher magnitude district “is likely to produce more political parties, more candidates, and the resulting increase in the difficulty of making a choice on election day”.¹⁶ This should increase the number of invalid votes by error. Likewise, it is argued that higher numbers of parties reduce the perceived impact of voting.¹⁷ Thus, both factors, larger districts and more parties, each create more confusion that increases invalid voting. This is what we label the ‘confusion’ hypothesis (H1a). On the other hand, the increased political supply by both higher district magnitude and more parties might lead to lower shares of invalid votes. Given that there are more choices, the likelihood of casting a ballot for the party or candidate close to the voter’s interest is higher, and the incentive to spoil ballots is lower. We label this hypothesis as the ‘supply’ hypothesis (H1b). In order to test for all possible variations in these institutional effects, we include an interaction term for the number of parties and the district magnitude into our model of invalid voting.

Compulsory voting and the concurrency of parliamentary and presidential elections have also been discussed as factors influencing the level of invalid voting. Studies consistently show that when mandatory voting is present, the number of invalid votes is higher than when voting is voluntary, as invalid voting is regarded as the “functional equivalent of abstention”.¹⁸ Compulsory voting, though, is not uniform.¹⁹ While in some countries, compulsory voting is sanctioned and enforced (eg. Australia), in others it is recognized but it is neither sanctioned nor enforced (eg. Bolivia). Similar to turnout studies, which have shown that different enforcement levels of compulsory voting have substantive different effects on voter turnout,²⁰ we argue that these systems have different impacts on the level of invalid voting. Therefore, we expect that both enforced and unenforced compulsory systems increase the level of invalid voting in comparison to voluntary elections, but that the effect of enforced compulsory voting is substantially higher than of the unenforced version (H1c).

When parliamentary and presidential elections are held concurrently, this might have one of two effects. On the one hand, efficacy should increase as more is at stake and invalid voting should be lower. However, Kouba and Lysek²¹ show that concurrence of elections might increase invalid voting because citizens are more prone to error as voting decisions are more complex and the likelihood of confusing ballots for different contests is higher. A further factor in relation to the likelihood of errors is how much experience voters have with the voting process in their country. The greater the number of elections that have already taken place in a country, the greater the level of experience that voters have of casting their vote and the fewer mistakes they make, thus theoretically leading to a lower number of invalid votes. Finally, the electoral formula is included as a standard control in turnout and invalid voting studies.²²

The societal approach

The societal approach states that invalid ballots are a function of the social structure. In both single-case and comparative studies, the societal approach has focused on factors such as literacy rate, urbanization and some measures of socioeconomic development. Education or literacy level was suggested first by McAllister and Makkai²³ for Australia, and then expanded on by Power and Garand²⁴ for Latin America. The main argument is that where relevant shares of the population lack sufficient literacy, invalid voting increases because there is a decreased chance of individuals completing their ballot paper without error. Alternatively, however, it could also be argued that higher education equips voters to engage in the subtler form of protest through spoiled ballots. Thus, education is one of the factors that could influence invalid voting through either mechanism. Related to literacy is urbanization, which is a signal for the extent of modernization and decreases the marginality of large parts of the population and, consequently, leads to fewer invalid votes.²⁵ Finally, economic development also improves voter capacity, which leads to fewer errors and should also increase voter satisfaction with the political system and its representatives, thus decreasing the incentives for protest.²⁶ Therefore, economic development and improvements in measures such as GDP per capita should decrease the number of invalid votes.

Another factor that might influence the aggregate chance of invalid voting is ethnic fragmentation, understood as the likelihood that two randomly selected individuals belong to the same ethnic group. Until now, the effect of ethnic fragmentation on the level of invalid voting has been considered only in single country studies and, thus, neglected in comparative work. For example, Knack and Kropf as well as Herron and Sekhon²⁷ find that in the 1996 and the 2000 US presidential elections, respectively, invalid voting was higher in precincts with large proportions of black and Latino populations than in more homogeneous precincts. Herron and Sekhon²⁸ explain the impact of ethnicity on invalid voting in the US as being due

to systematic differences in the levels of socioeconomic status and education. Similarly, McAllister and Makkai²⁹ find that invalid voting in Australia is substantially dependent “upon the proportion of immigrants within a polling booth area, and by their length of residence in Australia and geographical origins.” McAllister and Makkai³⁰ explain that immigrants are less familiar with the political process and find voting more difficult because of differences in language and culture. Thus, while ethnic fragmentation in these two countries stems from different processes, the mechanism increasing invalid voting is based on systematic differences in general as well as democratic education.

Another possible mechanism explaining how more ethnic fragmentation might increase invalid voting at the aggregate level is through decreased social cohesion. In related studies, ethnic fragmentation has been shown to have a strong negative impact on political trust³¹, tax morale³² and public expenditure.³³ Alesina and La Ferrara³⁴ observe that, at the aggregate level, there are more inter-personal interactions in more homogeneous communities, which leads to higher social capital. The inverse relation also holds true: there are fewer interactions in more heterogeneous communities, thus decreasing social capital. Recent works linking ethnic diversity with turnout follow the same reasoning and have similar findings. For example, Lago et al.³⁵ state that “if electoral participation is considered as a common good, social fractionalization should have a direct effect on decreasing turnout rates” because the minority group may have a “lesser attachment” to the community.³⁶ Lago et al.³⁷ find support for their claim in an analysis of 22 democracies at the aggregate level and two countries at the individual level, while Martinez i Coma and Nai³⁸ find the same relationship in an analysis of 650 parliamentary elections within a 50-year period.

Thus, we expand such reasoning to invalid voting and expect it to be lower in more homogenous communities, which should have, at the aggregate level, a more equal level of democratic education as well as “shared interests, socialization to the same cultural norms,

and greater empathy toward individuals who remind them of themselves”.³⁹ Thus, ethnic fragmentation is understood as a proxy for the diversity of a society. We therefore propose our ‘diversity’ hypothesis, suggesting that more diverse countries should observe higher rates of invalid votes than more homogeneous societies (H2a). This effect should be exacerbated if the country also has compulsory voting because this system forces all societal groups to participate and eliminates the opportunity to abstain. In parallel to the logic of the compulsory voting hypothesis above, we expect that the enforced compulsory system has a stronger positive effect than the unenforced version (H2b).

Politics: stakes and protest

The political approach has been mainly developed in two dimensions: stakes and protest.⁴⁰ The former is very similar to the electoral stakes argument in turnout studies.⁴¹ According to this argument, invalid votes are less likely in elections when there is more at stake, which is understood as the closeness of the election entailing the possibility of change in government. If an election is on the knife’s edge, voters are argued to care more about the election in general and to perceive their individual vote as more decisive, leading voters to take more care in their decision and when filling out the ballot. In line with this argument, Ugglå⁴² finds that in less competitive contests (and more fragmented legislative elections), the proportion of invalid ballots is higher. Thus, we formulate the ‘stakes’ hypothesis (H3a), suggesting that in more competitive elections, the level of invalid voting is lower.

The protest perspective suggests that invalid votes are a function of the voters’ desire to show their discontent. Voters might rely on invalid votes to show their rebuttal of the established rules and procedures or their “distaste for the choices between the candidates and parties on offer”.⁴³ While this mechanism seems straightforward, it does not theorize the motivation for protest. We argue that corruption is one of the catalysts of such discontent.

Corruption has negative effects on a country's economy, as governments lose tax revenues and deplete capital that otherwise could have been productively used. Corruption also has a negative effect on a country's institutions as well as on democracy itself,⁴⁴ as it undermines positive attitudes toward these institutions.⁴⁵ Hence, corruption undermines citizens' satisfaction with the performance of democracy,⁴⁶ decreasing trust in the system's institutions⁴⁷ and the legitimacy of democracy.⁴⁸ In relation to this, Birch⁴⁹ finds that if citizens consider the electoral process corrupt, there is a lower incentive to vote. Along the same lines, Martinez i Coma⁵⁰ and Stockemer et al.⁵¹ find that corruption decreases turnout by demobilizing voters as it reduces the meaning of the election itself.

Invalid voting might be another way of either punishing corrupt elites by withholding support or voicing discontent with the whole political system, similar to the mechanism of not voting at all. If only one specific political party is corrupt, citizens can replace this party at the next election,⁵² but if people believe that the majority of parties are corrupt, then voters can either abstain or show their discontent by turning up to the ballot box and spoiling their vote to protest against all available options. This is also one of Cohen's main findings at the individual level and with a sample of 14 Latin American countries.⁵³ Therefore, following the logic of the protest argument, we hypothesize a positive association, whereby more invalid votes are cast in settings with greater corruption (H3b).

The impact of corruption on invalid voting is also conditioned by whether the electoral system includes compulsory voting. Like Kouba and Lysek⁵⁴, we rely on the work of Hirschman⁵⁵ to detail this argument. When explaining possible consumer reactions to the dissatisfactory performance of firms, Hirschman suggested two main options: 'exit' or 'voice'. In electoral terms, 'exit' implies abstention, while 'voice' may translate into several possibilities, with one of them being invalid voting. While voters in voluntary electoral systems always have the exit option⁵⁶, voters' options are more reduced in compulsory

systems because exit is no longer possible. In other words, compulsory voting means that voter dissatisfaction can only be expressed in voice mechanisms such as invalid voting. Accordingly, we hypothesize that compulsory voting increases the effect of corruption on invalid votes. Again, this effect should be stronger in settings where compulsory voting is enforced, while systems with unenforced compulsory still leave a theoretical, if illegal, option of exit (H3c).

Finally, the proportion of invalid voting may also be a response to the interaction between corruption and ethnic fragmentation. According to Mauro and Alesina et al.⁵⁷, ethnic fragmentation impacts corruption probably because corrupt relationships are more likely in smaller, ethnically bound and marginalised groups. Further, ethnic groups tend to support their leaders in a ‘support for gains’ relationship, as has been shown for African countries⁵⁸, the US⁵⁹ and India⁶⁰. Thus, if corruption increases invalid voting, ethnic fragmentation should increase this effect further as the incentive to use this secret form of protest is larger. Hence, hypothesis H3d states that the effect of corruption on invalid voting is stronger in ethnically diverse, as opposed to homogenous, societies.

Data and methods

In contrast to the three previous comparative studies⁶¹, the analysis below is strictly limited to democracies. This is worth mentioning because the above mentioned comparative aggregate studies have claimed to exclusively analyze democracies but actually included non-democracies as well.⁶² For example, Kouba and Lysek⁶³ rely on the Freedom House (FH) scale for their case selection, but they include countries such as Russia and Guatemala for the period between 1980 and 2013. According to FH, Russia was never a democracy in this period, being partially free from 1991 until 2005 and not free after 2005. Guatemala, included in all three comparative studies, is considered partially free and not free from 1980 to 2010.

Mixing democracies with non-democracies in the analysis is not desirable, as it may bias the results. The logics of, especially, expressing protest in elections are likely to be different in non-democracies than in democracies, as is, for instance, the effect of corruption on voters' decisions.⁶⁴ As we know that the determinants for turnout in democracies are different from those in non-democracies,⁶⁵ one can also assume that the mechanisms behind invalid votes in democracies are different from those in non-democracies. Consequently, we opt to restrict the analysis exclusively to democracies.

For the identification of cases, we face a trade-off between expanding the number of cases and limiting the definition of democracy: the more demanding the definition, the lower the number of cases. Inversely, the more relaxed the definition, the higher the number of cases. For the analysis in this study, we rely on the Unified Democracy Scores (UDS) outlined by Pemstein et al.⁶⁶ The UDS comprise information provided by 10 measures of democracy, including the Freedom House scale (that previous studies rely upon), and are an improvement “over isolated democracy measures because they draw upon the work of a wide variety of scholars to both improve rating accuracy and to generate estimates of score uncertainty”.⁶⁷ The UDS are a continuum with a minimum of -1.2 and a maximum of 2.4 , and we define democracies as countries with a mean value equal to or above 0.4 for the UDS.⁶⁸ For example, the Republic of Korea had a mean UDS value of 0.44 in 1988, and it was just crossing the threshold when, as a consolidated democracy, it reached a value of 1.07 in 2008.⁶⁹ The categorization of countries into democracies and non-democracies obtained from this threshold correlates very highly with the categorizations by Boix et al.,⁷⁰ which are not part of the UDS measure. Furthermore, following the logic of previous studies and echoing the established works on turnout, we do not combine presidential and parliamentary elections, as their underlying dynamics and competitions vary.⁷¹ Thus, our analysis includes 417 parliamentary elections in 73 countries on five continents between 1970 and 2011.⁷²

Dependent variable: invalid voting in democracies

The dependent variable is invalid voting defined as the percentage of blank and null ballots cast in the parliamentary election. The main source is International IDEA and the data was manually expanded with data collected by Nohlen and colleagues⁷³ and the Election World website (electionworld.org). This data was completed using Lublin's Election Passport and the Constituency-Level Elections Archive (CLEA) and some mistakes were corrected (e.g. Ecuador 2006 and Spain 2011).

Table 1 shows how the mean level of invalid votes included in the analysis has varied from one decade to the next. The overall mean level of invalid voting in the 417 elections was 3 percent, and above 3.2 percent in both the 1980–1989 and 1990–1999 periods. While such differences may not look especially significant, the fifth column in Table 1 shows that the share of elections with 5 percent of invalid ballots or more is above 15 percent since 1990.

[Table 1 about here]

Table 1 also shows that the distribution of invalid voting is also not homogeneous over the five continents. Specifically, elections in America surpass 5 percent of invalid voting in over 25 percent of the contests. The mean value in the Americas is above 5 percent, while in the remaining continents ranges between 2.2 and 3.1 percent. With the exception of America, there are no significant differences in the percentage of invalid votes between the continents.⁷⁴

[Figure 1 about here]

Figure 1 maps all 417 elections over time and shows their share of invalid votes. The x-axis represents the year of the election while the y-axis accounts for the percentage of

invalid votes. The graph shows that there are 18 elections with invalid voting of 10 percent or more: the most significant outliers with 22 to 30 percent invalid votes are the parliamentary elections of Ecuador in 1986, 1984 and 1996, and of Peru in 2006. There are 49 elections with between 5 and 10 percent of invalid voting. To test for the effect of these outliers, Table A.5 in the Appendix recreates the analysis below, excluding, firstly, all elections with more than 10 percent of invalid votes, secondly, those of more than 7 percent, and thirdly, those that fall outside of two standard deviations around the mean invalid voting level. The results are robust against these alternations.

Independent variables

To test the three sets of hypotheses presented above and avoid the omitted variable bias by including control variables, a series of independent variables needs to be included in the analytical model. The variables of interest to test H1a–b are the effective number of parties and the district magnitude. Both of them follow the specifications outlined by Bormann and Golder.⁷⁵ The former is estimated following Laakso and Taagepera⁷⁶, while the latter is the average district magnitude in an electoral tier, calculated as the total number of seats allocated in an electoral tier divided by the total number of districts in that tier. Further on the institutional level, we include whether the parliamentary election was concurrent with a presidential election. We control for the electoral system with two dummy variables, majoritarian and PR systems, with mixed as the comparison category.

Regarding compulsory voting, we expect that invalid voting is substantially higher in enforced compulsory voting than in other systems (H1c). Studies that differentiate between the levels of enforcement of compulsory voting normally do so with a categorical variable with four values. Fornos, Power and Garand or Dettrey and Schwindt-Bayer both rely on a scale in which 0 is for countries with voluntary voting; 1 is for countries with compulsory voting

mandate but no sanctions against nonvoters written into law; 2 is when compulsory systems possess such legal sanctions but leave them generally unenforced; 3 is for compulsory systems with legal sanctions that are enforced in practice.⁷⁷ Following this classification, categories 1 and 2 account for 8 and 3 per cent of our 417 cases, respectively. Therefore, we collapsed both categories and left the compulsory variable with three, more equally distributed categories: voluntary voting, unenforced compulsory voting and enforced compulsory voting.⁷⁸

The main variable from the societal approach is ethnic fragmentation (H2a–b), which is measured via the Herfindahl Index and understood as the probability that two randomly selected people from a given country will not share certain racial or linguistic characteristics. This data is obtained from Alesina et al.⁷⁹ As H2b proposes that compulsory voting strengthens the effect of ethnic fragmentation, we follow the IDEA data set to distinguish between enforced and unenforced compulsory as well as non-compulsory elections.⁸⁰ We also include, firstly, the literacy rate, which is defined as the total enrollment in primary education, regardless of age, expressed as a percentage of the population of official primary-education age. Further, the level of urbanization is understood as the share of the population living in urban areas as defined by national statistical offices. The data are collected and smoothed by the United Nations Population Division. Third, we include the GDP per capita (logged) in constant US dollars at base year 2000.⁸¹

For the political explanations (H3a–d), we include the difference between the vote shares of the largest and second largest parties as a measure for the competitiveness of the election (H3a). Further, we use the corruption data from V-DEM, which is based on the pervasiveness of political corruption.⁸² The variable summarizes six different types of corruption, covering different areas and levels of politics, and differentiates between executive, legislative and judicial corruption. Finally, the analysis includes the level of

turnout in the election as well as a set of dummies for the continents.⁸³ Table 2 provides an overview of the variables and the sources used for the analysis.

[Table 2 about here]

Analysis: determinants of invalid voting

The following analysis investigates the determinants of invalid voting levels in 417 democratic, parliamentary elections. Given that the observations are nested within specific countries, the most suitable method to take such features into account is multilevel analysis. The Hausman test ($\text{Prob} > \chi^2 = 0.0059$) indicates that the preferred model is a random effects model, and the ICCs in Table 3 confirm the appropriateness of this approach. As a robustness check and following Kouba and Lysek's as well as Ugglä's⁸⁴ approaches, we also ran the models as generalized least square regressions with panel-corrected standard errors that are further corrected for panel-specific AR1 autocorrelation and heteroskedasticity. The results of this alternative modeling strategy, which show that the analysis is robust, can be found in Table A.4 in the Appendix.

Model 1 in Table 3 presents the main results of a baseline model that includes all independent variables but no interaction terms. This model allows an easy inspection of the effect sizes for all the variables. The second model includes the four interaction terms – accounting for hypothesis H2b, H3c, H3d, and the relation of the number of parties and the district magnitude.⁸⁵ As interaction coefficients and significances might hide changes in the effect over individual variables,⁸⁶ Figure 2 shows the average marginal effects graphs for the interactions.

[Table 3 about here]

The first set of hypotheses focuses on three institutional factors; namely district magnitude, the number of parties and whether there is compulsory voting and its level of enforcement. Our confusion hypothesis (H1a) stated that an increase in district magnitude and number of parties would increase invalid voting, while the supply hypothesis (H1b) pointed to the opposite effect. The analysis seems to confirm the confusion argument (H1a) as a higher number of parties increases invalid voting. The district magnitude does not have an effect by itself. The interaction in model 2, graphed in the lower-right panel in Figure 2, shows that the number of parties only has an effect at very low levels of district magnitude, which is negative. Thus, we cannot reject the null hypothesis for either H1a or H1b.

The other major institutional aspect we discussed was the degree of compulsory voting. We differentiated between voluntary and enforced as well as unenforced compulsory system. The main argument is that in the latter contexts, invalid voting is higher (H1c). The main effects of compulsory voting systems in both models show that this differentiation is indeed very relevant. While unenforced and unsanctioned compulsory voting systems do not affect the level of invalid voting in either models or subsequent interactions, enforced compulsory voting is a strong driver of invalid votes. The main effect in model 1 shows that the presence of enforced compulsory voting systems increases the level of invalid voting by more than 6 percent. This effect vanishes with the introduction of the interaction, but we will see below that this institutional setting plays a crucial role for both ethnic fragmentation and corruption.

Further on the institutional level, the electoral-system variable accounting for a majority system shows a significant negative sign, pointing out to a lower level of invalid voting, which is at odds with Uggle's finding.⁸⁷ Also, neither the number of elections held nor whether the elections were concurrent seem to have an impact. This latter result differs from Kouba and Lysek's⁸⁸ analysis on presidential elections.

[Figure 2 about here]

The second set of hypotheses developed above was related to the ethnic fragmentation of a society, and it assumed that higher fragmentation would lead to higher levels of invalid voting (H2a). Furthermore, compulsory voting was hypothesized to increase this effect (H2b). Model 1 confirms H2a, showing that the change from no to full ethnic fragmentation increases the level of invalid voting by 2.6 percent, albeit with a weak significance. In model 2, the interaction with enforced compulsory voting is not only significant but substantially larger. The upper-left panel in Figure 2 shows the effect very clearly. Neither voluntary or unenforced compulsory voting change the effect of ethnic fragmentation. When all citizens are legally obliged to vote and such requirement is enforced, however, the effect of ethnic fragmentation on invalid voting increases dramatically. Thus, we can confirm hypothesis H2b that enforced compulsory voting increases the effect of ethnic fragmentation.

We find several further interesting results with regards to the other societal factors. Higher education levels seem to have a slight tendency to lead to higher levels of invalid voting, which is at odds with Power and Garand's and Kouba and Lysek's⁸⁹ findings. However, this effect is very small and not significant in model 2. Confirming previous studies, economic development does not influence invalid voting and neither does urbanization. The latter finding confirms Uggle's findings but contradicts those of Power and Garand and Kouba and Lysek.⁹⁰

The final set of hypotheses is centered on the political dimension. The stakes hypothesis (H3a) stated that the competitiveness of an election would decrease invalid votes, as voters would perceive that their vote counts for more. Models 1 and 2 both show that the competitiveness of elections does not influence the level of invalid voting, thus we cannot reject the null hypothesis for H3a. This result needs further exploration, as Uggle finds a

significant negative effect, while Kouba and Lysek find a significant positive effect.⁹¹ It could be argued that this is because the measure of competitiveness is an outcome of the election itself, and thus is apparent only after the decision to vote validly or not has already been made. However, only in very rare circumstances will the level of competitiveness not be palpable for voters before the election. In the run-up to the election, in campaigns and through the media, and in particular through the ever-present opinion polls, voters will have a general idea whether an election result will be close or a clear win for one party.

The protest hypothesis (H3b) focused on the effect of corruption, which would increase invalid votes as voters use them to voice their dissatisfaction with the system at large. In model 1, the effect is in the theorized direction and (though weakly) significant. This goes along the findings by Stockemer et al. and Martinez i Coma⁹² on the effect of corruption on voter turnout. In model 2, in which we include the interaction term with compulsory voting, corruption by itself is not significant although the interaction term is (H3c). In order to provide a more detailed account of this finding, the upper-right panel in Figure 2 shows the marginal effect of corruption depending on whether voting is compulsory or not and its level of enforcement. It shows that neither voluntary nor unenforced compulsory voting change the effect of corruption. Enforced compulsory voting, however, significantly and strongly increases the effect of corruption on the proportion of invalid voting. Thus, we can reject the null hypothesis of both H3b and H3c.

Furthermore, it was hypothesized that corruption would increase the effect of ethnic fragmentation on invalid voting (H3d). The general interaction effect in model 2 is statistically significant and the lower-left panel in Figure 2 shows that the effect of ethnic fragmentation becomes stronger with increasing levels of corruption. However, the confidence interval of the ethnic fragmentation effect only excludes the zero value from the 0.3 value of the corruption scale. As the graph shows, increasing levels of ethnic

fragmentation and corruption lead to higher proportion of invalid voting. Thus, along the same lines of earlier findings on the effect of ethnic fragmentation on corruption,⁹³ we find that these two factors interact with regards to the level of invalid voting.

Conclusion

In the 2009 Mexican parliamentary elections, the share of invalid voting nearly doubled from 2.9 percent in 2006 to 5.4 percent. This increase demonstrated a concerted protest by the so-called ‘*annulist* movement’, which proposed casting invalid votes (voice) instead of abstaining (exit) to send a message to the political elite.⁹⁴ This example indicates that the level of invalid voting might be a communicator of widespread popular dissatisfaction and discontent in a democracy. One of the main findings from our global study of invalid voting in 417 parliamentary elections speaks directly to this explanation of invalid voting and shows that the level of corruption in a country is a predictor of invalid voting at the global comparative level.

Simultaneously, ethnic fragmentation of a society has a very strong effect on invalid voting. Indeed, it has the highest predictive power of all the explanatory factors we tested. The more ethnically fragmented a society, meaning the more groups there are with distinct characteristics in terms of culture, language and attitudes, the higher the levels of invalid voting. This effect is even stronger when participation in elections is not voluntary but compulsory and enforced, suggesting that enforcing compulsory voting compels individuals to the ballot box who would otherwise likely not have turned out. It is conceivable but not necessarily so that the mechanism behind ethnic fragmentation might be one of protesting voters of disenfranchised minority groups, for instance, spoiling their ballots deliberately. It is also possible that the variety in languages and cultures increases the risk of voters making errors and, thus, unintentionally excluding themselves from the decision-making process.

A further result of this analysis highlights the importance of studying phenomena like invalid voting at a global comparative level. Both Uggle as well as Kouba and Lysek find the competitiveness of an election has a significant effect on invalid voting, albeit with contradictory directions of effects.⁹⁵ These two studies focus on different parts of the democratic (and not so democratic) world. Our global study focusing on democratic parliamentary elections finds that, even after controlling for continent and country effects, competitiveness has no significant effect at all.

We envision future research to explain invalid voting along three strands. The first is to complement the aggregate analysis with individual survey data for the 73 countries included in this analysis. Such an approach would have the virtue of overcoming the possibility of ecological fallacy, as invalid votes are cast by individuals “driven by individually held characteristics and attitudes”.⁹⁶ Given the period and countries covered in this study, such analysis is not possible at this time.

A second set of possibilities for future research is to include further explanations for which we currently lack the necessary breath of data. For instance, income inequality is another possible source of voter discontent and disconnection from the democratic process.⁹⁷ Another possibility regards the ballot design and technology used at the time of casting it. Pachón, Carroll and Barragán⁹⁸ show that the complexity of ballots impacts invalid votes by testing this mechanism in an experimental setting and with the Colombian case of redesigning ballots between 2007 and 2011. Unfortunately, the data collection efforts to extend such an analysis to a systematic comparison over countries and for decades into the past would be very substantive. While a very novel development, some countries are experimenting with non-paper ballots. For example, studies on US elections⁹⁹ and Brazil¹⁰⁰ indicate that paper ballots perform best. Currently, the effect of ballot technology cannot be studied in a large-scale comparative setting because of missing variance. Over 92 percent of

the countries around the world that hold elections use the traditional paper ballot (Electoral Knowledge Network, ACE Project), and the few early adaptors of electronic voting machines or online voting have implemented these only very recently.

Finally, future research might expand the cover of the analysis to include presidential contests and might help tease out different mechanisms for protest and error. Similarly, expanding the analysis of invalid voting to non-democratic settings, as some recent works on turnout have done¹⁰¹, might also offer insights into the protest and error mechanisms. Such analyses could provide valuable insights into the degree to which invalid voting is a sign of democratic malaise because of systematic obstacles for voters attempting to make their vote count and how much it is a sign of voters rejecting the political supply or system in general. Thus, investigating invalid voting further is crucial for our understanding of present and future democracy as we know it.

References

- Adserà, Alicia, Carles Boix, and Mark Payne. 2003. Are You Being Served? Political Accountability and Quality of Government. *Journal of Law, Economics and Organization* 19 (2):445–90.
- Aldashev, Gani and Mastrobuoni, Giovanni. 2010. Invalid Ballots and Electoral Competition, *Carlo Alberto Notebooks*, 153.
- Alesina, Alberto, Reza Baquir and William Easterly. 1999. Public Goods and Ethnic Divisions. *Quarterly Journal of Economics* 114 (4): 1243-1284.
- Alesina, Alberto and Eliana La Ferrara. 2000. Participation in Heterogeneous Communities. *Quarterly Journal of Economics* 115 (3): 847-904.
- Alesina, Alberto, Arnaud Devlesschauwer, William Easterly, Sergio Kurlat, and Romain Wacziarg. 2003. Fractionalisation. *Journal of Economic Growth* 8:155-194.

- Anderson Christopher and Yuliva Tverdova. 2003. Corruption, Political Allegiances, and Attitudes Toward Government in Contemporary Democracies. *American Journal of Political Science* 47(1): 91–109.
- Ansolabehere, Stephen and Charles Stewart III. 2005. Residual Votes Attributable to Technology. *The Journal of Politics*, 67(2): 365-389.
- Banerjee, Abhijit and Rohini Pande. 2007. *Parochial Politics: Ethnic Competition and Politician Corruption in India*. KSG Working Paper No. RWP07-031. <http://dx.doi.org/10.2139/ssrn.976548>
- Birch, Sarah. 2010. Perceptions of Electoral Fairness and Voter Turnout. *Comparative Political Studies*, 43 (12):1601-1622.
- Blais, Andre, and Agnieszka Dobrzynska, 1998. Turnout in Electoral Democracies. *European Journal of Political Research* 33, 239-261.
- Bobillo, Francisco. 1988. “El voto estéril en las elecciones generales españolas”, *Revista de Estudios Políticos*, 62, 69-88.
- Boix, Carles, Michael Miller and Sebastian Rosato. 2013. A Complete Data Set of Political Regimes, 1800-2007. *Comparative Political Studies* 46(12): 1523-54.
- Bormann, N.-C., & Golder, M. 2013. Democratic electoral systems around the world, 1946–2011, *Electoral Studies*, 32 (2), 360–369.
- Brambor, Thomas, William R. Clark and Matt Golder. 2006. Understanding Interaction Models: Improving Empirical Analyses. *Political Analysis*, 14: 63-82.
- Cancela, Joao and Benny Geys. 2016. Explaining Voter Turnout: A Meta-Analysis of National and Subnational Elections. *Electoral Studies*, 42:264-275.
- Carlin, Ryan. 2006. The Decline of Citizen Participation in Electoral Politics in Post-authoritarian Chile. *Democratization*, 13(4): 632-651, DOI: 10.1080/13510340600791921

- Cisneros Yescas, Gerardo Isaac. 2013. Movilización, Escolaridad y Voto Nulo. *Política y Gobierno* 20 (1):39-78.
- Cisneros Yescas, Gerardo Isaac. 2016. Gobernanza Electoral y ¿Voto Nulo Escolarizado? El Efecto de la Coalición Parcial y de la Boleta Electoral en la Elección Federal de 2012 en Mexico. *Estudios Politicos* (37): 143-165.
- Cohen, Mollie. 2018. Protesting via the Null Ballot: An Assessment of the Decision to Cast an Invalid Vote in Latin America. *Political Behavior* 40 (2):395-414.
- Costa, Dora, and Matthew Kahn. 2003. Civic Engagement and Community Heterogeneity: An Economist's Perspective. *Perspectives on Politics* 1(1):103-111.
- Coppedge, Michael, John Gerring, Staffan I. Lindberg, Svend-Erik Skaaning, Jan Teorell, David Altman, Michael Bernhard, M. Steven Fish, Adam Glynn, Allen Hicken, Carl Henrik Knutsen, Kyle Marquardt, Kelly McMann, Farhad Miri, Pamela Paxton, Daniel Pemstein, Jeffrey Staton, Eitan Tzelgov, Yi-ting Wang, and Brigitte Zimmerman. 2016. "V-Dem [Country-Year/Country-Date] Dataset v6.2." Varieties of Democracy (V-Dem) Project.
- Dettrey, Bryan J. and Leslie A. Schwindt-Bayer. 2009. Voter Turnout in Presidential Democracies. *Comparative Political Studies*, 42(10):1317-1338.
- Driscoll, Amanda, and Michael J. Nelson. 2014. Ignorance or Opposition? Blank and Spoiled Votes in Low-Information, Highly Politicized Environments. *Political Research Quarterly*, 67(3): 547-561.
- Dalhberg, Steffan and Maria Solevid. 2017. Does corruption suppress voter turnout? *Journal of Elections, Public Opinion and Parties*. 26 (4): 489-510.
- Eifert, Benn, Edward Miguel and Daniel Posner. 2010. Political Competition and Ethnic Identification in Africa. *American Journal of Political Science*, 54 (2): 494–510.
- Fatke, Matthias and Till Heinsohn. 2017. Invalid Voting in German Constituencies. *German Politics*, 26 (2): 273-291

- Fornos, Carolina A., Timothy J. Power, and James C. Garand. 2004. Explaining Voter Turnout in Latin America, 1980 to 2000. *Comparative Political Studies*, 37(8): 909-40.
- Galatas, Steven. 2008. "None of the Above?" Casting Blank Ballots in Ontario Provincial Elections. *Politics and Policy*, 36(3):448-473.
- Glaeser, Edward, David Laibson, Jose Scheinkman, and Christine Soutter, C.L. 2000. Measuring Trust. *Quarterly Journal of Economics* 115 (3): 811-846.
- Glaeser, Edward and Raven E. Saks. 2006. Corruption in America. *Journal of Public Economics*, 90 (6-7): 1053-1072.
- Herron, Michael and Jasjeet Sekhon. 2003. Overvoting and Representation: an Examination of Overvoted Presidential Ballots in Broward and Miami-Dade counties. *Electoral Studies*, 22: 21-47.
- Hirschmann, Albert O. 1970. *Exit, Voice, and Loyalty: Responses to Decline in Firms, Organizations, and States*. Harvard University Press, Cambridge, MA.
- Knack, Stephen and Martha Kropf. 2003. Voided Ballots in the 1996 Presidential Election: A County-Level Analysis. *The Journal of Politics*, 65(3): 881-897.
- Kouba, Karel, and Jakub Lysek. 2016. Institutional Determinants of Invalid Voting in Post-Communist Europe and Latin America. *Electoral Studies*, 41: 92-104.
- Laakso, Markku and Rein Taagepera. 1979. Effective Number of Parties: A Measure with Application to West Europe. *Comparative Political Studies*, 12(1):3-27.
- Lago-Peñas, Ignacio and Santiago Lago-Peñas. 2010. The Determinants of Tax Morale in Comparative Perspective: Evidence from European Countries. *European Journal of Political Economy* 26: 441-453.
- Lago-Peñas, Ignacio, Sandra Bermudez, Marc Guinjoan and Pablo Simon. 2017. Turnout and Social Fractionalisation. *Politics*. doi/10.1177/0263395716686598
- Lublin, David. "Election Passport." American University. <http://www.electionpassport.com>.

- Martinez i Coma, Ferran. 2016. Turnout Determinants in Democracies and in Non-Democracies. *Electoral Studies*, 41:50-59.
- Martinez i Coma, Ferran and Alessandro Nai. 2017. Ethnic Diversity Decreases Turnout. Comparative Evidence from 650 Elections around the World. *Electoral Studies* 49: 75-95.
- Mauro, Paolo. 1995. Corruption and Growth. *Quarterly Journal of Economics* 110:681–712.
- McAllister, Ian and Toni Makkai. 1993. Institutions, Society or Protest? Explaining Invalid Votes in Australian Elections. *Electoral Studies*, 12(1): 23-40.
- Nohlen, Dieter. 2005a. *Elections in the Americas: A Data Handbook. Vol. I: North America, Central America, and the Caribbean*, Oxford: Oxford University Press
- Nohlen, Dieter. 2005b. *Elections in the Americas: A Data Handbook. Vol. II: South America*, Oxford: Oxford University Press.
- Nohlen, Dieter., Florian Grotz, and Christof Hartmann. 2001a. *Elections in Asia and the Pacific: A Data Handbook. Vol. I: Middle East, Central Asia, and South Asia*, Oxford u. a.: Oxford University Press.
- Nohlen, Dieter., Florian Grotz, and Christof Hartmann. 2001b. *Elections in Asia and the Pacific: A Data Handbook. Vol. II: South East Asia, East Asia, and the South Pacific*, Oxford u. a.: Oxford University Press.
- Nohlen, Dieter, Michael Krennerich and Bernard Thibaut. 1999. *Elections in Africa: A Data Handbook*, Oxford: Oxford University Press.
- Obradovic-Wochnik, Jelena and Alexander Wochnik. 2014. Invalid Ballots and the “Crisis of Representative Democracy”: Re-inventing Protest at the 2012 at the Serbian Elections. *East European Politics and Societies and Cultures* 28(4): 808-835.
- Pacek, Alexander, C., Grigori Pop-Eleches and Joshua Tucker. 2009. Disenchanted or Discerning: Voter Turnout in Post-Communist Countries. *The Journal of Politics*, 71(2):473-491.

- Pachón, Mónica, Royce Carroll, Hernando Barragán. 2017. Ballot design and invalid votes: Evidence from Colombia. *Electoral Studies*, 48: 98-110.
- Pemstein, Daniel, Stephen A. Meserve, and James Melton. 2010. Democratic Compromise: A Latent Variable Analysis of Ten Measures of Regime Type. *Political Analysis*, 18: 426-449.
- Pharr, Susan and Robert Putnam. 2000. *Disaffected Democracies: What is Troubling the Trilateral Countries?* Princeton, NJ: Princeton University Press.
- Power, Timothy J. and James Garand C. 2007. Determinants of Invalid Voting in Latin America. *Electoral Studies*, 26:432-444.
- Power, Timothy J. and Timmons Roberts. 1995. Compulsory Invalid Ballots, and Abstention in Brazil. *Political Research Quarterly*, 48(4): 795-826.
- Rothstein, Bo. 2003. Social Capital, Economic Growth and Quality of Government: The Causal Mechanism. *New Political Economy* 14(1): 67–87.
- Seligson, Mitchell. 2006. The Measurement and Impact of Corruption Victimization: Survey Evidence from Latin America. *World Development* 34(2): 381–404.
- Skaaning Svend-Erik, John Gerring, and Henrikas Bartusevicius. 2015. A Lexical Index of Electoral Democracy. *Comparative Political Studies*, 48: 1-35.
- Steifbold, Rodney P. 1965. The Significance of Void Ballots in West German Elections. *The American Political Science Review*, 59(2):391-407.
- Stockemer, Daniel, Bernadette La Montagne, and Lyle Scruggs. 2011. Bribes and Ballots: The Impact of Corruption on Voter Turnout in Democracies. *International Political Science Review*, 34(1): 74-90.
- Stockemer, Daniel. 2016. What Affects Voter Turnout? A Review Article/ Meta-Analysis of Aggregate Research. *Government and Opposition* doi:10.1017/gov.2016.30 1-25.
- Uggla, Fredrik. 2008. Incompetence, Alienation, or Calculation? *Comparative Political Studies*, 41(8): 1141-1164.

- Warren, Mark. 2004. What Does Corruption Mean in a Democracy? *American Journal of Political Science* 48(2): 328–43.
- Wobig, Jacob. 2013. Defending democracy with international law: preventing coup attempts with democracy clauses. *Democratization*, 22(4): 631-654.
- Zucco, Cesar Jr, and Jairo M. Nicolau. 2016. Trading Old Errors for New Errors? The impact of electronic voting technology on party label votes in Brazil. *Electoral Studies*, 43: 10-20.
- Zulfikarpasic, Adelaide. 2001. Le vote blanc: Abstention civique or expression politique? *Revue Francaise de Science Politique*, 51: 247-268.

¹ For the most recent meta-analyses, see Geys and Cancela, “Explaining Voter Turnout”; Stockemer, “What Affects Voter Turnout?”

² Power and Garand, “Determinants of Invalid Voting in Latin”, 403.

³ Aldashev and Mastrobuoni, “Invalid Ballots and Electoral Competition”; Carlin, “The Decline of Citizen Participation”; Cisneros Yescas, “Movilización, Escolaridad y Voto Nulo”; Cisneros Yescas, “Gobernanza Electoral y ¿Voto Nulo Escolarizado?”; Driscoll and Nelson, “Ignorance or Opposition?”; Galatas, “None of the Above?”; Zucco and Nicolau, “Trading Old Errors for New Errors?”.

⁴ See also Power and Garand, “Determinants of Invalid Voting in Latin”.

⁵ Ugglá “Incompetence, Alienation, or Calculation?”; Kouba and Lysek, “Institutional Determinants of Invalid Voting”.

⁶ Power and Garand, “Determinants of Invalid Voting in Latin”, 433.

⁷ For example, Stiefbold addressed the topic for former West Germany and more recently Fatke and Heinsohn have done so for the 2013 general election; Bobillo analyzed Spain; McAllister and Makkai analyzed Australia; Power and Roberts and Zucco and Nicolau studied Brazil; Zulfikarpasic has examined France and Carlin, Chile. Galatas has performed a subnational analysis for Ontario in Canada; Aldashev and Mastrobuoni centered on Italy while Driscoll and Nelson investigated Bolivia; Cisneros Yescas has surveyed Mexico; and Obradovic-Wochnik and Wochnik for Serbia.

⁸ Ibid.

⁹ Kouba and Lysek, “Institutional Determinants of Invalid Voting”.

¹⁰ Ugglá, “Incompetence, Alienation, or Calculation?”

¹¹ Power and Garand, “Determinants of Invalid Voting in Latin”, 433.

¹² Ibid., 433.

¹³ McAllister and Makkai, “Institutions, Society or Protest?”; Power and Garand, “Determinants of Invalid Voting in Latin”

¹⁴ Ibid.

¹⁵ Blais and Dobrzynska, “Turnout in Electoral Democracies”.

¹⁶ Power and Garand, “Determinants of Invalid Voting in Latin”, 436.

¹⁷ Blais and Dobrzynska, “Turnout in Electoral Democracies”, 250.

¹⁸ Power and Roberts “Compulsory Invalid Ballots”, 803.

¹⁹ We thank both reviewers for raising this point.

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- ²⁰ Dettrey and Schwindt-Bayer, “Voter Turnout in Presidential Democracies”; Fornos, Power and Garand, “Explaining Voter Turnout in Latin America”.
- ²¹ Kouba and Lysek, “Institutional Determinants of Invalid Voting”.
- ²² Power and Garand, “Determinants of Invalid Voting in Latin”; Ugglä, “Incompetence, Alienation, or Calculation?”
- ²³ McAllister and Makkai, “Institutions, Society or Protest?”.
- ²⁴ Power and Garand, “Determinants of Invalid Voting in Latin”.
- ²⁵ Power and Roberts, “Compulsory Invalid Ballots”; Steifbold 1965; Zulfikarpasic 2001.
- ²⁶ Power and Garand, “Determinants of Invalid Voting in Latin”.
- ²⁷ Knack and Kropf, “Voided Ballots in the 1996 Presidential Election”; Herron and Sekhon, “Overvoting and Representation”.
- ²⁸ Herron and Sekhon “Overvoting and Representation”, 29.
- ²⁹ McAllister and Makkai, “Institutions, Society or Protest?”.
- ³⁰ McAllister and Makkai, “Institutions, Society or Protest?”, 26.
- ³¹ Glaeser et al., “Measuring Trust”.
- ³² Lago-Peñas and Lago-Peñas, “The Determinants of Tax Morale”.
- ³³ Alesina, Baquir and Easterly., “Public Goods and Ethnic Divisions”.
- ³⁴ Alesina and La Ferrara, “Participation in Heterogeneous Communities”.
- ³⁵ Lago et al. “Turnout and Social Fractionalisation”, 4.
- ³⁶ Ibid., 5.
- ³⁷ Ibid., 2016.
- ³⁸ Martinez i Coma and Nai, “Ethnic Diversity Decreases Turnout”.
- ³⁹ Costa and Kahn, “Civic Engagement and Community Heterogeneity”, 104.
- ⁴⁰ Kouba and Lysek, “Institutional Determinants of Invalid Voting”.
- ⁴¹ Pacek, Pop-Eleches, Tucker, “Disenchanted or Discerning”
- ⁴² Ugglä, “Incompetence, Alienation, or Calculation?”
- ⁴³ McAllister and Makkai, “Institutions, Society or Protest?”, 27.
- ⁴⁴ Warren, “What Does Corruption Mean”.
- ⁴⁵ Rothstein, “Social Capital, Economic Growth”.
- ⁴⁶ Anderson and Tverdova, “Corruption, Political Allegiances”.
- ⁴⁷ Pharr and Putnam, *Disaffected Democracies*.
- ⁴⁸ Seligson, “The Measurement and Impact of Corruption”.
- ⁴⁹ Birch, “Perceptions of Electoral Fairness”.
- ⁵⁰ Martinez i Coma, “Turnout Determinants in Democracies and in Non-Democracies”.
- ⁵¹ Stockemer, LaMontagne and Scruggs, “Bribes and Ballots”.
- ⁵² Adsera, Boix and Payne, “Are You Being Served?”.
- ⁵³ Cohen, “Protesting Via the Null Ballot”.
- ⁵⁴ Kouba and Lysek, “Institutional Determinants of Invalid Voting”.
- ⁵⁵ Hirschman *Exit, Voice, and Loyalty*.
- ⁵⁶ Ibid.
- ⁵⁷ Mauro “Corruption and Growth”; Alesina et al., “Fractionalisation”.
- ⁵⁸ Eifert, Miguel and Posner “Political Competition and Ethnic Identification in Africa”.
- ⁵⁹ Glaeser and Saks, “Corruption in America”.
- ⁶⁰ Banerjee and Pande *Parochial Politics*.
- ⁶¹ Kouba and Lysek, “Institutional Determinants of Invalid Voting”; Power and Garand, “Determinants of Invalid Voting in Latin”; Ugglä, “Incompetence, Alienation, or Calculation?”.
- ⁶² The Freedom House (FH) scale summarizes the level of civil liberties from 1 (free) to 7 (non-free). The cases included in the study by Kouba and Lysek (“Institutional Determinants of Invalid Voting”) have a mean FH value of 2.69 with a maximum of 6. Power and Garand

(“Determinants of Invalid Voting in Latin”) reverse the scales and add the FH scales, and their cases range from 0 to 10 (mean 6.39). Ugglä (“Incompetence, Alienation, or Calculation?”) uses cases with scores between 1 and 7.

⁶³ Kouba and Lysek, “Institutional Determinants of Invalid Voting”.

⁶⁴ Martinez i Coma, “Turnout Determinants in Democracies and in Non-Democracies”.

⁶⁵ Ibid.

⁶⁶ Pemstein, Meserve and Melton, “Democratic Compromise”.

⁶⁷ Ibid., 442.

⁶⁸ In order to check for the robustness of our results against this decision, we run the analytical models when the democracy threshold is set to 0.3 or 0.5. Examples of a mean score of 0.3 are Burundi in 2005, Greece in 1974 or Paraguay in 1993. Examples of a mean score of 0.5 are Nicaragua in 2006, Moldova in 2005 or Paraguay in 2006. Table A.2 (Appendix) shows that the results are independent from this decision. Furthermore, Table A.3 shows the same robustness check when defining democracies according to Boix, Miller and Rosato (“A Complete Data Set of Political Regimes”) and with an FH score equal to or smaller than 2.5. Again, the results are robust.

⁶⁹ UDS is one of the standard measures in the literature when classifying democracies. For example, Skaaning, Gerring and Bartusevicius use it as one of the indices to which contrast when presenting their lexicographic index of democracy. Several authors, e.g. Martinez i Coma and Nai on their turnout study or Wobig in his coup prevention paper, rely on it in their works to distinguish democratic from non-democratic regimes.

⁷⁰ Boix, Miller and Rosato, “A Complete Data Set of Political Regimes”.

⁷¹ Kouba and Lysek, “Institutional Determinants of Invalid Voting”; Power and Garand, “Determinants of Invalid Voting in Latin”; Ugglä, “Incompetence, Alienation, or Calculation?”

⁷² It needs to be acknowledged that the unit of analysis in this study, as in most previous ones, is the aggregate share of invalid votes in an election. While rendering one’s vote invalid is an individual decision, individual-level data on this phenomenon is extremely limited. Thus, our theoretical explanations are located at the election level, and the purpose of our analysis is to test the systematic effect of factors at countries’ societal, political and institutional levels.

⁷³ Nohlen et al *Elections in Africa*; Nohlen, Grotz and Hartmann, *Elections in Asia and the Pacific*; Nohlen, Grotz and Hartmann, *Elections in Asia and the Pacific*; Nohlen, *Elections in the Americas*; Nohlen, *Elections in the Americas*.

⁷⁴ There are no significant differences between the mean percentages of invalid votes in Western Europe compared to Eastern Europe. While the former has a mean of 2.2 for 159 elections, the latter shows a mean of 2.38 for 64 contests.

⁷⁵ Bormann and Golder “Democratic Electoral Systems”.

⁷⁶ Laakso and Taagepera “Effective Number of Parties”.

⁷⁷ Fornos, Power and Garand, “Explaining Voter Turnout in Latin America”; Dettrey and Schwindt-Bayer, “Voter Turnout in Presidential Democracies”.

⁷⁸ When running the models with the suggested 4 categories in the variable, results do not change.

⁷⁹ Alesina et al., “Fractionalisation”.

⁸⁰ Power and Garand (“Determinants of Invalid Voting in Latin”) propose distinguishing further among compulsory voting systems with regard to the level of penalization for non-compliance. Because the number of observations for this finer categorization is rather small, we only distinguish between the presence and absence of enforcement in compulsory voting.

⁸¹ As with institutional variables, those are not the only covariates that have been suggested. For example, Ugglä (“Incompetence, Alienation, or Calculation?”) also considers

unemployment rate, which he found to be not significant. Kouba and Lysek (“Institutional Determinants of Invalid Voting”) also include income inequality and change in per capita GDP, all of them non-significant. Thus, we do not include them here.

⁸² This measure is based on Coppedge et al., 2016 and does not allow us to distinguish different forms of corruption. According to Johnston (2005), corruption varies to a great extent across countries, depending on their political institutions. In countries with strong institutions, corruption is about market influence, and in countries with weak institutions, we may observe elite cartel corruption (see also Dahlberg and Solevid, 2016, p. 492). However, we currently lack the data to distinguish corruption targeting the market versus the political level at a sufficient scale to include in the present analysis.

⁸³ The correlation among the variables is reasonable, and only one value is higher than 0.7 (corruption and the logarithm of GDP). Other variables, such as competitiveness and majority and PR electoral systems correlate below .16.

⁸⁴ Kouba and Lysek, “Institutional Determinants of Invalid Voting”; Ugglä, “Incompetence, Alienation, or Calculation?”

⁸⁵ Both models were extensively tested for robustness against changes in the definition of democracies, variable alternations and modelling strategies. These tests, which can be found in the Appendix, show an overall stability of the model with only minor changes in effect sizes but no changes in significances, size of confidence intervals or effect directions.

⁸⁶ Brambor, Clark and Golder, "Understanding Interaction Effects".

⁸⁷ Ugglä, “Incompetence, Alienation, or Calculation?”

⁸⁸ Kouba and Lysek , “Institutional Determinants of Invalid Voting”.

⁸⁹ Power and Garand, “Determinants of Invalid Voting in Latin”; Kouba and Lysek , “Institutional Determinants of Invalid Voting”.

⁹⁰ Ugglä, “Incompetence, Alienation, or Calculation?”; Power and Garand , “Determinants of Invalid Voting in Latin”; Kouba and Lysek , “Institutional Determinants of Invalid Voting”.

⁹¹ Ugglä, “Incompetence, Alienation, or Calculation?”; Kouba and Lysek , “Institutional Determinants of Invalid Voting”.

⁹² Stockemer et al., “Bribes and Ballots”; Martinez i Coma, “Turnout Determinants in Democracies and in Non-Democracies”.

⁹³ Alesina et al., “Fractionalisation”; Mauro, "Corruption and Growth".

⁹⁴ Cisneros Yescas, “Movilización, Escolaridad y Voto Nulo”.

⁹⁵ Ugglä, “Incompetence, Alienation, or Calculation?”; Kouba and Lysek , “Institutional Determinants of Invalid Voting”.

⁹⁶ Cohen, "Protesting via the Null Ballot".

⁹⁷ We would like to thank one of the reviewers for this idea.

⁹⁸ Pachón, Carroll and Barragán, "Ballot Design and Invalid Votes".

⁹⁹ Ansolabehere and Stewart III, "Residual Votes Attributable to Technology", 366.

¹⁰⁰ Zucco and Nicolau, “Trading Old Errors for New Errors?”.

¹⁰¹ Martinez i Coma, “Turnout Determinants in Democracies and in Non-Democracies”.