

Political Behavior in Complex Informational Environments:
The Effect of Number of Parties on Political Efficacy, Voter Turnout and Political
Knowledge

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DEDICATION

To my parents for all their love and support.

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Chapter 1

Introduction

1.1 The Puzzle

Elections are the bedrock of democracy. The right of ordinary citizens to influence political decisions, directly or through the selection of representatives, is the defining element of a democratic system. Intrinsic to the merit of elections is the availability of distinct options from which voters can choose, may it be ideologically-opposing political parties or simply an alternative to who is in power.¹ And given the power of citizens in an election emanates from the existence of options, the absence of alternatives to choose from implies no control for the populace while a larger number of choices should provide individuals with a greater sense of control over the political process.

In fact, scholars have argued that a larger number of parties competing in an election should promote a more diverse set of options on the political menu of individuals, thus enhancing electors' potential to select an alternative that better represents their preferences (Coppedge 2007, Dalton 2008, Norris 2004). In other words, the expansion of electoral alternatives implies an approximation to the democratic ideal of interest-based representation, which should heighten ordinary citizens' levels of political efficacy (Karp 2012, Karp and Banducci 1999, Karp, Banducci and Bowler 2008), or "the feeling that individual political action does have, or can have, an impact upon the political process" (Campbell and Miller 1954, p. 184).

A complementary proposition suggests that a larger set of contestants incentivizes parties to distinguish themselves by generating various policy proposals that more closely align with the preferences of citizens, and to assure that information is communicated ef-

¹ In a quote that represents what has been coined as the minimalist definition of democracy, Przeworski et al. (2000, p. 54) state that "Democracy is a system in which incumbents lose elections and leave office when the rules so dictate."

fectively to the electorate (Downs 1957). This theory of surging competition proposes that as the number of contestants increase, parties will invest more in outreach efforts to inform and mobilize the public, which should in turn lead to a higher level of efficacy from citizens (Karp and Banducci 2008, Karp 2012).

Based in part on these arguments, experts have advocated that new democracies institute some form of proportional electoral formula that can stimulate the creation of multiple political parties (Norris 1997, Lijphart 1999).² As a matter of fact, elections in the majority of developing democracies are contested by multiple parties, and elections in many of the youngest democracies have been marked by a multitude of options on the electoral ballot.³ But do higher or increasing levels in the number of electoral options actually instill a greater sense of efficacy among citizens?

This dissertation is motivated by this question. In trying to understand the impact of more electoral options on individuals' perception about their role in politics, I dispute the claim that more options is necessarily better for the public.⁴ I posit that the public's lack of constrained belief-systems and limited ability to absorb and process political information hampers the potential benefits associated with more electoral options (Converse 1964). Furthermore, I contend that scholars have assumed that more parties promote the empowerment of citizens due to a confounding positive effect between proportional representation and turnout while existing works provide little evidence that more parties increase ordinary citizens' political efficacy through the congruity of preferences between the mass public and political parties or through increasing incentives to mobilize potential electors through outreach efforts. Instead, I rely on works from psychology, especially social-cognitive the-

² Other outcomes associated with the implementation of a proportional formula are an increase in voter turnout (Blais and Carty 1990, Blais and Dobrzynska 1998, Powell 1986), higher satisfaction with elections, particularly among supporters of losing parties (Anderson and Guillory 1997, Anderson et al. 2005), and the improved representation of social minorities (Norris 1997).

³ Young democracies like Kosovo, Tunisia, Iraq and Afghanistan are examples of the inflated number of contestants in recent elections. Exceptions to this pattern tend to be former British colonies where the Westminster system was implemented. For a distribution of effective number of legislative parties (ENLP) in developing democracies by regions of the world (Laakso and Taagepera 1979), see appendix A.

⁴ As mentioned above, however, it is important to note that at least two alternatives is fundamental to give citizens' at least some agency over the decision-making process.

ory, to theorize that increasing the amount and complexity of political information, like increasing the number of electoral options, tends to negatively affect the engagement of individuals with politics due to lower levels of political efficacy.

In this introductory chapter, I discuss the limitations of arguments that suggest more electoral options should improve citizens' political efficacy by reviewing findings from the psychology and political behavior literatures that challenge assumptions about the benefits of an expansive set of electoral choices for citizens. In the second chapter, I elaborate my theory of why multiparty systems lead to lower levels of efficacy, and test how variation in the number of political parties affects perceptions of political efficacy with panel data from New Zealand, survey data across subnational units in Brazil, and with nearly 100 surveys across 25 countries of the Americas. In the third chapter, I explore a behavioral implication of lower levels of efficacy by analyzing how rates of turnout are affected by varying number of candidates across municipalities in Colombia and Brazil, and across time in New Zealand. In the fourth chapter, I debate the validity of results that point toward a positive relationship between the number of parties and citizens' level of political knowledge by demonstrating that results from an important pioneering study suffer from lack of robustness due to arbitrary decisions in the statistical analysis, and by conducting an original test of this relationship with a larger dataset composed of 88 surveys from 48 countries.

1.2 The Case for More Electoral Choices

The case for a positive effect of more options on individual efficacy is grounded on two main ideas: 1) the optimization of the linkage between individuals and parties, 2) the benefits of increasing party competition for citizens- and two main findings: 3) a positive correlation between number of parties and voter turnout, and 4) results that indicate individuals in countries with more parties have higher levels of political knowledge than in systems with fewer parties.

1.2.1 Diversity of Options and Mobilization

By offering a wider range of options on the electoral ballot, systems with multiple parties are theorized to provide ordinary individuals with a better chance of finding a political party that represents their preferences (Coppedge 2007, Dalton 2008, Norris 2004). In essence, the argument rests on the idea that with a larger set of menu options, even the pickiest of voters will find a party to their liking. For example, suppose citizens have views either in favor or against government intervention on the economy and either in favor or against same-sex marriage. In this simple scenario of two political dimensions, in order for all potential electors to find a party that aligns with their preferences, there would have to be at least four distinct political options.⁵ The addition of an extra binary issue dimension, e.g. joining international organizations or not, means that in order for all possible combinations of opinions be represented by a unique party, the number of electoral options would need to increase geometrically to eight. Hence, the diversity of options hypothesis states that because a larger number of parties should provide a more diverse set of options on the political menu of the mass public, those who would otherwise feel alienated by a limited choice set to participate in politics are more likely to be motivated to participate in politics (Dalton 2008, Karp 2012, Ladner and Milner 2006).

The second interrelated argument in favor of more electoral options for the individuals is that the existence of more parties in an election increases the incentives for parties to provide potential voters with better information and dedicate more resources toward voter mobilization efforts. That is, in a scenario in which there are multiple competitors, parties have the incentive to diversify their offerings and assure that citizens understand the distinctiveness between options (Downs 1957). And even if the general population does not have fixed preferences over all issue dimensions, parties could gain electoral support through mobilization through effective political communication and targeted interactions

⁵ That is, in favor of economic intervention and in favor of same-sex marriage, in favor of economic intervention and against same-sex marriage, against economic intervention and in favor of same-sex marriage, and against economic intervention and against same-sex marriage.

with potential voters (Karp 2012, Karp and Banducci 1999, Karp, Banducci and Bowler 2008).⁶ Hence, the mobilization hypothesis proposes that more parties should lead to more competition between alternatives, which in turn should lead to more outreach efforts from parties including effective information that improve the public's level of perceived efficacy.

The extent to which these two mechanisms have found empirical support is, however, limited. Karp and Banducci (1999) find that the perception of vote effectiveness and levels of internal efficacy improved, on average, after the number of parties increased in the first election after the implementation of a more proportional electoral formula in New Zealand.⁷ Yet, Karp and Bowler (2001) find that satisfaction with democracy in New Zealand started to drop a year and a half into the new system due to preferences for single party government. Karp and Banducci (2008) fail to find a relationship between the number of parties in parliament and a measure of political efficacy with data from the Comparative Study of Electoral Studies. In fact, their results suggest that larger numbers of parties in the coalition government are associated with a decrease in perceptions of vote efficacy. Finally, Karp (2012) does not find a larger number of parties to be associated with higher rates of individuals reporting experiences of mobilization in Europe.

Comparative studies of ideology and partisanship also indicate that a larger fragmentation in party system is associated with lower levels of ideology-based voting and weaker attachment to political parties.⁸ For instance, larger number of parties or candidates is associated with lower levels of partisan attachments (Huber, Kernell and Leoni 2005, Lupu 2015b), moderately lower levels of self-placement on the left-right spectrum in Latin America (Zechmeister and Corral 2013, Singer 2016)⁹, lower levels of trust in po-

⁶ Mueller and Murrell (1986) suggest that parties are specifically incentivized to compete for the vote of the poor given variation in electoral participation is often explained by the turnout rates of the less well-off.

⁷ I discuss the process that led to the change in electoral system and its impact on the general public in more detail in chapter 2.

⁸ Considering that feelings of political efficacy should be both a cause and a product of partisanship- those who have an attachment to a party should feel more efficacious, and those who are confident in their capability to understand politics should be more likely to dedicate cognitive efforts to sort through the parties and find one that best aligns with their preferences- we should expect a positive relationship between number of parties and levels of party identification.

⁹ It should be noted that earlier studies from Western Europe find that individuals' self-placement on left-

litical parties in Eastern Europe (Ceka 2012), and lower levels of ideological voting (Dalton 2008, Lau and Redlawsk 2006) and correct voting (Cunow 2014, Lau and Redlawsk 1997).¹⁰

In addition to the shortage of empirical results in favor of more electoral options, these arguments stand in contrast to research on individuals' cognitive ability to process information and make decisions.¹¹ For example, studies in psychology suggest that increasing the number of choices may lead individuals to become discouraged by the efforts necessary to make an informed decision, particularly in decisions in which the stakes are high (Luce, Bettman and Payne 1997, Schwartz 2004, Huang and Zhang 2013). Experiments on consumer behavior provide evidence that more options can be demotivating as people are less likely to purchase products or to engage in activities when offered a larger number of options (Iyengar and Lepper 2000, Iyengar 2010). Also, works from political behavior suggest that large amounts of options and information can lead to voter indecision, inaction, information overload, and disengagement from politics (Cunow 2014, Lau and Redlawsk 2006, Rahn, Aldrich and Borgida 1994, Rennó 2004, Sniderman and Levendusky 2007).

Added options to the political menu of ordinary citizens could be valuable if individuals were able to observe and process large amounts of information about available choices (Schwartz 2004). That is, the benefits of more options is likely to be enjoyed by those who have clear policy preferences and resources to digest complex political information. In reality, however, the great majority of ordinary citizens do not have high levels of political knowledge nor high levels of motivation to become better informed (Delli Carpini and Keeter 1996).

One could argue that in order to make sense of complex informational contexts,

right scale are more closely connected to issue positions and partisanship in multiparty systems (Inglehart and Klingemann 1976, Huber 1989, Knutsen 1997).

¹⁰ Huber, Kernell and Leoni (2005) actually find the total number of electoral options to be associated with higher levels of partisanship, but a stronger negative association between the effective number of legislative parties and partisanship levels.

¹¹ For a review of this literature, see Druckman (2005).

“encyclopedic knowledge” of candidates’ policies is not necessary (Lupia 1994). While it is plausible that individuals may be able to overcome limitations in the process of digesting information through the use of heuristics (McKelvey and Ordeshook 1986, Sniderman, Brody and Tetlock 1991, Lupia and McCubbins 1998), an increase in the number of options potentially require more or better heuristics to avoid the increasing demands of processing more information. In fact, a second wave of studies on heuristics suggest that the effectiveness of informational shortcuts is debatable, or at least, often limited (Bartels 1996, Kinder 1998, Kuklinski et al. 2001, Lau and Redlawsk 2001).¹² The effectiveness of a shortcut depends on the accurateness of the information (Bartels 1996), as well as the amount of information required from individuals to recollect (Lupia and McCubbins 1998). And because the amount of information tends to be larger and less precise in scenarios with multiple options (Schwartz 2004), the effectiveness of heuristics should also be reduced. Finally, the effectiveness of heuristics also tends to be conditioned by an individual’s level of political awareness or sophistication- those who most need informational shortcuts (less knowledgeable) are not only less likely to use heuristics, but also less likely to use it correctly (Lau and Redlawsk 2001, Lau and Redlawsk 2006).¹³ Therefore, as much as political parties serve as important shortcuts for citizens to understand politics, their heuristic utility begin to fall apart as the number increases, potentially transforming a helpful aid for citizens into an increasingly more difficult piece of information to use.

¹² For example, Merolla, Stephenson and Zechmeister (2008) find that Canadian students struggled to make use of party heuristics, and that individual differences are important in shaping the effectiveness of heuristics.

¹³ Yet, because politically sophisticated individuals are more likely to use heuristics, they are also more likely to be led astray by non-stereotypic heuristics (Lau and Redlawsk 2001, Lau and Redlawsk 2006). That is, when shortcuts provide misleading signals, the decisions by the more politically sophisticated are more likely to be negatively affected. It should be noted, moreover, that the politically sophisticated may actually be less likely to use a simple heuristic when offered a larger amount of issue-specific information (Kam 2005).

1.2.2 Levels of Turnout in Multiparty Systems

Aside from the diversity of options and mobilization arguments, an important source for why some scholars believe that more parties improves the efficacy of citizens originates from the assumption that because elections with more parties tend to have higher levels of turnout, there is a causal relationship between the two variables (e.g. [Coppedge 2007](#), [Dalton 2008](#), [Karp 2012](#), [Ladner and Milner 2006](#), [Norris 2004](#)). The problem with this inference is that the simple bivariate association does not account for the fact that the degree of proportionality associated with an electoral formula is a predictor of both number of parties and levels of turnout. That is, proportional electoral formulas motivate citizens to turn out due to a higher probability that their participation will have an impact on the final outcome of the election ([Duverger 1954](#), [Blais and Carty 1990](#), [Jackman 1987](#)), and also lead to a higher number of political parties due to inherently lower threshold for parties to gain seats ([Duverger 1954](#), [Lijphart 1997](#), [Powell 1984](#), [Powell 1986](#)). Consequently, to assess the isolated effect of number of parties on voter turnout, it is necessary to isolate the influence of disproportionality. Otherwise, the estimated relationship between number of parties and turnout might be biased. The positive bivariate association between number of parties and turnout seems to be, I argue, spuriously correlated due to the fact proportionality of the electoral formula is omitted from this analysis.

Existing studies of voter turnout distinguish the estimated effect of number of parties from the impact of disproportionality by including both in multivariate regression models of turnout. Results indicate that, on average, a larger effective number of parties actually depresses turnout after controlling for degree of disproportionality ([Blais and Carty 1990](#), [Blais and Dobrzynska 1998](#), [Jackman 1987](#), [Jackman and Miller 1995](#)), or does not seem to have a significant effect ([Kuenzi and Lambright 2007](#), [Fornos, Power and Garand 2004](#), [Pérez-Linán 2001](#)). Recent experimental work from Brazil also finds that in scenarios with a larger choice set, individuals are more likely to abstain, less likely to acquire information, and less likely to choose the correct candidate due to larger cognitive costs for the

mass public (Cunow 2014). In chapter three, I expand on the idea that the positive association between a larger number of political parties and higher levels of turnout is spurious, and test the direction and mechanisms of the relationship between number of parties and turnout with municipal-level electoral data from Brazil and Colombia, and across time in New Zealand.

1.2.3 Variation in Political Knowledge across Countries

Lastly, scholars suggest that more electoral options is beneficial for the mass public based on findings that suggest a larger number of parties among countries with fewer than 2.5 effective number of legislative parties (ENLP) is associated with a higher level of political knowledge (Gordon and Segura 1997, Berggren 2001). According to these works, systems with more political parties offer citizens with more opportunities to learn about the positions of parties because of the systemic incentives parties have to differentiate themselves in contexts with more competitors (Downs 1957, Gordon and Segura 1997, Berggren 2001, Busch 2016). Yet, these works also argue and find that a larger effective number of parties is associated with lower levels of knowledge for countries with more than 2.5 ENLP (Gordon and Segura 1997, Berggren 2001). More recent works, however, find the relationship between the number of parties in a country's system and the average level of political knowledge may be null or even negative (Clark 2016, Fortin-Rittberger 2016, Turgeon and Lloyd 2017).

In chapter four, I review this mixed set of findings and replicate the original results of Gordon and Segura (1997), this literature's pioneering and seminal piece. After reevaluating the modeling and interpretation of the results presented by the authors, I provide evidence that the result of heterogeneous effects, in which the estimated effect of more parties is positive for systems with fewer than 2.5 but negative for those with more than 2.5 effective parties is a product of the cut-off used to divide the groups. Moreover, the results are largely driven by an arbitrary strategy to impute values for "Don't know" re-

sponses. Additionally, I use a larger dataset from the **Comparative Studies of Electoral System (CSES)** to reproduce their analysis, which corroborates the artificiality of the results due to the imputation strategy. Hence, I posit that the conclusions based on those findings should be taken with considerable caution. In par with more recent works, the results my analysis do not indicate a clear relationship between the number of parties and citizens' level of political knowledge.

Chapter five concludes the dissertation with a discussion of the limitations and implications of the argument and empirical analyses presented here.

Chapter 2

Internal Political Efficacy in Complex Informational Environments

2.1 Introduction

Studies of public opinion have long recognized the importance of political efficacy, as individuals who perceive themselves as capable of understanding and having an impact on what happens in politics are more likely to support the democratic system and to participate in politics (Campbell et al. 1960, Easton and Dennis 1967, McPherson, Welch and Clark 1977, Pateman 1970).¹ But while the measurement and variation of political efficacy across individuals has been extensively investigated by scholars, works in political science still lack a psychological theory of how individuals develop this belief and the extent to which variation in the political context shapes this process.² In this chapter, I seek to fill this gap by providing a framework for the comparative study of internal efficacy by proposing hypotheses about how the characteristics of political competition, particularly the number of parties, influence individuals' political efficacy beliefs. I test the validity of my hypotheses with panel survey data from New Zealand, subnational data from Brazil, and a large comparative dataset of survey respondents in the Americas.

2.2 A Framework for the Comparative Study of Political Efficacy

Political efficacy is defined by Campbell and Miller (1954, p. 187) as “the feeling that individual political action does have, or can have, an impact on the political process.” But as noted by Lane (1959), the concept of political efficacy can be divided into

¹ In the words of Almond and Verba (1963, p. 257), “The self-confident citizen appears to be the democratic citizen. Not only does he think he can participate, he thinks others ought to participate as well. Furthermore, he does not merely think he can take part in politics, he is likely to be more active.”

² Vecchione and Caprara (2009, p. 487) highlight this shortcoming by noting the inattention of political scientists to some of the seminal works in psychology on the topic, “(s)urprisingly, despite the vast literature on political efficacy, little attention has been paid to Bandura’s (1986) work on perceived self-efficacy and to social-cognitive theory.”

two components that differentiate beliefs individuals hold about their own capacity to effectively engage in politics (internal) from perceptions about the extent to which institutions and its political agents effectively respond to their political demands (external).³ This distinction separates the individual from the exterior world by recognizing that as much as individuals may believe they have the capabilities to comprehend politics and be effective actors in the political process, institutional constraints may impede the realization of this potential.⁴ Throughout the chapter, I focus most of the discussion and data analysis on internal efficacy because I am interested in individuals' assessment of their own capabilities, although the empirical measurements of the two tend to be correlated (Stewart et al. 1992).

According to social cognitive theory, the most influential sources through which beliefs of self-efficacy are shaped are personal experiences (Bandura 1997).⁵ Individuals' recollections of previous attempts to execute an action greatly influence the perception of self-capacity to perform similar tasks successfully in the future. This means that in the realm of politics, individuals who are able to absorb and digest political information develop higher levels of political self-efficacy. On the other hand, individuals who struggle to grasp the interactions between political actors and their implications become, on average, less interested in engaging with politics due to lower self-efficacy beliefs. Mansbridge (1980) offers evidence of this phenomenon by showing that individuals who had positive experiences in local political meetings in Vermont became more psychologically equipped for future participation. Likewise, Madsen (1987) finds that individuals who are successful at petitioning the government develop higher levels of internal efficacy, and Bowler and

³ Clarke and Acock (1989, p. 552) distinguish the two by defining internal political efficacy as "the perception that one has the requisite skills and resources to influence the political system", and external efficacy as "the perception that government institutions and elites are responsive to one's attempts to exert political influence".

⁴ For example, as much as an African American may have felt highly qualified and motivated to enter politics in southern states during the 1950s, the institutional settings of the time would not permit it. In this example, the individual has a high level of internal efficacy but because of his or her likely view that the political institutions would reject such participation, that individual's level of external efficacy would be quite low- "I am quite capable of expressing my political voice (high internal efficacy), but the political system will not/does not listen" (low external efficacy).

⁵ The other three types of sources are: vicarious learning, persuasion and physiological state (Bandura 1997).

Donovan (2002) find that having more experiences with direct political participation is linked to a greater sense of political efficacy.⁶

Context-level factors have the potential to impact a citizenry's level of political efficacy beliefs by systematically affecting the political experiences of individuals. In particular, the institutional arrangement that greatly influences ordinary individuals' relationship with politics is the party system. The organization of political competition by parties provides the frame with which citizens perceive and interact with political debates and policy decisions (Campbell et al. 1960, Norris 1997). And while individuals' central beliefs may be stable, most of what ordinary citizens think and know about politics is based on peripheral beliefs shaped by the salience of issues (Converse 1964, Zaller 1992), which in turn are heavily influenced by strategic political actors and their framing of issues (Carmines and Stimson 1991, Kinder and Sanders 1996). Thus, arrangements of political actors whose actions and discourses lead to an increase in the amount and complexity of information demand higher cognitive resources from citizens, consequently lowering their self-perceived levels of efficacy. In other words, because individuals have more difficulty acquiring and processing political information in complex informational environments, their internal efficacy suffers.

One crucial dimension of party systems that contributes to the degree of complexity in the informational environment is the number of parties. The expansion of the number of actors competing for power affects the amount and type of political information, making the process of grasping what happens in politics for citizens more difficult. More parties or candidates in the political environment demands the processing of additional information and increased evaluations of which issues or candidate characteristics matter more or less from citizens.⁷

⁶ Higher sense of efficacy and participation is also connected to programs of civic learning (Finkel 2002) and local-level political participation (Altschuler and Corrales 2012).

⁷ Coalitions may act as heuristics to simplify the process of attributing responsibility to parties, but because parties tend to run separate campaigns while having different leaders, names, and logos, the amount of information in the political environment to process is also inherently larger.

The number of parties is, of course, not the only feature of party competition that affects the complexity of informational environment. The extent to which the party system is institutionalized and polarized may also shape the level of complexity for individuals. The institutionalization of the party system, defined by the stability of party competition across time, can facilitate the task of learning and assessing the political issues not only by providing consistency in the options for potential voters, but also by structuring political debates and preferences over time (Mainwaring and Scully 1995). If instead, parties do not have strong ties in society, are not ideologically coherent, and are transient in nature, the task of assessing the work of political actors becomes increasingly difficult (Mainwaring 1999). In fact, Stewart et al. (1992) find that the degree of dissimilarity between the provincial and federal party systems in Canada shape the structure of political efficacy beliefs between the two levels.

Likewise, the degree to which parties have distinct positions on policy issues shapes the dynamics of political competition (Sartori 1976), and in turn should affect the level of difficulty for individuals to differentiate between them (Lupu 2013). That is, the degree of differentiation between parties across issue dimensions affects the saliency of political cleavages and facilitate the need to sort and contrast political actors (Dalton 2008, Roberts 2002).

The extent to which the number of parties, or other features of party system like institutionalization and polarization, have an impact on difficulty to process political information should vary according to individuals' cognitive resources. Given politically sophisticated individuals are better able to absorb and organize political information, and the number of years of schooling is directly correlated with political sophistication and participation (Zaller 1992, Delli Carpini and Keeter 1996), I hypothesize that complex informational environments should have a larger impact on individuals with lower levels of education.⁸ More specifically, because formal education enhances one's ability to under-

⁸ I recognize that there is not a consensus about the effect of formal education on sophistication and participation among scholars (e.g. Luskin 1987, Kam and Palmer 2008).

stand political information (Delli Carpini and Keeter 1996, Price and Zaller 1993, Jerit, Barabas and Bolsen 2006), individuals with more years of education should not only be more efficacious, but also be less affected by the difficulty of complex party system configurations. Conversely, those with lower levels of schooling should be particularly subject to informational environments that require cognitive efforts to thoroughly process the complexities of politics.⁹

2.3 Empirical Evidence

I examine these propositions in three stages. First, I leverage a reform of electoral rules in New Zealand to explore the extent to which the public's feelings of efficacy were affected by the increase in the number of parties in parliament. In a second step, I examine what specific factors about the configuration of electoral choices explain differences in levels of efficacy beliefs across municipalities in Brazil. Finally, I expand the argument to a comparative setting by assessing the extent to which characteristics of a country's party system predict levels of efficacy between nations and individuals with different levels of education with survey data from four rounds of the *AmericasBarometer* surveys and standard measures of party system characteristics.¹⁰

2.3.1 Panel Analysis in New Zealand

New Zealand is a unique case in the study of the impact of electoral institutions on political behavior because it recently reformed its electoral system from a traditional first-past-the-post system (FPTP) to a mixed member proportional representation (MMP). This change in electoral system was seen by scholars as an opportunity to test previous

⁹ On a similar note, Rennó (2004) find that those with levels of political awareness are able to retain more political information than the less aware as election day nears, which indicates their ability to manage larger amounts of information.

¹⁰ I thank the Latin American Public Opinion Project (LAPOP) for making the data available, and supporters of the *AmericasBarometer*, including the United States Agency for International Development (USAID), the Inter-American Development Bank (IADB) and Vanderbilt University.

findings from cross-national comparisons and new hypotheses about the effects associated with different electoral formulas. Yet, as will I discuss later in this section and in the next chapter, it is actually difficult to make strong inferences about the independent impact of changes to the electoral system on individuals' attitudes based on the New Zealand case because the initiative to change the electoral laws is a product of the public's negative attitudes toward the earlier system. Having said that, it is still worth exploring the changes in political efficacy associated with the transformation of electoral laws and party system in this important case.

For more than 60 years (1935-1995), either the left-of-center Labour party or the right-of-center National party held an absolute majority in New Zealand's only legislative chamber, the House of Representatives. Yet, after consecutive elections in 1978 and 1981 in which the National party won a majority of seats in spite of receiving a slightly smaller share of the popular vote than the Labour party, and the third most-voted party received 16.1% and 20.7% but ended up with fewer than 2.5% of seats, New Zealanders started to become skeptical about the fairness of their elections ([Donald 2003](#)).

Shortly after the Labour party won a majority of seats in the 1984 elections after promising to appoint a commission to look into issues related to the country's electoral system, the national parliament established the Royal Commission on the Electoral System. The commission published its report in late 1986 strongly recommending the adoption of a German-style mixed-member system, an expansion of the size of parliament from 92 to 120, and that parliament initiate a referendum for the populace to vote on the report's propositions ([Royal Commission on the Electoral System 1986](#)).¹¹

The Labour administration did not move forward with the referendum and ended up defeated by the National party in the 1990 election. But although the National party had promised to hold a referendum during that year's election campaign, internal disputes within the party led the government to postpone taking any further action pertaining to the

¹¹ The report also discussed other issues such as Maori representation, campaign finance and length of term.

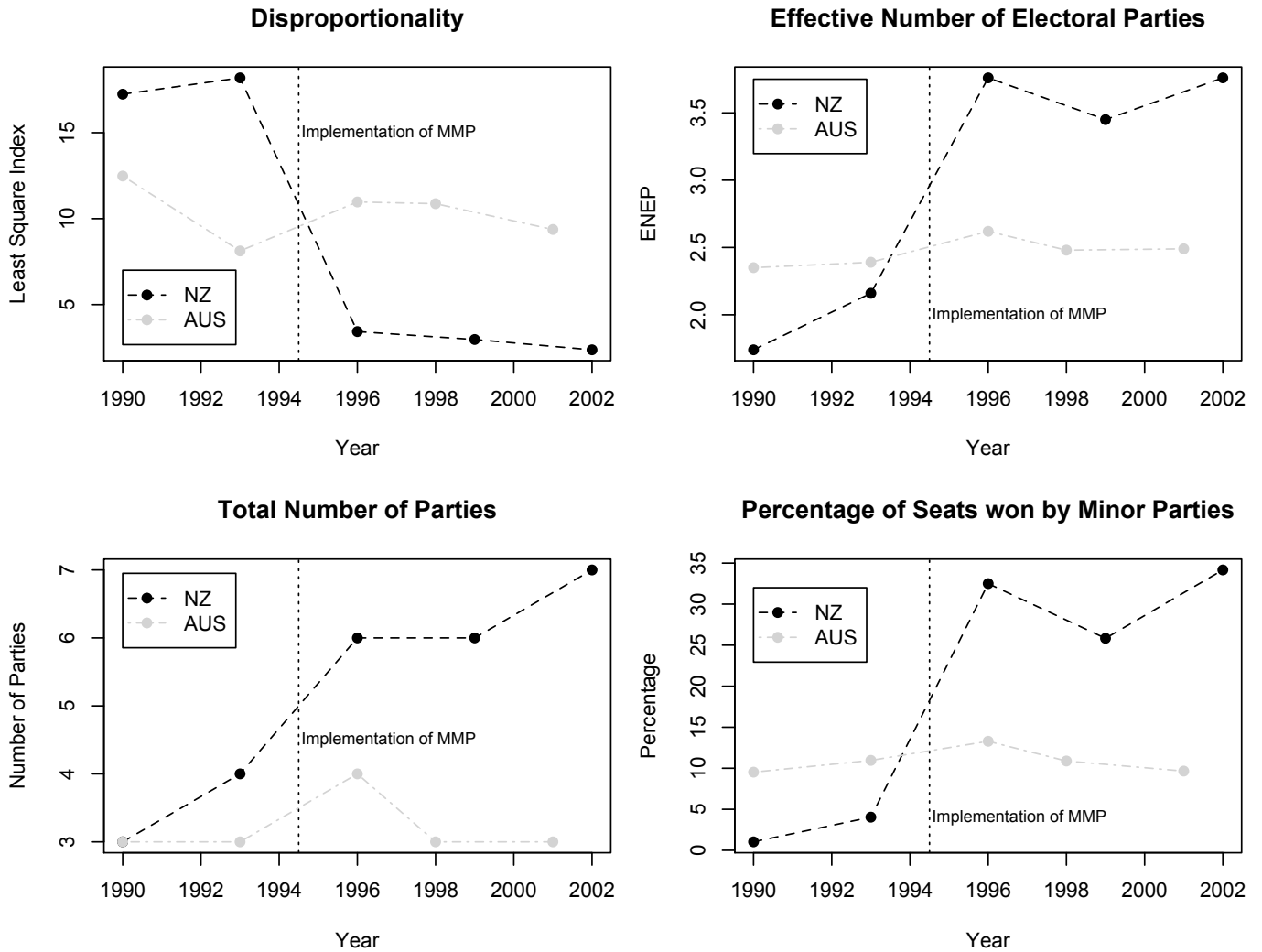
referendum ([Ministry of Culture and Heritage of New Zealand 2016](#)). In the mean time, a group called Electoral Reform Coalition was formed to lobby in favor of the implementation of the commission's proposals. As public pressure started to soar, the government decided to hold a non-binding referendum to evaluate the public's favorability of altering the electoral system, as well as what type electoral system among four proposed alternatives had the highest support ([Renwick 2010](#)). Even though only 55% of the registered voters participated, an overwhelming majority of roughly 85% voted in favor of a change to the electoral system, including 71% who preferred the commission's proposed MMP system.

This result led to the scheduling of a second and this time binding referendum to be held during the 1993 general elections. The new referendum generated a national debate in which the Electoral Reform Coalition stood on the side of change while leaders of both major parties and business groups were against the adoption of the new system ([Vowles et al. 1995](#)). While participation rate was higher in the second referendum, the dispute was much tighter. In the end, approximately 54% of voters chose the adoption of the new mixed-member system in which 64 seats are elected in majoritarian districts and 49 seats are selected through a national election of party lists.¹² Therefore, starting in 1996, elections in New Zealand have followed an electoral formula that reduced the disproportionality between votes and seats, thus increasing the number and importance of minor parties in the country's House of Representatives ([Aimer 2014](#)). Figure 1 presents the degree of disproportionality, effective number of electoral parties, total number of parties and percentage of seats won by smaller parties before and after the reform. While the degree of disproportionality plummeted, the effective number of parties jumped from 2.16 to 3.76 between 1993 and 1996, mainly driven by the fact the share of seats by the smaller parties grew from less than 5% in previous elections to approximately 30% after the reform. To better assess the magnitude of this change, Figure 1 also presents the numbers for Australia, New

¹² The extra seven seats were dedicated to Maori representation.

Zealand's most similar neighbor, which did not experience any major shifts in any of the election indices during the same period.

Figure 2.1: Election Indices in New Zealand and Australia, 1990-2002



While the Labour and National parties have always finished first and second, no party has been able to win an absolute majority ever since. This break in party system allows for an assessment of the impact the change in the number of parties had on attitudes and behavior before and after the electoral reform. For the past three decades, the [New Zealand Election Study](#) has conducted post-election surveys administered through a self-completion mail-in questionnaire that explore, among different topics, public attitudes

about representation, including since 1993 respondents' feelings of political efficacy.¹³

To measure internal efficacy, participants were asked to indicate how much they agreed or disagreed with the statement "Sometimes politics seems so complicated a person like me can't really understand what's going on." And to assess feelings of external efficacy, the statement said "I don't think politicians and public servants care much about what people like me think." Responses were measured in a 5-point scale in which 1 means "Strongly agree" and 5 means "Strongly disagree". Given the statements are negative, the scale is also left in the negative direction to signify more efficacy. That is, those who say they disagree with the statement believe they are more capable of understanding politics. For each election survey, a portion of respondents from the previous study is carried through making the data into a panel. For instance, 1173 randomly selected respondents in 1993 also responded to the mail-in questionnaire in 1996.¹⁴ In the new panel in 1996, 1999 and 2002, 546 citizens responded to the questionnaire in all three waves.¹⁵

According to the mobilization and diversity of options arguments, there should be an increase in feelings of efficacy among the general population after the election of more parties in New Zealand. The theory posited here, however, suggests that the increase in parties associated with the electoral rule should lead to a decrease in the mass public's feelings of internal efficacy, particularly from those with lower levels of education. Figure 2 presents the differences in responses to the efficacy by the same respondents weeks after the 1993, 1996, 1999 and 2002 general elections in New Zealand split into two panels.

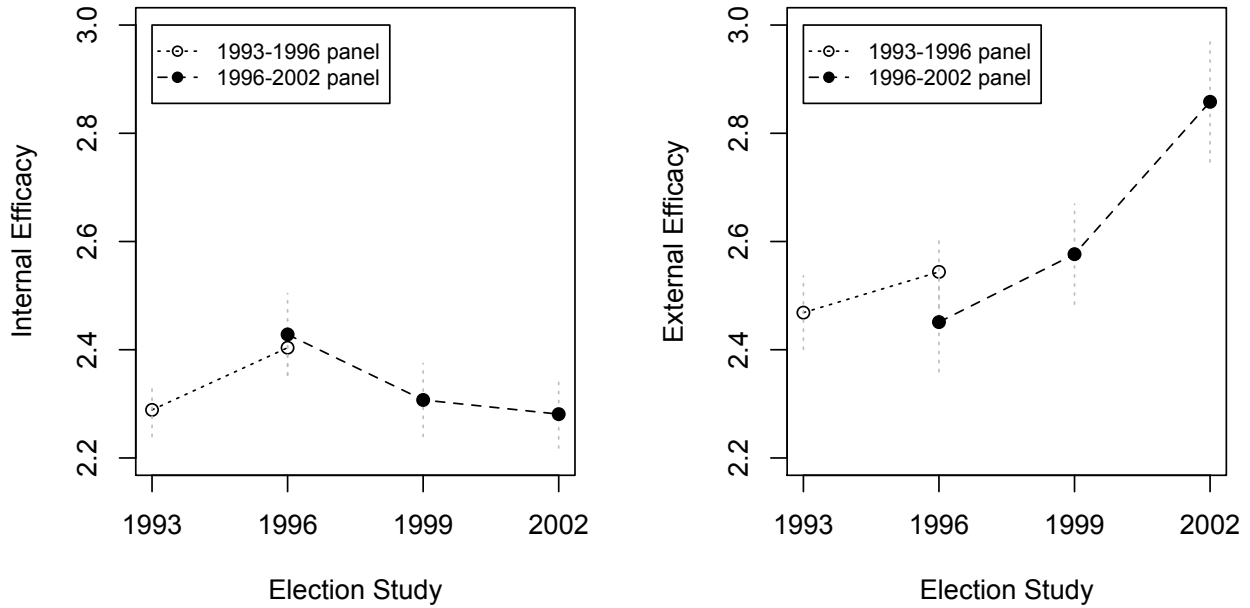
The graph on the left indicates that while survey participants had, on average, higher feelings of internal efficacy right after the first election under MMP, the level of efficacy dropped back after the country experienced its first multiparty parliament (1997-1999),

¹³ More information about the studies can be found in the project's [website](#).

¹⁴ Questions about efficacy were not asked in 1990, the first wave of the study.

¹⁵ An important threat to internal validity in a panel study is potential bias from attrition. For example, the attrition rate between the 1990-1993 panel study and 1996 was roughly 47%. However, to make sure the attrition group is not different from those who continue to participate, I test for potential differences on several measures, including the efficacy questions, and similar to the New Zealand Election Study's own assessment, do not find systematic differences between the sample across waves.

Figure 2.2: Levels of Internal and External Efficacy, New Zealand 1993-2002



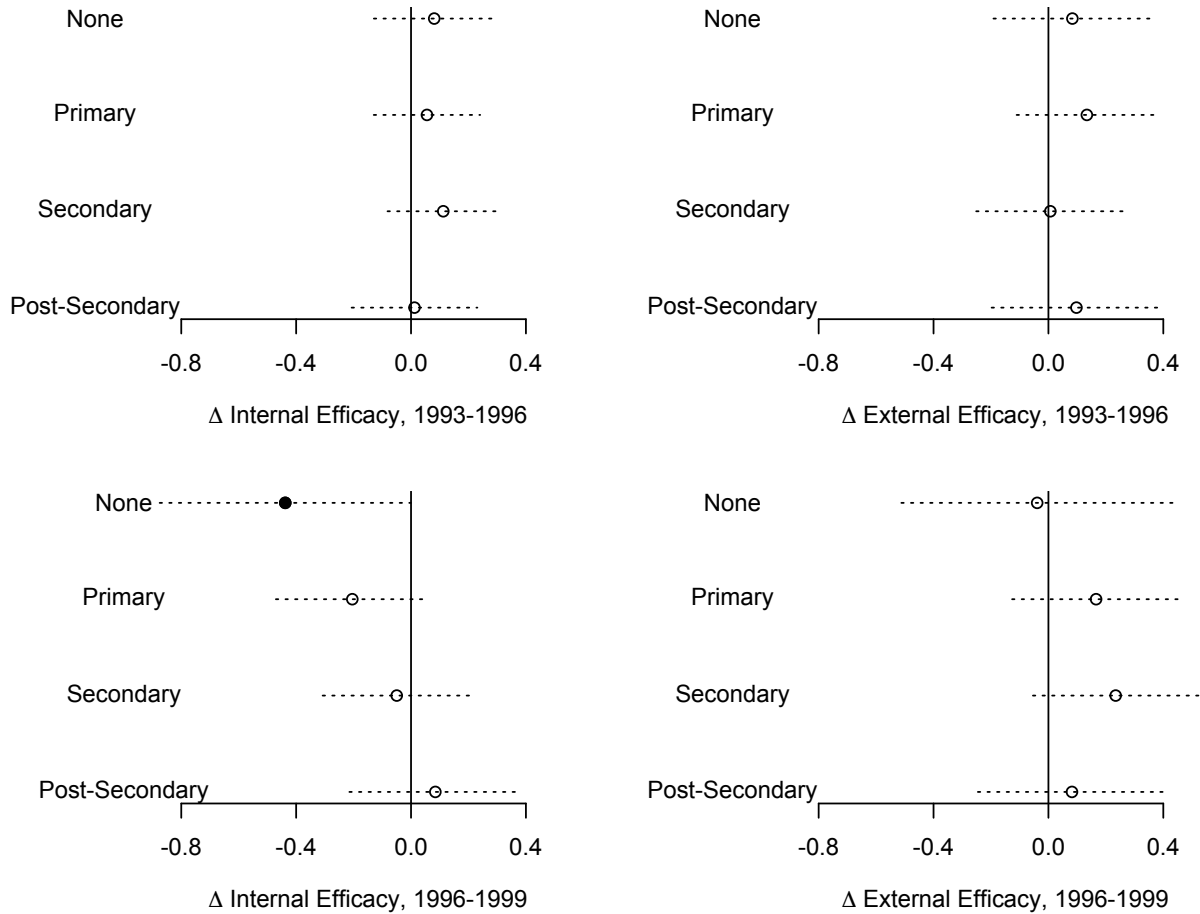
and stayed low through the second multiparty parliament. More precisely, the average of responses went up roughly .11 points from 1993 to 1996, but dropped back .12 points in 1999. The change in external efficacy was increasingly positive, nevertheless. In other words, compared to responses given after the previous election, levels of disagreement with the statement that politicians and public servants don't care about ordinary citizens increased substantially.

On top of looking at average change across time, we can also analyze variation in opinion change between individuals. That is, while the average level may moved in one direction, there might be important differences in feelings of efficacy over time across respondents. In fact, the majority of respondents indicate an equivalent level of efficacy across waves. According to my argument, the drop in efficacy levels associated with the increasing the number of parties should be larger for those with lower levels of education.¹⁶ But to adequately make this comparison, it is important to control for possible confounding factors that might be associated with education such as sex, age, religion, Maori ancestry,

¹⁶ Graphs with the distribution of responses in the 1993 and 1996 are presented in [appendix B](#).

region of the country one lives in, and country of birth. Hence, I run multivariate ordinary least square regressions on the change of efficacy responses across time, and present the average change for respondents with varying education levels after controlling for socio-demographic characteristics in Figure 3.¹⁷

Figure 2.3: Change in Efficacy Across Time by Education Level, New Zealand 1993-1999



The results indicate that for the most part there were not major differences in changes of opinion between groups of varying levels of education, but the graph on the bottom left shows that the general drop in internal efficacy between 1996 and 1999 was larger among those with lower levels of educations. That is, individuals with no education and primary education reported substantive drops in internal efficacy of roughly -.4 and -.2

¹⁷ Full regression results are presented in [appendix B](#).

across waves, respectively. On the other hand, those with secondary and post-secondary education reported much smaller differences, which aligns with the expectation proposed by here. Hence, the results suggests the increase in the number of parties in parliament from 1993 through 1996 had somewhat heterogenous effects on groups of different educational attainment levels. In regards to the increase in external efficacy, there were not major differences between these groups.¹⁸

As suggested in the beginning of this section, nevertheless, it is possible that changes in feelings of efficacy were not a product of the increase in the number of parties in parliament given multiple political events were occurring in New Zealand during the 1990s. The starting point of the time-series analyzed here was likely heavily influenced by the difficulty of understanding the electoral formulas posed by the referendum, and the fact that the major parties were opposed to the electoral commission's proposal that gained popular support over time. In fact, levels of confidence on politicians and parties were extremely low prior to the implementation of the new electoral system. Opinion polls in the early 1990s showed that politicians were seen as untrustworthy as used car salespeople, the least trustworthy group of professionals (McCluskey 2008, Ministry of Culture and Heritage of New Zealand 2016). Thus, in an attempt to further evaluate the relationship between number of parties and individual efficacy while isolating confounding factors, I turn to a comparison of efficacy levels between municipalities in Brazil with a larger and more varied set of observations that allows for the testing of different dimensions of party competition and inclusion of more statistical controls.¹⁹

¹⁸ Yet, in a separate analysis, those who identified as supporters of any political party in 1993, roughly 60% of the sample, reported a slightly larger change in feelings of external efficacy than their non-partisan counterparts in 1996, but this was neither statistically significant nor present between 1996 and 1999. In 2002 compared to 1999, however, those who identified with minor parties, approximately 17% of the sample, reported a substantively greater change in external efficacy than non-partisans or those attached to the major parties.

¹⁹ The comparison of elections across municipalities provides other common advantages of subnational analysis such as inherent controls for national-level institutions and often better construct validity for the variables of interest (Snyder 2001, Hiskey and Bowler 2005)

2.3.2 Municipal Level Comparisons in Brazil

My argument proposes that context-level factors that require more cognitive efforts from individuals to grasp political information should be associated with lower levels of internal efficacy. Aside from the number of parties, the extent to which parties are not institutionalized, and the extent to which differences between parties are not clear should negatively impact the degree of difficulty ordinary individuals face to differentiate and evaluate parties. Consequently, when these dimensions that form the structure of party competition increase the complexity of the informational environment, they lead to lower levels of efficacy, particularly among those with lower levels of education.

Local elections in Brazil provide an ideal setting to explore the effects of the configuration of electoral options on people's efficacy beliefs because they are partisan, concurrent, compulsory, and they offer a great deal of variation in the number and type of parties with candidates across mayoral races (Rennó 2004).²⁰ Hence, I see this comparison as an opportunity to test the hypotheses about the impact of more competitors in elections on the public's perception of efficacy. To do so, I use a multilevel analysis of a survey item that captures internal efficacy beliefs at the municipal level with data from the AmericasBarometer 2014 Brazil survey and campaign-level information from the 2012 mayoral elections.²¹ The survey interviewed respondents from a total of 107 municipalities selected based on a multi-stage population probability sampling method.²² Similar to the previous

²⁰ Municipal elections are held every four years with the possibility of reelection for a second term for mayors, and no term limits for local councilmen. Elections for president and state-level positions are held in the off-years of local elections.

²¹ As the selection of households within municipalities is conducted by clusters (blocks), it should be noted that respondents at the municipal level tend to be from the same neighborhood. This could potentially introduce bias into the municipal-level estimates. Yet, if the selection of neighborhoods was random as intended, or at least orthogonal to the characteristics of the municipality's election, this method of selection should lead to increased variance due to random measurement error but not systematic bias, which should only increase the probability of a false negative due to measurement error, but not erroneous point estimates (King, Keohane and Verba 1994). Furthermore, the large number of municipalities should reduce the probability of a false positive by chance, again assuming the block selection is not correlated with the municipality's electoral features and latent levels of efficacy.

²² The sample of municipalities covers all five regions of country and 21 out of the 27 states. Brazil's capital Brasília is dropped from the analysis given it does not have a mayor.

analysis, the question asks respondents about perceptions of their own ability to understand political issue, but highlights the level of government being asked about: “You feel that you understand the most important political issues of *the municipality*. How much do you agree or disagree with this statement?” Responses were recorded on a seven-point scale in which higher values characterize beliefs of higher levels of efficacy.

It should be noted that I am implicitly theorizing that feelings of internal efficacy regarding national-level and local-level politics are both influenced by the number of electoral options. This does not mean the relationship between electoral competition and efficacy is the same across level, nor that the experiences and evaluations that lead to efficacy beliefs are equal at the different levels. The idea here is simply that variation in internal efficacy beliefs at the local level is influenced by the political informational environment across municipalities.

In quantifying the amount of electoral options offered in each election, similar to [Huber, Kernell and Leoni \(2005\)](#), I measure both the total number of candidates in the election, as well as a weighted number of candidates based on the distribution of votes received by each candidate, also known as effective number of parties (ENP) ([Laakso and Taagepera 1979](#)).²³ While the two measures correlate moderately, the effective number of parties reduces the range of variation by curtailing the right side of the distribution due to the calibration for large differences in electoral results.²⁴ On the other hand, the crude measure of the total number of parties gives more weight to elections with multiple

²³ ENP is calculated with the following formula: $ENP = 1 / \sum_i p_i^2$, in which i indicates a party and p_i indicates the proportion of votes/seats won by that party. For instance, if all legislature seats are shared equally between three parties, the “effective” number of parties would be 3, but if one party has 50% of the seats and the other two 25% each, the “effective” number of parties would equal 2.67. In the original article, the authors suggest the effective number of parties can be calculated with either the distribution of votes in the election or the share of seats in the legislature. Alternative measures to ENP focus on the “hyperfractionalization” ([Widgen 1971](#)) and size of the largest party ([Molinar 1991](#)).

²⁴ This is especially the case with the sample of cities in this analysis. Given the probability of a municipality is selected to the study is proportional to its population size, the sample includes a higher proportion of large municipalities than in the population of municipalities, consequently comprising elections with more candidates than the average national distribution. For a comparison between the distribution of candidates between all municipalities and the sample selected in the study, see [appendix B](#).

candidates by keeping a wider range between the ends of the distribution.²⁵

Based on the idea that party labels can facilitate potential voters' processing of the political informational environment, I operationalize institutionalization of parties at the municipal-level with a count of the number of mayoral candidates from the Workers' Party (PT) and the Brazilian Social Democratic Party (PSDB). While Brazil's party system was considered weak and inchoate during the first decade of its latest transition to democracy in 1985 (Mainwaring 1999, Ames 2001), toward the end of the 1990's, the PT and PSDB emerged to the national stage as representatives of a left-right cleavage. In the words of a report by IDEA (2011, p. 50) on programmatic parties around the world, "the two most important parties in the story of Brazil's increasing programmatization are the PT and PSDB, which together crowded out clientelistic parties and acted as the bases for coalitions of the left and right." The PT became nationally known for being the only strong programmatic party that developed an institutionalized national organization (Hunter 2010, Samuels 2004), and for having the highest proportion of party identifiers in the population (Samuels 2006).²⁶ The PSDB, on the other hand, became known for having a clear policymaking record due to the stabilization of inflation and implementation of government reforms during its tenure in the presidency from 1995-2001 with President Cardoso, and for being the center-right opposition to the PT in the last four presidential elections won by President Lula da Silva in 2002 and 2004, and President Dilma Rousseff in 2008 and 2012 (Samuels and Zucco 2014).²⁷ Therefore, the prominence the party labels gained in the 1990's and their repeated disputes for the presidency in over two decades provide individuals with clear and accessible information about the parties' ideologies and tracking records, making the informational environment simpler for citizens if mayoral candidates from these parties were running.²⁸

²⁵ In the sample of municipalities analyzed here, no elections went uncontested (i.e. one-candidate races).

²⁶ While the proportion of PT identifiers (known as *petistas*) vary by polls, it tends to range between 15 to 30% of the population, which is at least double the number of identifiers of any other party.

²⁷ The PT presidential candidate was never able to win a majority in the first-round, thus always taking the presidential race to a round-off and an extra month of intense competition between the PT and PSDB.

²⁸ Similar to the approach by Stewart et al. (1992) who use dissimilarity between party systems as a

Comparably, I measure lack of clarity between options with a dummy that indicates if the PT and PSDB joined a coalition with each other or with non-ideologically-aligned parties leftist PC do B or rightist DEM, or with the national-level catch-all party PMDB.²⁹ The logic behind this measure is that party brands can lose their meaning when converging with former rival parties and hence increasing the difficulty of understanding the position of these coalitions' candidates (Lupu 2013). The expectation is that in municipalities where the local PT or PSDB brands have been diluted due to non-ideological coalitions, differentiating between candidates becomes more complicated; consequently demanding more cognitive efforts from potential electors.³⁰

In addition to these four variables capturing the structure of the local-level's political competition, I include a dummy for elections in which the incumbent candidate was running for re-election, a measure for size of municipality, average size of coalitions, and dummies for the country's five main regions.³¹ At the individual-level, the models include sex, age, level of education, urban-rural divide, ethnicity, partisanship, wealth quintiles, and the preceding internal efficacy question that asks about understanding issues at the national-level. This measure serves as an important control because it helps differentiate what is a product of feelings of efficacy at the national and local level.³² Table 1 presents results of four hierarchical level regression models, of which the original and weighted

useful proxy of the degree of differentiation between political contexts, this measure can be interpreted as the degree of congruency of options between presidential and mayoral elections, which again should facilitate understanding of local level politics.

²⁹ In the sample of municipalities analyzed here, the PT and PSDB did not form any coalitions, seldom coalesced with the non-ideological-aligned parties, but more often partnered with the centrist PMDB.

³⁰ Both of these measures assume that most mayoral candidates do not hold political preferences widely different from their parties' platforms, which is not a strong assumption given high rates of party-switching in Brazil, proliferation of minor non-ideological parties, and the PT and PSDB's strong organization nationwide. Consequently, in the case of disagreements between potential candidates or parties, potential candidates could easily switch to another party or even be kept from running from party elites.

³¹ Mayoral elections in Brazil also differ in format according to the size of the electorate. Elections in municipalities with fewer than 200,000 registered voters are single member plurality (first-past-the-post), whereas elections in municipalities with 200,000 or more voters are majoritarian with a potential runoff. For this reason, I also run the regressions presented in Table 1 but only with municipalities with fewer than 200,000 voters. The results are consistent and presented in [appendix B](#).

³² Including the national-level efficacy measure in the right side of the equation means the dependent variable captures the difference between the national and local level efficacy responses.

number of candidates variables are introduced separately at first, and then together in the last model.

Table 2.1: Hierarchical Linear Models of Internal Efficacy across Municipalities, Brazil 2014

| | Model 1 | Model 2 | Model 3 | Model 4 |
|-------------------------------|----------------------|----------------------|----------------------|----------------------|
| Internal efficacy (national) | 0.686*** (0.020) | 0.684*** (0.020) | 0.684*** (0.020) | 0.686*** (0.020) |
| Female | -0.162* (0.066) | -0.162* (0.066) | -0.162* (0.066) | -0.162* (0.066) |
| Age | 0.003 (0.002) | 0.003 (0.002) | 0.003 (0.002) | 0.003 (0.002) |
| No formal education | -0.738*** (0.193) | -0.730*** (0.193) | -0.730*** (0.193) | -0.740*** (0.193) |
| Secondary education | 0.103 (0.088) | 0.103 (0.088) | 0.103 (0.088) | 0.104 (0.088) |
| Post-Secondary education | 0.432** (0.142) | 0.448** (0.142) | 0.447** (0.142) | 0.431** (0.142) |
| Urban | -0.209 (0.137) | -0.232 (0.142) | -0.226 (0.142) | -0.212 (0.138) |
| Wealth Quintiles | Yes | Yes | Yes | Yes |
| Number of candidates | -0.091* (0.041) | | | -0.100* (0.045) |
| ENC (centered) | | -0.033 (0.071) | 0.019 (0.115) | 0.036 (0.076) |
| ENC (centered) ² | | | -0.024 (0.042) | |
| Incumbent | 0.104 (0.097) | 0.108 (0.103) | 0.104 (0.104) | 0.116 (0.100) |
| Institutionalized parties | 0.081 (0.067) | 0.058 (0.069) | 0.060 (0.069) | 0.080 (0.068) |
| Average size of coalition | -0.083** (0.032) | -0.046 (0.028) | -0.041 (0.030) | -0.082* (0.032) |
| Non-ideological coalitions | -0.129 (0.106) | -0.123 (0.110) | -0.125 (0.111) | -0.124 (0.107) |
| Size of Municipality (5 cat.) | Yes | Yes | Yes | Yes |
| Region categories (5 cat.) | Yes | Yes | Yes | Yes |
| Intercept | 1.976*** (0.368) | 1.560*** (0.332) | 1.515*** (0.342) | 1.960*** (0.371) |
| Num. obs. | 1429 | 1429 | 1429 | 1429 |
| Num. municipalities | 104 | 104 | 104 | 104 |
| Var. (municipalities) | 0.061 | 0.074 | 0.075 | 0.063 |
| Var. Residual | 1.536 | 1.535 | 1.535 | 1.537 |

Source: AmericasBarometer Brazil 2014 and Brazil's Superior Electoral Tribunal (TSE)

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

The individual-level predictors mirror results from previous studies: males and more educated individuals display higher levels of internal efficacy at the local level. While those with no formal education show levels of efficacy .74 points lower than those who completed primary school, on average, those who completed post-secondary report levels .43 points higher compared to the same group. These differences across groups holds even when controlling for the measure at the national level. That is, males and those more educated feel they are better able to understand politics in their municipality than their female and less educated counterparts even when they have the same level of national-level efficacy.

In regard to the second-level predictors, the first and last models indicate that in municipalities where there are more mayoral candidates, individuals become less confident about their ability to understand local political issues. In other words, controlling for the size of municipality, average size of coalitions, presence of candidates from the major parties and other factors, as the number of candidates is larger, the average reported level of internal efficacy is lower.³³ The size of the decrease associated with a large number of candidates is meaningful when we consider the range in the number of candidates. According to the first model, an election with 5 additional candidates is associated with an average drop of roughly .45 in internal efficacy, a change larger than the difference in efficacy between individuals who completed primary and post-secondary education.

Models 2 and 3 indicate that variation in internal efficacy beliefs across municipalities is only slightly associated with the weighted measure of the number of candidates.³⁴

³³ Similar results are found when dividing the number of candidates variable into a set of dummies. The gap in average levels of internal efficacy widens as the number of candidates grow. The full regression table is presented in [appendix B](#).

³⁴ The squared term in model 3 indicates that a one unit change in the effective number of candidates is

This non-significant result suggests that important variation in efficacy across municipalities is explained by elections with large number of candidates. Given the measure's adjustment by distribution of votes, the effective number of candidates for elections with a large number total number of candidates but not highly contested elections would be much closer to more contested elections with few candidates. For instance, a six-candidate election split 54%, 22%, 11%, 07%, 04%, and 02% has about the same effective number of candidates (2.816) from a three-candidate race split 46%, 30%, 24%. Thus, the weighting process from the calculation of effective number of parties reduces the power from non-closely-disputed elections with more candidates. The last model disentangles the two and shows that a larger total number of candidates is associated with lower levels of efficacy even when controlling for the distribution of votes.³⁵

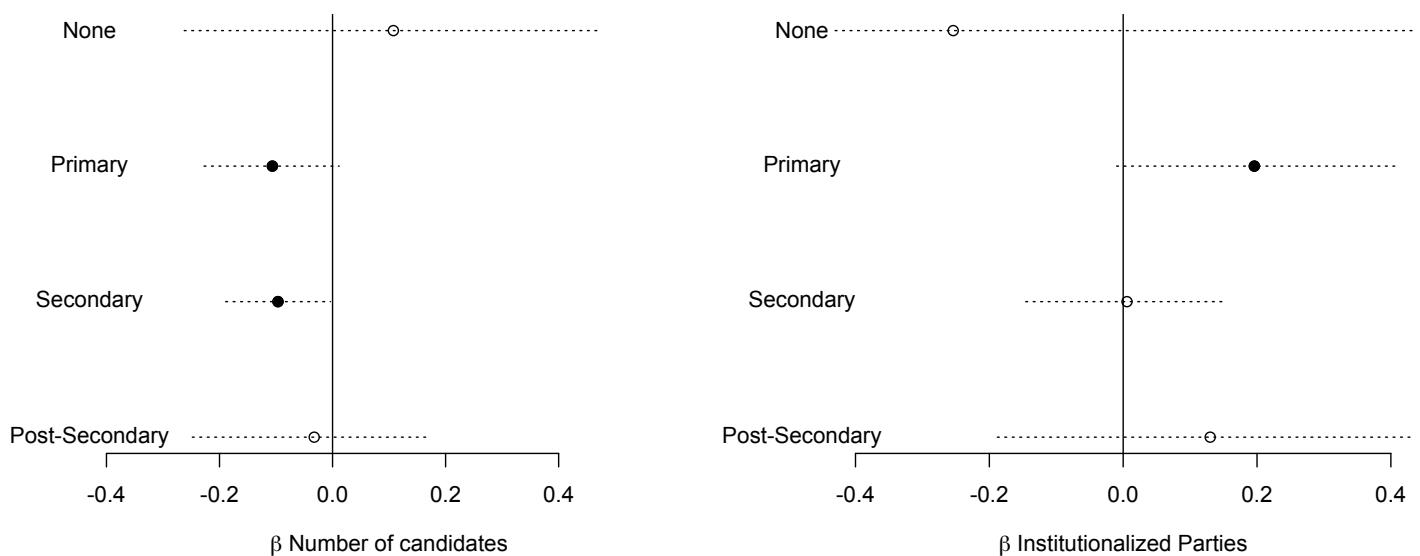
The models also indicate only a limited importance of incumbency and party labels for voters' feeling of efficacy. While both elections in which the incumbent is running for re-election and elections in which the more institutionalized parties introduce their own candidates are associated with slightly higher levels of efficacy, the coefficients do not reach conventional levels of statistical significance. Similarly, levels of efficacy are not statistically significantly lower in municipalities where the major parties coalesced with parties not ideologically-aligned.

The cross-level interaction hypothesis stipulates that the negative effect of more candidates should be larger for individuals with lower levels of education. Hence, I model differences in efficacy between respondents of varying levels of educational attainment as associated with increasingly larger, though not significant, drops in efficacy. A plot of the varying effect of effective number of candidates across is presented in [appendix B](#).

³⁵ Alternatively, the coefficient for the effective number of candidates should be interpreted as the relationship between competition and efficacy when controlling for the total number of candidates.

a function of the same municipal level predictors. That is, I treat the differences in efficacy between groups of varying educational attainment as random variables that are explained by variation in municipality size, geographic region and structure of party competition in that municipality.³⁶ Figure 4 presents the estimated change in efficacy associated with the addition of an extra candidate to a mayoral race for the four different levels of education, holding other factors constant.³⁷

Figure 2.4: Heterogenous Effects of Number of Candidates by Education Level, Brazil 2014



The coefficients from the cross-level interactions indicate that a mayoral race with an extra candidate is associate with a significant negative change in efficacy for on individuals who completed primary and secondary school, but not on those with no formal education and those who completed post-secondary education.³⁸ Another way to interpret

³⁶ Mathematically this means the beta for education become a second dependent variable of the model, $\beta_{01} = \gamma_{10} + \gamma_{1k}Z + u_j$, in which β_{01} is the estimated relationship for education, γ_{10} is the average change in efficacy, γ_{1k} stands for the coefficients of Z second-level predictors, and u_j is the residual.

³⁷ Full regression results are presented in [appendix B](#).

³⁸ The unexpected point estimate and large confidence interval for the group with no formal education is explained by the small number of cases (51, or 3.5% of the sample).

this interaction is that the difference in efficacy between those with primary or secondary education and those with a degree higher than primary widens as the number of candidates increase, which conforms with the expectations of my theory. Likewise, the presence of a candidate from the institutionalized parties is associated with a positive change in efficacy mainly for those who completed primary education, but not as much for those with higher educational degrees. Therefore, the results suggest that the impact of arrangements that reduce the complexity of informational environment is larger for those with lower levels of education.

The two analyses presented thus far provide some evidence in favor of a negative relationship between a crowded political environment and individuals' attitudes about their ability to understand political issues. In the next section, I evaluate the extent to which the results from the analyses in New Zealand and Brazil represent a pattern that can be generalized to a cross-national setting.

2.3.3 Cross-National Comparisons in Latin America and the Caribbean

To make the comparison of feelings of efficacy across countries, I use 91 nationally representative surveys conducted from 2008 and 2012 in over 25 countries in Latin America and the Caribbean by the AmericasBarometer project. The surveys evaluated respondents' level of internal and external efficacy by asking the extent to which they agreed with the following sentences: "You feel that you understand the most important political issues of the country" and "Those who govern this country are interested in what people like you think." While responses were measured in a 7-point scale ranging from "strongly

disagree” to “strongly agree”, average scores by country in internal efficacy ranged from 3.18 in the 2010 Paraguayan survey to approximately 4.51 in Venezuela 2014.³⁹ I combine the 91 surveys to estimate the relationship between the structure of competition between parties and variation in efficacy scores across respondents and surveys with three-level hierarchical models. Respondents are clustered within surveys, which are clustered within countries. As I treat the survey as the second-level unit of analysis, the shared characteristics of surveys from the same country are accounted by the third-level intercepts. The assumption here though is that the surveys are random draws of a population of survey that do not follow any specific order.⁴⁰

To avoid the impact of having outliers, such as Brazil with its 20+ plus parties in the lower house, I operationalize the fragmentation of a country’s party system with the national-level effective number of legislative parties (ENLP), which weighs the number of parties according to their share of seats in the lower or only legislative body (Laakso and Taagepera 1979).⁴¹ Party system institutionalization is measured with the Pedersen’s index of electoral volatility, which uses the net change of votes across two elections to assess a degree of stability in the system (Pedersen 1979).⁴² Similar to the subnational analysis in Brazil, the rationale behind the measure is that in systems where parties have strong

³⁹ The United States 2012 actually yielded the highest average score (5.13), but like Canada, responses from the U.S. are not part of the analysis due to missing variables that are included in the regression models.

⁴⁰ That is, surveys of the same country are assumed to be independent and identically distributed, thus, interchangeable among themselves.

⁴¹ Given the surveys were not purposively conducted near or distant from elections, I choose to use the effective number of parties by seats rather than votes because the salience of the fragmentation is more or less constant across periods between elections. There is also better information on the distribution of seats in legislatures than electoral results across countries, especially in federal countries where the counting of votes for legislative bodies is done at the state level.

⁴² The formula for the Pedersen Index is as follows: $\text{Volatility} = \sum_i^p |p_{it} - p_{i(t+1)}| / 2$, in which i indicates a party and p_{it} indicates the proportion of votes won by that party. For surveys conducted in 2008 and 2010, I use the electoral volatility scores calculated by Alcántara (2012), and for surveys conducted in 2012 and 2014, I use my own estimates due to missing data.

roots in society and present stable platforms for the population across time, the amount of change in party vote across elections should be small. On the other hand, in systems where individuals are not presented with stable options and parties are constantly changing positions, the volatility of votes should be high.⁴³

To measure the degree of polarization between parties, or distinctiveness of positions, it is necessary to estimate the position of parties across one or more political dimensions.⁴⁴ Scholars have used different sources of information to estimate the position of parties in a left-right scale such as parties' political manifesto (e.g. [Maoz and Somer-Topçu 2010](#)), surveys of legislators (e.g. [Power and Zucco 2009](#)), the opinion of country experts (e.g. [Lupu 2015a](#)), survey respondents' placement of the parties (e.g. [Dalton 2008](#)), and roll-call votes (e.g. [Hetherington 2001](#)).⁴⁵ I use a measure of polarization calculated by [Singer \(2016\)](#), which estimates the positions of the parties based on surveys of legislators in 17 Latin American countries conducted by the [Representative Institutions Observatory \(OIR\) Project](#) from the University of Salamanca. The positions of the parties are generated based on the left-right placement of their legislators, which are then used to calculate the distance between individual parties from the party system's center (average position of all parties weighted by their size).⁴⁶ Figure 5 presents how countries in Latin America and

⁴³ Moreover, electoral volatility correlates well with other measures of institutionalization such as measures of party volatility, entry of new parties, and the Varieties of Democracy project's indicators of institutionalization.

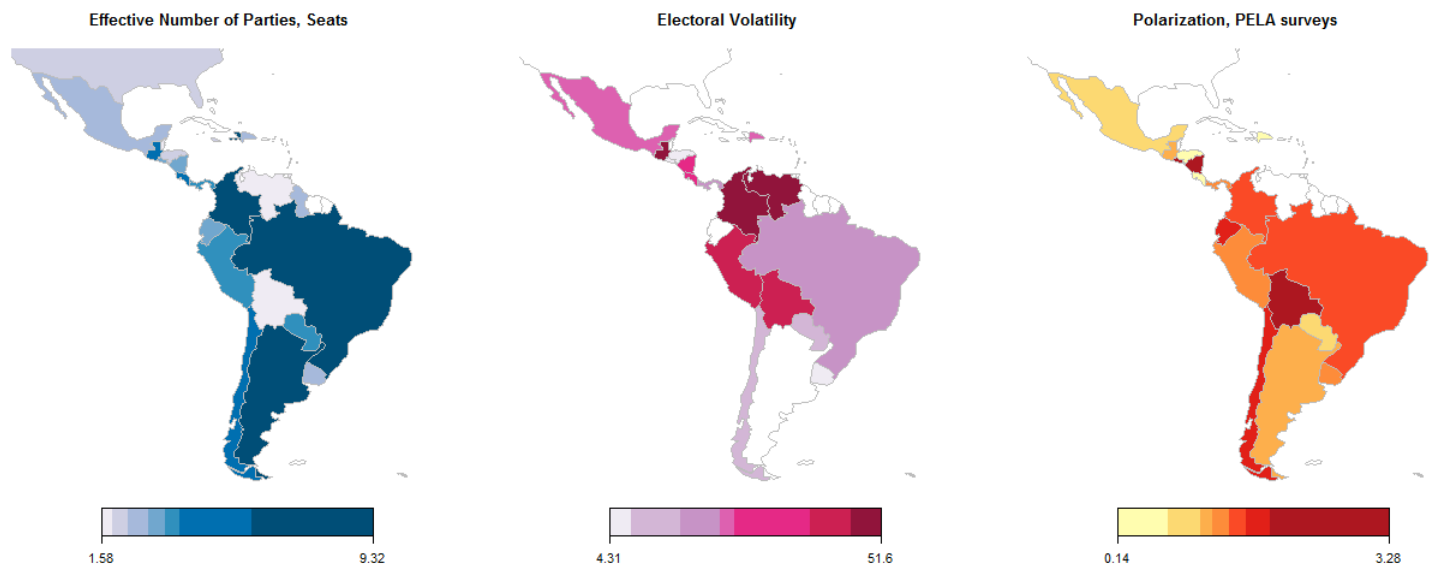
⁴⁴ Standard measures of polarization assume that parties have a single peakedness preference positions in a left-right scale individuals can observe and use for comparisons.

⁴⁵ As [Dalton, Farrell and McAllister \(2011\)](#) indicate these different approaches to coding ideological positions tend to yield similar results. For a discussion of polarization measures and an example of their applicability, see [Alvarez and Nagler \(2004\)](#) and [Ezrow \(2007\)](#), respectively.

⁴⁶ The formula for the calculation of distance is: $\text{Polarization} = \sqrt{\sum_i p_i (LR_i - \hat{LR})^2}$, in which i indicates a party, p_i indicates the proportion of votes/seats won by that party, LR_i indicates the position of the party in the left-right spectrum of votes/seats, and \hat{LR} indicates the average position of parties weighted by their sizes.

Caribbean fare in these three party system characteristics in 2010.

Figure 2.5: Party System Characteristics of Latin American Countries, 2010



The map on the left presents the effective number of parties per country, and shows that Honduras and Bolivia have the lowest effective number of parties, while Argentina and Brazil have the highest. The middle map displays the high degree of institutionalization in stable party systems such as Chile and Uruguay, but low values in volatile systems like Guatemala and Colombia.⁴⁷ Polarization, on the other hand, is particularly high in countries with leftist presidents such as Bolivia, Ecuador and Nicaragua.

To control for possible confounding factors, I include in the models the logged number of seats in the lower chamber or only legislature, dummies for bicameral and federal countries, inverted Freedom House scores, Human Development Index scores, the number of years since the last democracy transition since 1963, the logged number of months away from the closest election in the country, and a set of dummies for different years. At the

⁴⁷ Venezuela actually has the highest value of volatility in 2010 given the opposition decided not to run in the previous legislative election in 2005 due to alleged fraud in the process.

individual-level, the model includes sex, age, level of education, and urban-rural divide.⁴⁸

Table 2 presents the results of three regression models for internal and external efficacy each. The first and second models do not include the measures of institutionalization and polarization as predictors due to missing values.⁴⁹ The second model differs from the first by allowing for a curvilinear relationship between the effective number of parties and average levels of internal efficacy. Finally, the third regression estimates the relationship with a smaller number of observations but includes institutionalization and polarization as a part of the model.

⁴⁸ Due to the difficulty of having a valid measure of wealth across countries, I choose not to include any direct measure of economic status here. Nonetheless, robustness checks show that the results are unchanged when the standard wealth quintiles measure is included in the models. Furthermore, because the surveys in the United States and Canada were conducted by telephone, the dataset does not include similar categories of urbanization. For this reason, category "Question not asked" is labeled as NA.

⁴⁹ The absence of polarization and institutionalization do not have a major effect on the direction of the estimated effect of party system fragmentation because they are only slightly correlated in this sample. For the correlation scores, see [appendix B](#).

Table 2.2: Hierarchical Linear Models of Efficacy, AmericasBarometer 2008-2014

| | Internal Efficacy | | | External Efficacy | | |
|--------------------------------|----------------------|----------------------|---------------------|----------------------|----------------------|----------------------|
| | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 | Model 6 |
| Male | 0.389*** (0.009) | 0.389*** (0.009) | 0.386*** (0.012) | 0.005 (0.010) | 0.005 (0.010) | 0.021 (0.013) |
| Age | 0.023*** (0.002) | 0.023*** (0.002) | 0.024*** (0.002) | -0.007*** (0.002) | -0.007*** (0.002) | -0.007*** (0.002) |
| Age ² | Yes | Yes | Yes | Yes | Yes | Yes |
| No formal education | -0.128*** (0.027) | -0.128*** (0.027) | -0.060 (0.034) | 0.091** (0.029) | 0.091** (0.029) | 0.129*** (0.037) |
| Secondary education | 0.320*** (0.012) | 0.320*** (0.012) | 0.341*** (0.016) | -0.095*** (0.013) | -0.095*** (0.013) | -0.122*** (0.017) |
| Post-Secondary education | 0.796*** (0.015) | 0.796*** (0.015) | 0.837*** (0.019) | -0.187*** (0.016) | -0.187*** (0.016) | -0.235*** (0.021) |
| Educ. (DK/NA) | Yes | Yes | Yes | Yes | Yes | Yes |
| Urban | 0.068*** (0.011) | 0.068*** (0.011) | 0.043** (0.014) | -0.099*** (0.012) | -0.099*** (0.012) | -0.107*** (0.015) |
| Urban (NA) | Yes | Yes | Yes | Yes | Yes | Yes |
| ENLP (centered) | -0.037 (0.021) | -0.108* (0.047) | -0.097* (0.040) | -0.046 (0.032) | -0.146* (0.071) | -0.104** (0.037) |
| ENLP (centered) ² | | 0.011 (0.007) | | | 0.016 (0.010) | |
| Electoral volatility | | | 0.003 (0.003) | | | 0.004 (0.004) |
| Polarization | | | 0.064 (0.073) | | | 0.137 (0.077) |
| Federal | 0.011 (0.189) | -0.058 (0.194) | -0.440 (0.421) | -0.299 (0.270) | -0.393 (0.285) | -1.167** (0.368) |
| Bicameral | -0.125 (0.100) | -0.152 (0.102) | -0.334 (0.174) | 0.101 (0.142) | 0.064 (0.149) | 0.050 (0.153) |
| Seats (log) | -0.088 (0.099) | -0.083 (0.099) | 0.352 (0.255) | 0.175 (0.143) | 0.181 (0.146) | 0.691** (0.225) |
| Freedom House | -0.028 (0.032) | -0.035 (0.032) | -0.035 (0.057) | -0.039 (0.046) | -0.049 (0.047) | 0.034 (0.070) |
| Age of Democracy | 0.002 (0.003) | 0.001 (0.003) | 0.006 (0.004) | -0.003 (0.004) | -0.004 (0.005) | 0.000 (0.004) |
| Human Development Index | 1.503 (1.010) | 1.865 (1.031) | 3.444 (2.047) | 1.587 (1.464) | 2.100 (1.527) | 3.777 (2.174) |
| No. months near election (log) | -0.035 (0.020) | -0.035 (0.020) | 0.025 (0.024) | -0.027 (0.031) | -0.027 (0.031) | 0.007 (0.043) |
| Year dummies | Yes | Yes | Yes | Yes | Yes | Yes |
| Intercept | 2.784*** (0.685) | 2.672*** (0.693) | -0.772 (1.829) | 2.350* (0.981) | 2.209* (1.016) | -2.713 (1.656) |
| Num. obs. | 147853 | 147853 | 81456 | 148049 | 148049 | 81474 |
| Num. surveys | 91 | 91 | 49 | 91 | 91 | 49 |
| Num. countries | 24 | 24 | 16 | 24 | 24 | 16 |
| Var. surveys | 0.035 | 0.034 | 0.021 | 0.085 | 0.082 | 0.076 |
| Var. countries | 0.039 | 0.040 | 0.053 | 0.076 | 0.083 | 0.017 |
| Var. Residual | 3.111 | 3.111 | 2.992 | 3.696 | 3.696 | 3.613 |

Source: AmericasBarometer 2008-2014, Alcántara (2012), Singer (2016), UNDP, Freedom House, and information collected by the author.

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

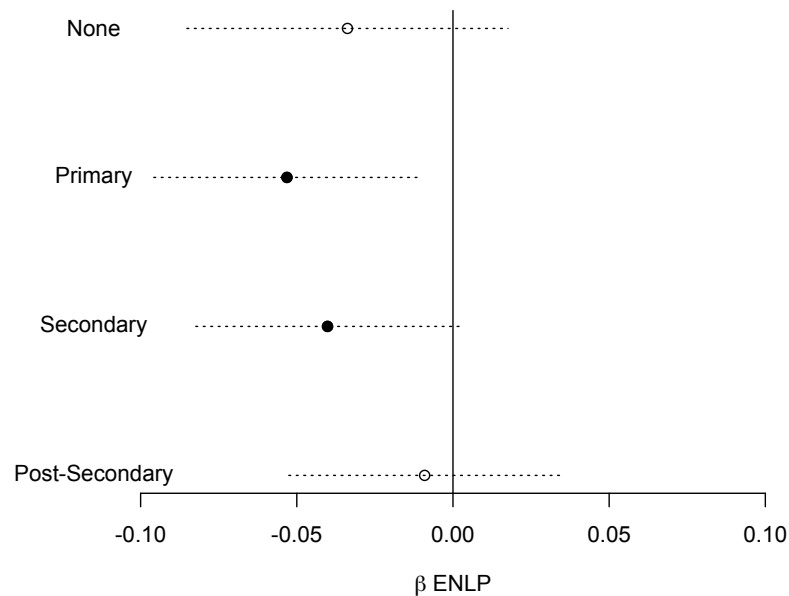
The coefficients at the individual level again show that males and those with higher levels of education tend to have higher confidence in their ability to understand political issues. Across the first three models, the estimated relationship between the ENLP and average levels of internal efficacy is negative, which corroborates the cognitive demanding hypothesis and contradicts the diversity and competition arguments. Furthermore, the coefficient is significantly different from 0 in models 2 and 3, and also of considerable magnitude. Using the third model as reference, holding the institutional and development variables constant, a change of 4 units in the effective number of parties represents more than the average difference between those who completed primary and secondary school. The second model indicates that the effect of more parties does not follow an inverted-J curve, but rather a diminishing negative effect across the range of parties. More precisely, because the ENLP variable is centered at 2, the model estimates that the average change in efficacy associated with increasing from two to three effective number of parties would be -.108, while the average change in efficacy associated with increasing from three to four would be -.086, and so on.⁵⁰

The results also indicate the number of effective parties is the only national-level predictor that is statistically significant. But putting statistical significance aside for a moment to analyze the directions of the other macro-level predictors, with the exception of electoral volatility and Freedom House scores, they tend to fall in the direction of more complex political systems reducing levels of efficacy. That is, the third model indicates that levels of efficacy are, on average, lower in bicameral, federal, less developed, and

⁵⁰ Given I centered ENLP at 2 and estimated as a curvilinear the relationship, the marginal effect is calculated as follows: $\beta_{ENLP} + 2 * \beta_{ENLP^2} ENLP_i$.

countries with newer democracies. Models 4 through 6 also contrast with the idea that individuals feel their voices are of interest to those in power in countries where the number of parties is larger. In fact, model 5 and 6 point in the opposite direction: in countries with more parties, individuals seem to feel less represented. However, higher levels of external efficacy seem to be somewhat associated with economic development as indicated by the coefficients for HDI, though the coefficient does not always reach a levels of significance (alpha) below .1. Lastly, I also test for heterogenous effects of fragmented party systems on groups of varying levels of education by including cross-level interactions between the education-level categories and the macro-level predictors of the first model.⁵¹ Figure 5 presents the estimated impact of an additional unit in the effective number of parties for the different groups of educational attainment.

Figure 2.6: Heterogenous Effects of ENLP by Education Level, AmericasBarometer 2008-2014



⁵¹ Results of hierarchical linear regression are presented in [appendix B](#).

Similar to previous results, the negative change in efficacy associated with more parties is larger for those who completed primary or secondary education than those who have completed post-secondary school. While the difference between coefficients is not statistically significant, the estimated impact of more options is nearly null among those with post-secondary education, and farther from 0 among those with primary and secondary education. We can also interpret the results as indication of a widening gap in internal efficacy between those with post-secondary and those with not as the number of parties in a country increases.⁵²

2.4 Discussion

In this chapter I have put forth a theory of how characteristics of the political system, especially features of party competition such as the number of electoral options and parties in the legislature, may affect the complexity of politics for citizens, which then affects the extent to which they feel they can understand and participate in politics. I also argued that because cognitive resources are crucial for absorbing and processing political information, the increasing levels of complexity of politics have a larger negative impact on the efficacy of those with lower levels of education. This argument stands in opposition to the diversity of options and mobilization hypotheses that predict higher levels of efficacy when the number of electoral options is larger.

Exploring this point of tension between these diametrically-opposed views, I investigate the relationship between number of parties at the macro-level and feelings of politi-

⁵² In other words, the difference in average levels of internal efficacy between those who have completed a post-secondary degree and those who have not seems to increase as the effective number of parties is larger.

cal efficacy with three independent datasets. Overall, the results from all tests suggest that perceptions of one's capacity to understand political issues weakens when there are more parties competing, particularly for individuals with lower levels of education. It should be noted that the results from the analysis in New Zealand suggest the extent to which individuals perceived those in government to be interested in their opinion improved when the country changed its electoral rule to be more proportional and consequently minor parties gained importance in national politics. But the extent to which this is a function of the increase of parties is difficult to tell. A comparison of external efficacy levels across Latin American and Caribbean countries with different systems does not yield the same result, indicating the New Zealand result possibly had to do with factors specific to that context. In the next chapter, I dedicate more attention to the impact of the change in party system in New Zealand, and to differences between municipalities in Brazil, by analyzing rates of voter turnout as a behavioral implication of varying levels of political efficacy.

Chapter 3

Number of Electoral Options and Voter Turnout: Direction and Mechanisms

3.1 Number of Options and Turnout: When Less is More

Perhaps the main reason for why some scholars assume that a larger number of parties has a positive impact on individual efficacy is the association between the proportionality of an electoral formula and level of voter turnout.¹ Compared to proportional formulas, first-past-the-post elections have lower levels of electoral participation because they de-incentivize individuals who do not support parties that stand a chance of winning from turning out (Duverger 1954, Lijphart 1997, Powell 1986).² At the same time, because individuals are strategic in supporting parties that stand a chance of winning, winner-takes-all elections incentivize ideologically similar parties to converge in order to increase their chances of electing candidates into office, which often leads to the reduction in the number of parties (Cox 1997, Duverger 1954).³

The concurrent impact of electoral formula on number of parties and turnout seem to have led scholars to assume that individuals feel more politically efficacious in contexts with more parties. However, as Blais and Dobrzynska (1998) and Blais (2006) point out, the literature provides limited evidence regarding the mechanisms for why proportional

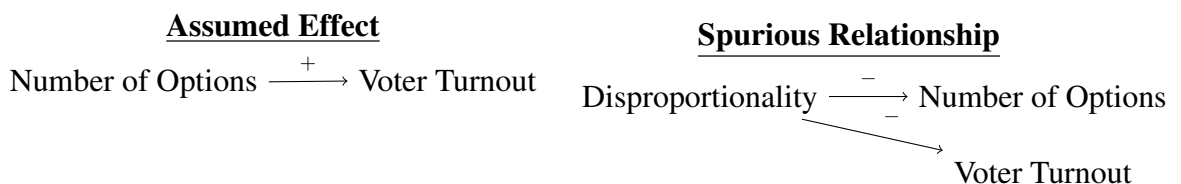
¹ Early research estimated the difference in turnout rates between majoritarian and proportional electoral formulas to be around 9-12 percentage points (Blais and Carty 1990, Burnham 1987, Lijphart 1999).

² For example, Fujiwara (2011) finds that in comparison to single ballot first-past-the-post mayoral elections in Brazil, dual-ballot (run-off) elections promote more votes for the third-place candidates and slightly increase turnout.

³ This phenomenon is often called Duverger's Law. In a more recent version of this theory, Cox (1997) argues that the number of parties in a system is a function of the number of seats allocated to that district plus one.

elections are associated with higher participation levels. [Blais \(2006, p.118\)](#) goes as far as to say that “we have a poor understanding of the relationship between the number of parties and turnout.” Rather than higher individual efficacy promoted by more parties, I argue this positive association between number of parties and turnout is driven by a spurious correlation in which both participation levels and number of parties are negatively affected by the degree of disproportionality of the electoral formula. Hence, I dispute mechanisms that suggest that more parties lead to higher levels of voter turnout. On the contrary, participation levels are higher in proportional elections because citizens know their ballots are less likely to go “wasted” than under disproportional electoral formulas ([Duverger 1954](#)).⁴ The disproportionality of an electoral formula is not only different from the number of parties, but actually one of its causes ([Duverger 1954](#), [Cox 1997](#), [Taagepera and Shugart 1989](#)). Therefore, because the disproportionality of an electoral formula leads to a reduction of parties competing for office and lower levels of electoral participation, it is assumed that the positive correlation between number of electoral options and turnout is a product of an isolated effect.

Figure 3.1: Relationship between Number of Electoral Options and Voter Turnout



Recent studies also contradict the idea that proportional elections promote higher turnout due to increased mobilization efforts or a more diverse set of electoral options

⁴ In non-competitive first-past-the-post elections, like most U.S. states in presidential elections, even potential voters of large parties have little incentive to vote given the chances of affecting the result are minimal ([Downs 1957](#)).

that appeal to the general public's preferences. [Rainey \(2015\)](#) argues that political parties actually have more incentives to spend efforts toward voter mobilization in competitive first-past-the-post elections given a small change in the distribution of votes can alter the entire outcome of an election, while a small change in proportional elections is unlikely to lead to major shifts in the allocation of seats. [Blais and Bodet \(2006\)](#) find that there is not higher congruency in ideology between the citizens and parties under PR systems. Furthermore, [Blais and Carty \(1990\)](#), [Blais and Dobrzynska \(1998\)](#), [Jackman \(1987\)](#), [Jackman and Miller \(1995\)](#) address the problem of convoluting disproportionality with number of parties by using multivariate regression on a large sample of elections across countries and find that while the degree of proportionality in elections are indeed associated with higher electoral participation, an increase in the effective number of parties significantly depresses turnout.⁵⁶ Finally, experimental studies in the U.S. by [Lau and Redlawsk \(2001\)](#), [Lau and Redlawsk \(2006\)](#) and in Brazil by [Cunow \(2014\)](#) also find that in scenarios with a larger choice set of candidates, individuals are less likely to participate in elections, to acquire information, and to choose the "correct" candidate.⁷

But while both set of studies dispute the idea that more choices promote electoral participation, they diverge in the reason why the relationship is negative. [Jackman \(1987\)](#) argues that more parties depresses turnout because electors feel de-incentivized from voting when they know that the agenda they are voting for will not be exactly what will be

⁵ [Blais and Carty \(1990\)](#) actually find the effect to be slightly curvilinear in which the marginal effect of more parties to be smaller when the number of parties is already large.

⁶ It should be noted that, in contrast to these studies that mostly use data from industrialized nations, a few studies find the relationship between number of parties and turnout to be null in Latin America ([Fornos, Power and Garand 2004](#), [Pérez-Linán 2001](#)) and Africa ([Kuenzi and Lambright 2007](#)).

⁷ [Power and Roberts \(1995\)](#) and [Cohen \(2016\)](#) also find a larger number of candidates to be a predictor of null votes in Brazil and Latin America, respectively.

implemented by parties given compromises they often make when forming coalitions in the aftermath of elections.⁸ In other words, because multiparty systems often lead to coalition governments, individuals have less incentive to participate because parties will likely not follow through with their campaign promises.⁹ In fact, [Armstrong and Duch \(2010\)](#) and [Bowler, Donovan and Karp \(2010\)](#) find evidence that individuals anticipate the formation of post-election coalitions in Europe and New Zealand, which in turn affects their voting calculus.

In contrast to the coalition-formation mechanism, [Lau and Redlawsk \(2001\)](#), [Lau and Redlawsk \(2006\)](#) and [Cunow \(2014\)](#) explain lower levels of participation in multi-candidate scenarios based on increasing cognitive demands from ordinary citizens and potential information overload. In other words, similar to the theory posited in this dissertation, this set of studies argues that the burden on ordinary individuals to absorb and process a larger amount of information leads them to disengage when faced with increasingly complex environments. The main difference between their explanations and the one presented here is the mediation of internal efficacy as the mechanism for which potential electors become less likely to turnout.

In this chapter, I seek to answer these two questions regarding the direction of the relationship and validity of mechanisms regarding the relationship between more political competitors and turnout. First, what is the independent impact of more electoral options on voter turnout? The observable implication of the diversity of options and mobilization

⁸ [Jackman](#) is actually inspired by [Downs \(1957, p.155\)](#) who states that multiparty systems offer potential voters with a less definite choice set due to ambiguity and compromise introduced on a second level in which parties, not voters, decide the formation of government.

⁹ Although [Blais and Carty \(1990\)](#) and [Blais and Dobrzynska \(1998\)](#) mention that the greater the number of parties, the more complex the system for electors to choose from, they follow [Jackman's \(1987\)](#) post-election coalition-formation argument.

arguments is that, all else equal, levels of turnout should increase as the number of electoral options increase. On the other hand, a set of works suggest the addition of more parties de-motivates electoral participation due to coalitions and increased complexity in the informational environment.

Second, how do competing explanations for the negative effect of more parties fare in explaining lower levels of turnout? While cognition-oriented explanations argue that turnout is lower because the mass public feel less efficacious in contexts with multiple parties, [Jackman's \(1987\)](#) argument states that individuals feel de-incentivized from voting due to the formation of coalitions post-election. Given the latter explanation relies on the individuals' perception of the size and type of coalition parties are forming, I seek to estimate the role of each mechanism by accounting for the influence of different types of coalitions on levels of turnout across municipal elections in Colombia and Brazil.

3.2 Empirical Evidence

To assess the direction and validity of these mechanisms, I conduct three analyses of voter turnout. First, I compare participation rates across mayoral elections in Colombia where voting is voluntary and coalitions at the subnational level have only recently been permitted. Second, I turn to an analysis of turnout levels across mayoral elections in Brazil, where voting is compulsory and coalitions at the municipal-level have been recurrent for nearly three decades. Finally, I look at variation in turnout in New Zealand before and after the transformation of the electoral system from first-past-the-post (FPTP) to mixed-member proportional (MMP). The latter two complement the previous chapter's analysis

of efficacy levels across time in New Zealand and across municipalities in Brazil.

3.2.1 Mayoral Elections in Colombia

While most studies of turnout tend to look at differences across countries, comparisons at the subnational level are useful because they inherently control for differences in electoral rules, timing of elections and other national-level factors such situation of the economy and national government policies. Moreover, Colombia is a useful case because not only there is wide variation in the number of candidates and levels of turnout across municipalities, but the formation of coalitions during the nomination of candidates in subnational elections has recently been sanctioned.¹⁰

In 2011, the Colombian Congress passed the “Political Parties Law” (*Ley de los partidos politicos*) that stipulated new rules regarding campaign finance, internal regulations for parties, gender quotas, and other changes to the electoral system including the formation of coalitions between parties in sub-national elections. This recent change provides an opportunity to assess the effect of more electoral options on turnout with and without the formation of coalitions. That is, because parties could not form coalitions prior to the 2011 elections, it is possible to evaluate if the relationship between the number of candidates and turnout changed before and after the electoral change.¹¹

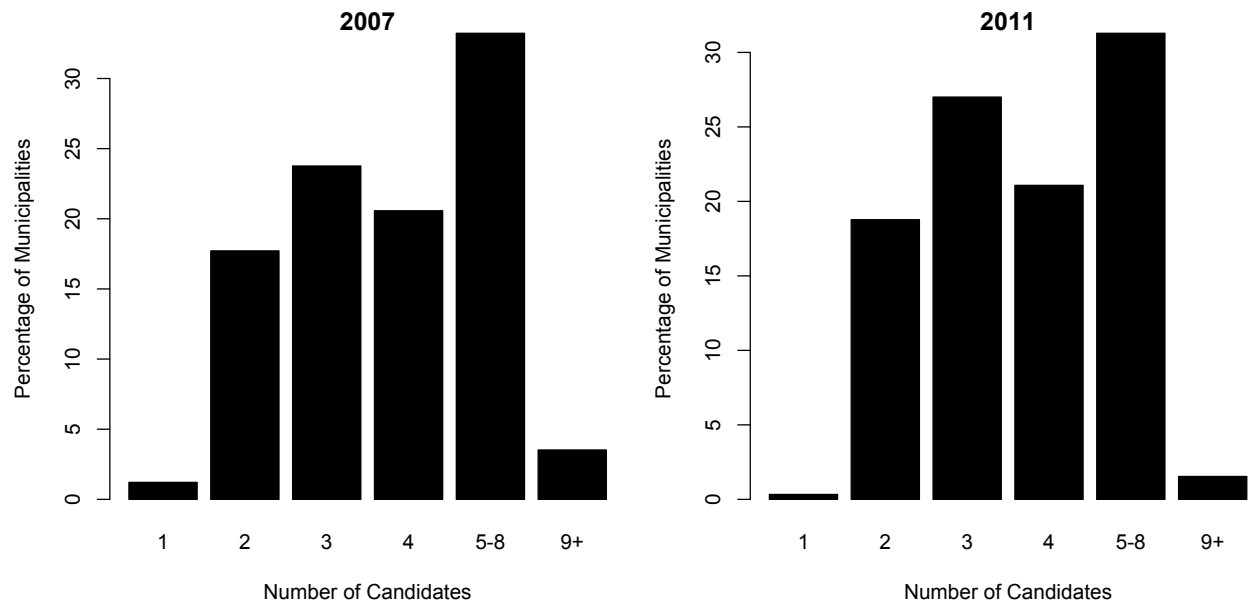
It is important to note, however, that the new set of rules was approved by the country’s legislative body only 108 days before the 2011 mayoral elections, and actually

¹⁰ The distribution of turnout rates across municipalities in Colombia is presented in [appendix C](#).

¹¹ Sub-national elections in Colombia take place every four years. Elections for governor, mayor and local councilmen are concomitant, while elections for president and senators always take place in the year after. Governors and mayors cannot run for reelection.

signed into law only 28 days before election day, which left many local leaders confused about the application of some rules, particularly regarding the gender quota and registration of candidates (Puyana 2012). Not surprisingly, then, the introduction of the new rules seem to have had only a small impact on the distribution of number of candidates across mayoral elections in 2007 and 2011 (Basset and Garbijas 2015). The average number of candidates per race dropped from 4.21 to 4.02, although the number of candidates across years was unchanged in one-fifth of elections, and varied by only one in roughly one-third.¹²

Figure 3.2: Number of Mayoral Candidate across Municipalities, Colombia 2007-2011



Moreover, the implementation of coalitions was limited in number, and tended to be geographically concentrated in a few Colombian departments (Puyana 2012). For example, at least one coalition was formed in half of the elections in the department of Risaralda (7 out of 14), whereas coalitions were formed in less than 5% of elections in the department of Bolívar. Hence, the new rules did not create major differences in the number of candidates

¹² This difference between average levels of number of candidates is statistically significant in a paired t-test analysis.

or even in the implementation of coalitions between rounds. Nonetheless, we can still compare the relationship between parties and turnout to assess if coalitions had any effect.

In the following analysis, I estimate the impact of the number of candidates on the levels and change in turnout, as well as the impact of the change in number of candidates on the varying levels of voter turnout across time. The analysis is composed of six regression models, evenly divided for modeling turnout rates in 2007 and 2011. In the first model for each year, the dependent and independent variables are static, which means I am assuming no influence of previous scores on the relationship. The second model, the dependent variable is the change in levels of turnout but the number of candidates is still static for the specific year (t). In the third model, I estimate the impact of the change in number of mayoral candidates on the difference in levels of turnout across years for the same municipalities, while controlling for the initial number of candidates in the previous election ($t-1$). Hence, the second regression per year is a simple autoregressive model with lagged value for the dependent variable but static predictors, while the third model is an autoregressive distributed lag model (ADL).¹³ Moreover, I include the margin of victory from the previous election, sets of dummies for the size of the municipality and for each department as controls. In the models for the 2011 round of elections, I also include variables for the number of coalitions in the election and a binary for if the winning candidate was part of a coalition.

Models 1 and 4 indicate the number of candidates in an election is negatively asso-

¹³ In order for these models to generate unbiased and consistent estimators, standard OLS assumptions about the distribution and covariation of the regression residuals u_t must be met. Namely, the residuals must be stochastic with mean zero ($E(u_t)=0$), variance equal to Σ^2 , and uncorrelated with the predictors ($\text{cov}(x_t, u_t)=0$) (Gujarati and Porter 2009). I test for these assumptions and find that while there is a small level of heterokedasticity, the results are unchanged when using alternatives to correct the standard errors. Furthermore, the disturbance (i.e. residuals) is not correlated with the number of candidates variables.

Table 3.1: Levels of Turnout across Municipalities, Colombia 2007-2011

| | 2007 | | | 2011 | | |
|-------------------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| | Turnout _t | Δ Turnout | Δ Turnout | Turnout _t | Δ Turnout | Δ Turnout |
| Turnout _{t-1} | | -0.469*** (0.019) | -0.466*** (0.019) | | -0.297*** (0.018) | -0.297*** (0.018) |
| Number of Candidates _t | -0.670*** (0.136) | -0.424*** (0.100) | | -0.512*** (0.155) | -0.259** (0.080) | |
| Δ Number of Candidates | | | -0.412*** (0.103) | | | -0.258** (0.083) |
| Number of Candidates _{t-1} | | | -0.463** (0.141) | | | -0.261** (0.098) |
| Margin of Victory _{t-1} | -0.029* (0.014) | 0.013 (0.010) | 0.013 (0.010) | -0.049** (0.017) | 0.010 (0.009) | 0.010 (0.009) |
| Number of Coalitions _t | | | | -1.112 (1.030) | -0.721 (0.532) | -0.722 (0.534) |
| Winner Coalition _t | | | | 1.283 (1.656) | 0.980 (0.855) | 0.983 (0.859) |
| Size of Electorate- Very Small | 3.502*** (1.023) | 2.134** (0.752) | 1.933* (0.790) | 3.872*** (1.030) | 1.829*** (0.536) | 1.825*** (0.547) |
| Size of Electorate- Small | 1.079 (0.976) | 0.241 (0.717) | 0.092 (0.746) | 1.209 (0.979) | 0.278 (0.506) | 0.276 (0.510) |
| Size of Electorate- Large | -4.512* (2.127) | -0.991 (1.557) | -0.962 (1.585) | -4.543* (2.141) | -1.921 (1.108) | -1.919 (1.109) |
| Size of Electorate- Very Large | -6.155** (2.009) | -2.444 (1.472) | -2.404 (1.546) | -7.271*** (2.007) | -3.881*** (1.043) | -3.877*** (1.049) |
| Dummies for department | Yes | Yes | Yes | Yes | Yes | Yes |
| Intercept | 72.759*** (6.988) | 33.916*** (5.281) | 34.086*** (5.350) | 70.228*** (7.047) | 27.081*** (3.840) | 27.102*** (3.886) |
| Adj. R ² | 0.493 | 0.522 | 0.519 | 0.486 | 0.324 | 0.323 |
| Num. obs. | 900 | 899 | 884 | 908 | 906 | 906 |

Source: Electoral National Institute of Colombia

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

ciated with the level of turnout in mayoral elections in Colombia. Similarly, the coefficients for the dummy variables indicate a negative relationship between size of municipality and levels of turnout. Models 2 and 5 indicate the number of candidates is also associated with a reduction in level of turnout across years, though the magnitude of the relationship is smaller. Finally, the coefficient for Δ Number of Candidates in models 3 and 6 show that

a positive change in number of candidates across time is significantly associated with a negative change in turnout across elections.¹⁴ Yet, the coefficient for the lagged measure, which measures the combined effect of number of candidates at time t-1 and the change in the number of candidates, indicates the drop in turnout is largely driven by the change at time t, not the initial level. In other words, because the difference in coefficient is small between the change and static variables, the results indicate the change at the last moment (t) drives the drop in rates of turnout across years.

These results are consistent before and after the implementation of coalitions in subnational elections in Colombia, which suggests that, at least in this case, the sheer number of options has an independent negative effect on individual engagement with elections.¹⁵ The presence of coalitions seemed to moderately affect turnout, but the coefficients do not reach statistical significance. To a certain extent, this result is not surprising given mayors do not need to create coalitions after an election to have a mandate, and the fact the 2011 rounds of elections was the first time coalitions were formed in subnational elections in Colombia.

¹⁴ A possible alternative explanation for the negative association between number of candidates and lower turnout is that elections with less candidates may be perceived as more competitive, which could increase cognitive engagement with politics (e.g. [Kam and Utych 2011](#), [Duffy and Tavits 2008](#), [Levine and Palfrey 2007](#)). In separate analysis, I estimate these relationships controlling for the size of the margin of victory of the election, and the direction and significance of coefficients is unchanged.

¹⁵ In [appendix C](#), I also estimate this relationship by separating the number of candidates in elections with sets of dummies. The results indicate that the increase in options from one to two is important for increasing participation among citizens, but the continued increase in the number of electoral choices can be negative, especially when the number reaches five or more.

3.2.2 Mayoral Elections in Brazil

Mayoral elections in Brazil are similar to Colombia's in the extent that they are partisan, there is wide variation in the number of candidates across municipalities, and coalitions are formed prior to voting day, which means citizens should be able to take into account the role of coalitions into their voting calculus. However, local races in Brazil contrast with Colombia in a few ways. Gubernatorial and municipal elections are not concurrent, incumbent mayors are allowed to run for a second term, voting is compulsory and, more importantly, coalitions at the local level have existed for over three decades and are much more frequent, which allows for a better test of the role of coalitions in shaping voter turnout.¹⁶ The analysis of turnout levels across municipalities in Brazil also adds to the study of efficacy presented in the chapter 2, in which respondents who live in municipalities where there were more mayoral candidates presented lower levels of internal efficacy for local issues. Hence, the expectation here is that a higher number of candidates should lower levels of turnout, even when taking into account the number and size of coalitions being formed.¹⁷

Given voting in Brazil is compulsory and enforced, it is not surprising the average voter turnout rate in municipal elections in Brazil is much higher than in Colombia, though the variation across municipalities is much smaller.¹⁸ Moreover, due to reelection and a larger proportion of small-sized municipalities, the distribution in the number of candidates is also less dispersed than in Colombia. The average number of mayoral candidates

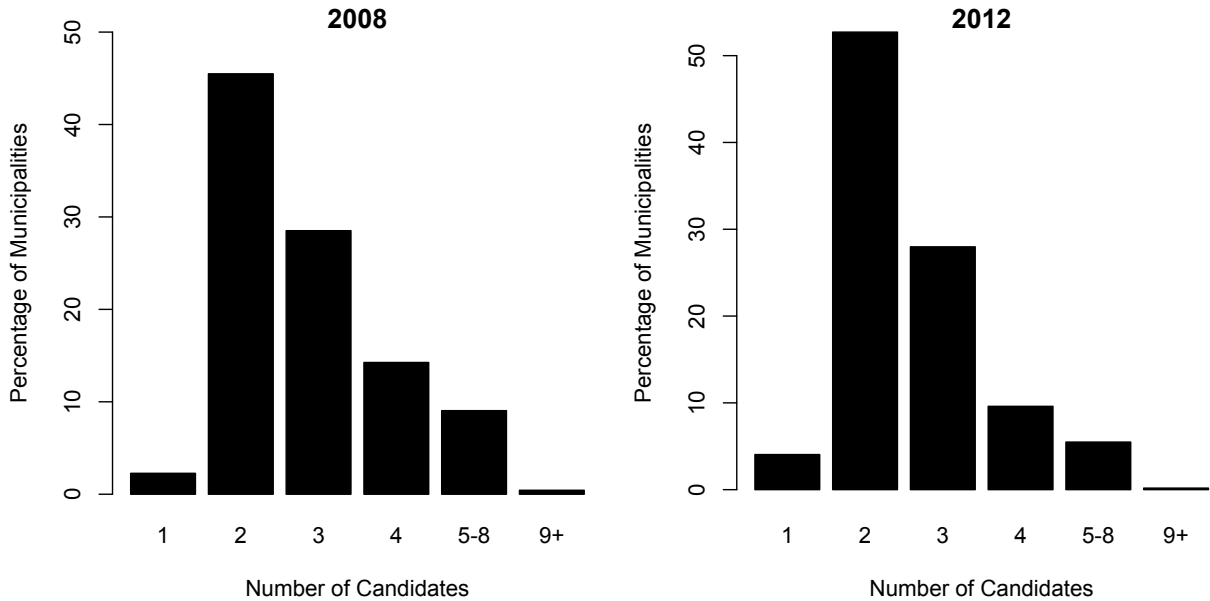
¹⁶ Municipal elections comprise the election of mayors and local councilmen.

¹⁷ I discuss how one-candidate elections are different below in footnote 21.

¹⁸ The distribution of turnout rates across municipalities in Brazil, as well as a map of Brazil with the number of candidates per municipality is presented in [appendix C](#).

in the Brazilian mayoral candidates in 2008 and 2012 were approximately 2.9 and 2.6, respectively.¹⁹

Figure 3.3: Number of Mayoral Candidates across Municipalities, Brazil 2012



Analogously to the analysis of mayoral elections in Colombia, I test for the impact of the number of electoral options on turnout rates first with a standard regression without any lagged variables. In a second model, I analyze the change in turnout rates between 2008 and 2012, but do not account for the number of candidates in the previous election. Finally, the third model estimates the impact of the change in the number of candidates on the variation of turnout rates across years. I also include campaign-level measures that characterize the structure of electoral competition such as the presence of the incumbent, presence of candidates from the two most institutionalized parties, and coalitions of non-ideologically aligned parties.²⁰

¹⁹ The similarity in the distribution across years indicates that nothing weird happened in the interim between elections that would disrupt parties from having more or less candidates at the local level.

²⁰ The operationalization of institutionalization and ideological parties are the same from the previous

To model the impact of coalitions on turnout, I include the the average size of coalitions (i.e. the total number of parties divided by the number of candidates), and the size of the winning candidate's coalition. To account for some potential differences in the set of candidates, I use a "kitchen-sink" approach and include measures of the total number of candidates who are male, married, and finished post-secondary education.²¹ Finally, I include sets of dummies for the size of the polity and states. The Table 3.2 presents the results of the OLS regressions.²²

Similar to the results from the analysis of elections in Colombia, Model 1 indicates a higher number of candidates in mayoral elections is associated with lower levels of turnout.²³ The second model indicates that a higher number of candidates is also associated with a negative change in turnout.²⁴ And in the third model, the coefficient for Δ Number of Candidates indicates an increase in number of candidates across time is associated with a drop in levels of turnout across elections, though this result is only significant at an alpha

chapter based on the idea that the accumulation of presidencies and disputes between the PT and PSDB in presidential and majoritarian elections has generally organized the structure of political competition in the country (Mainwaring, Power and Neto 2018).

²¹ The inclusion of the candidates' characteristics is driven by the fact the Brazilian electoral tribunal collects more information about the candidates than its Colombia counterpart. Nonetheless, it seems reasonable to think that candidates' characteristics may shape the types of issues that become salient in local campaigns, as well as how individuals feel about the candidates themselves.

²² In [appendix C](#), I present the results of the same models including the log of the sum of largest campaign expense by the candidates as a measure of campaign spending in the models. The number of cases is smaller because of missing data and because the Brazilian Superior Electoral Tribune does not provide this information for candidates in one-candidate elections. Aside from the fact the coefficient for the Δ Number of Candidates in the third model reaches conventional levels statistical significance, the results are largely unchanged. Moreover, simpler versions of these models without the characteristics of candidates yield similar results when the sample is restrained to elections with at least more than one candidate.

²³ [Cunow \(2014\)](#) finds a similar result when analyzing similar data from Brazil, though his results do not take into consideration the number of coalitions.

²⁴ For robustness checks, I also run these models only in elections with less than 200,000 voters (where there is not a second round with the two most-voted candidates), and the results are consistent. Similar to the analysis in the previous chapter, when the models include the effective number of candidates (ENC) instead of the total, a relationship in neither direction is found. Additionally, I test this relationship when controlling for the level of competition in the election measured by the share of votes by the winning candidate. The results again show that non-competitive elections, like one-candidate races, turnout drops significantly.

Table 3.2: Levels of Turnout across Municipalities, Brazil 2012

| | Turnout _t | Δ Turnout | Δ Turnout |
|---|----------------------|----------------------|----------------------|
| Turnout _{t-1} | | -0.197*** (0.007) | -0.198*** (0.007) |
| Number of Candidates _t | -0.899*** (0.138) | -0.161* (0.073) | |
| Δ Number of Candidates | | | -0.136 (0.073) |
| Number of Candidates _{t-1} | | | -0.205** (0.075) |
| Incumbent _t | 0.099 (0.124) | 0.007 (0.065) | 0.021 (0.065) |
| Institutionalized Parties _t | -0.132 (0.098) | -0.079 (0.051) | -0.079 (0.051) |
| Average Size of Coalitions _t | -0.519*** (0.045) | -0.071** (0.024) | -0.067** (0.024) |
| Size of Coalition of Winning Candidate _t | -0.012 (0.025) | -0.000 (0.013) | 0.000 (0.013) |
| Non-ideological Coalitions _t | 0.343* (0.135) | 0.093 (0.071) | 0.092 (0.071) |
| Number of Male Candidates _t | -0.147 (0.108) | 0.063 (0.057) | 0.062 (0.057) |
| Number of Married Candidates _t | 0.210* (0.082) | 0.120** (0.043) | 0.115** (0.043) |
| Number of Candidates with Post-Secondary Education _t | -0.279*** (0.071) | -0.074* (0.037) | -0.074* (0.037) |
| Size of Electorate- Small | -1.557*** (0.228) | 0.085 (0.120) | 0.105 (0.121) |
| Size of Electorate- Medium | -1.021*** (0.309) | 0.169 (0.162) | 0.202 (0.163) |
| Size of Electorate- Large | 0.098 (0.512) | 0.392 (0.268) | 0.488 (0.271) |
| Size of Electorate- Very Large | 1.847** (0.644) | 0.843* (0.337) | 0.990** (0.343) |
| Dummies for states | Yes | Yes | Yes |
| Intercept | 88.907*** (0.993) | 15.873*** (0.798) | 16.086*** (0.802) |
| Num. obs. | 5562 | 5562 | 5562 |

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

level of 0.065.²⁵ The coefficient for the lagged measure in the third model indicates that the change in turnout is also driven by the number of candidates in the previous round of elections.²⁶

The results regarding the impact of coalitions on turnout is mixed. While the models indicate that turnout rates are lower in municipalities where the average size of coalitions is larger, the size of the coalition of the winning candidate does not seem to be related to the level of turnout. More precisely, a higher level of one party in candidates' coalitions (at time t) is associated with a smaller level of turnout by 0.52%, and an average drop in the level of turnout across years of 0.07%.

Therefore, the analysis of mayoral elections in Brazil also provides evidence that a larger number of electoral options is associated with lower levels of turnout independently from the effect of coalitions. Nevertheless, even in the unlikely case of mayoral elections in Brazil where voting is compulsory and parties and elections are not as programmatic as parliamentary systems in Europe, the estimated relationship between size of coalition and turnout indicates potential voters are less likely to turn out when candidates belong to a larger coalition of parties.

²⁵ It should be noted this analysis assumes the impact of an increase of one candidate is equal across the distribution of number of candidates. In reality, however, we should expect any increase in number of candidates to have a positive effect on turnout for uncontested elections of only one candidate. On the other hand, the impact on turnout associated with an increase in the number of candidates might be different as the number of candidates continues to grow. For this reason, I also run the models with the number of candidates separated into sets of dummies in [appendix C](#). The results show the difference in cross-sectional levels of turnout as well as change in turnout across time is largest between elections with two and three candidates.

²⁶ To see the statistical significance of this result, I reparameterize the regression equation without the “delta” variables as $y_t = \beta_0 + \beta_1 y_{t-1} + \beta_2 x_t + \beta_3 x_{t-1} + \beta_z Z + u_t$, which yields β_2 , the coefficient for the impact of number of candidates at time t , equal to the coefficient for Δ Number of Candidates presented here. However, the coefficient for the number of candidates at time $t-1$ does not include the impact of number of candidates at time t .

3.2.3 Turnout rates in New Zealand over time

An important limitation of the previous analyses is that mayoral elections in Colombia and Brazil differ in important ways from traditional case studies of coalitions for a few reasons. First, these are majoritarian elections for a position at a local level rather than proportional elections to a country's national parliament. Second, these countries' party systems are known for being largely fragmented with few institutionalized and programmatic parties, which means the formation of coalitions should carry less weight than in more ideology-based systems ([Mainwaring and Scully 1995](#)).

In turn, the political system in New Zealand resembles the characteristics of European countries given parties in the country are more programmatic and have deep roots in society than their counterparts in the most Latin American countries. And as described in the previous chapter, the recent change in electoral rules makes New Zealand a unique case for the study of the impact of more parties and coalition government on voter behavior. Before 1996, either the Labour or National party always held an absolute majority of Parliament, but since the implementation of the new electoral formula, neither of the major parties has been able to win more than half of seats, consequently forcing the formation of coalitions with minor parties in order to form a majority.

The enactment of the mixed-member proportional system was designed to instill greater satisfaction with democracy and reduce the level disproportionality in the translation of votes into seats in the New Zealand's general elections ([Royal Commission on the Electoral System 1986](#)). The reform was designed to reduce electoral disproportionality, which should lead individuals whose views were not congruent with any of the two

major parties to feel they motivated to vote for minor parties as their ballots would now be “counted” in the allocation of seats rather than “wasted” on losing parties under the old first-past-the-post system. Hence, classic works on electoral systems would predict an increase in voter turnout due to less disproportionality, and possibly even due to gains in efficacy connected with a more diverse set of options and increased mobilization from parties (Duverger 1954, Cox 1997).²⁷ However, after a small bump in participation in 1996, voter turnout in New Zealand has actually declined since the more proportional system was implemented, reaching a low of roughly 75% in 2011, which is equal to a drop of more than 10 percentage points when compared to the early 1990’s (Vowles 2010).²⁸ In New Zealand’s last national election in 2017, turnout rates were 5 percentage points lower than before the implementation of the new reform. So what explains this overall decrease in voter participation in spite of the electoral formula becoming more proportional?

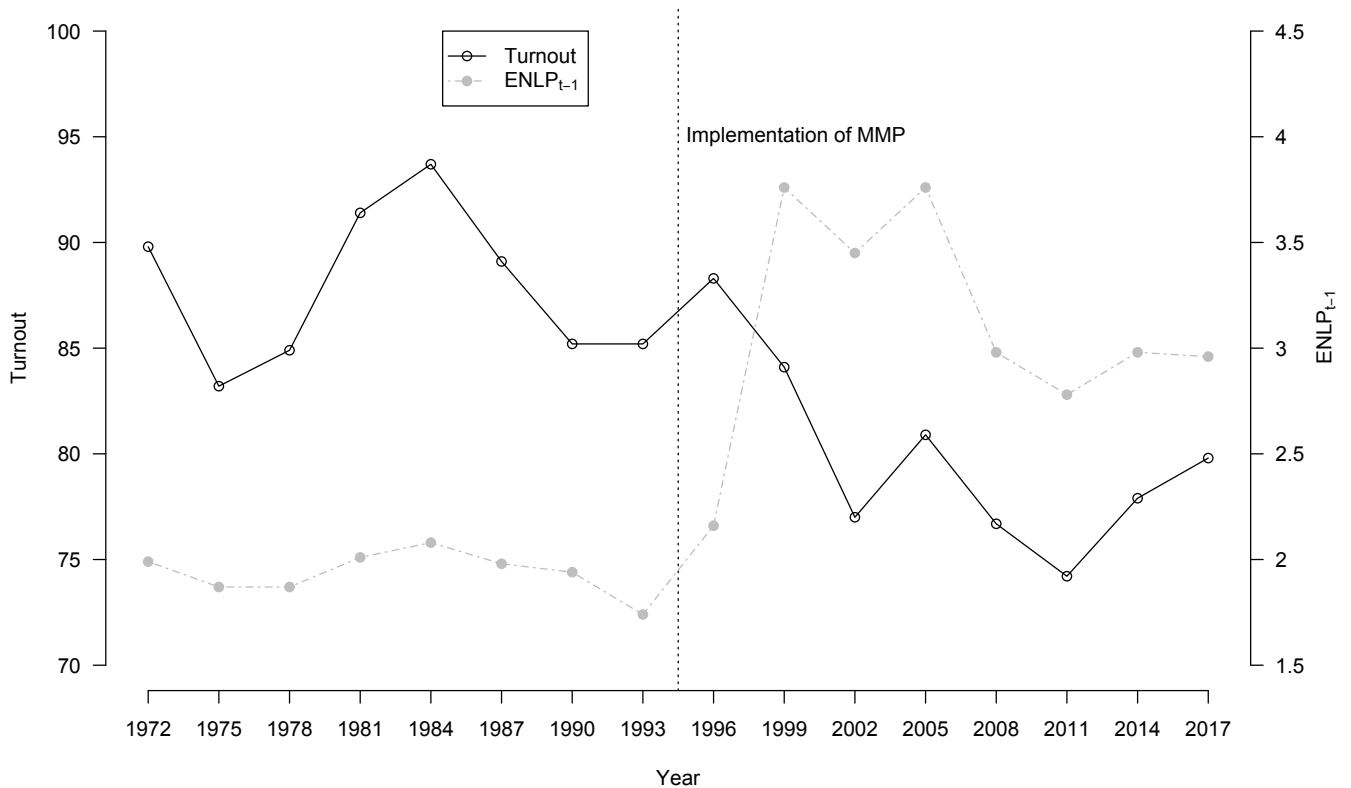
The electoral reform brought a series of changes to New Zealand politics including an expansion in the size of parliament, more seats allocated for Maori candidates, and the introduction of the dual vote system (i.e. the electorate vote- district voting in the form of a plurality system, and the party vote- national voting in the form of a proportional election), but I would argue the increase in the number of parties in the New Zealand Parliament and resultant formation of coalitions are, at least partially, responsible for the decrease in voter

²⁷ Recent works, nonetheless, show that changes in electoral formula do not always have an immediate impact on rates of turnout in Norway, Poland, and New Zealand (Cox, Fiva and Smith 2015, Gendźwill, Zóltak and Rutkowski 2015, Vowles 2010). According to Cox, Fiva and Smith (2015), the increase in turnout associated with the change to a proportional formula depends on the initial level of competition of the district. In Poland, while a change from proportional representation to first-past-the-post did not affect turnout, it had other expected outcomes such as the reduction in the number of parties elected and election of women (Gendźwill, Zóltak and Rutkowski 2015).

²⁸ The drop in turnout associated with the change from FPTP and MMP is similar between the Maori and non-Maori population (Parliamentary Library Research Paper 2015).

turnout. Figure 4 presents the change in turnout and effective number of legislative parties in the eight elections before and after the implementation of the new electoral system.

Figure 3.4: Levels of Turnout and ENLP over time, New Zealand 1975-2017



The dashed grey line shows the increase in the effective number of parties in the parliament after first election under the new system, while the solid black line portrays the inverse pattern of lowering levels of turnout after 1996.²⁹ The implementation of the new electoral rule, thus, increased the participation of minor parties transforming the structure of political competition from a standard two-party system into a system of multiple parties and coalition-based government.

According to the theory proposed here, this change in party system should increase

²⁹ The increase in ENLP is a function of both an increase in the total number of parties in the New Zealand parliament (roughly 3 to 7) and an increase in the share of seats by the minor parties.

the difficulty of absorbing and processing political information for citizens (i.e. discerning and attributing responsibility to the parties), which would negatively affect individuals' internal efficacy and their engagement with politics. And in fact, under the new electoral system, turnout rates decreased while the average number of candidates per district and the number of parliamentary parties increased.

Simultaneously, every government since the enactment of the new system has been formed by a coalition of parties. And according to the argument by [Jackman \(1987\)](#), potential electors should feel less motivated as they learn that what is implemented by government is different from what individual parties campaign on given parties often need to alter their agenda in search of a compromise when building a coalition after the election, particularly supporters of the two major parties used to one-party governments. [Karp and Bowler \(2001\)](#) provide evidence in favor of this mechanism by showing that partisanship and preference for one-party government is associated with satisfaction with democracy among individuals in New Zealand after the implementation of the new system.³⁰ [Vowles \(2010\)](#), on the other hand, finds that the drawing of new district boundaries was key in the decrease of levels of turnout due to diminishing competition in some districts .

Thus, the drop in turnout after the implementation of the new electoral system contradicts arguments that levels of efficacy should be higher among individuals associated with multiparty systems. And while this analysis cannot fully assess the extent to which specific mechanisms are responsible for the decrease of participation, it provides support for arguments that suggest more parties may lead to lower levels of turnout, and corroboration.

³⁰ Furthermore, [Miller \(1998\)](#) finds that New Zealanders perceived the new coalition government as less predictable and transparent.

rates the finding that the public's average level of internal efficacy dropped in New Zealand after the 1996 election.

It is important to note, however, that voter turnout has also declined over the last decades in many developed countries ([Gray and Caul 2000](#), [Blais et al. 2004](#)). In an attempt to evaluate the possibility that the drop in turnout is explained by factors unrelated to the electoral system change like the generational change and increasing use in technology, I compare the variation in levels of voter turnout between New Zealand and three other British Commonwealth developed countries- Australia, Canada, and the United Kingdom- over the past four decades.

Figure 3.5: Levels of Turnout and ENLP over time, New Zealand 1977-2017

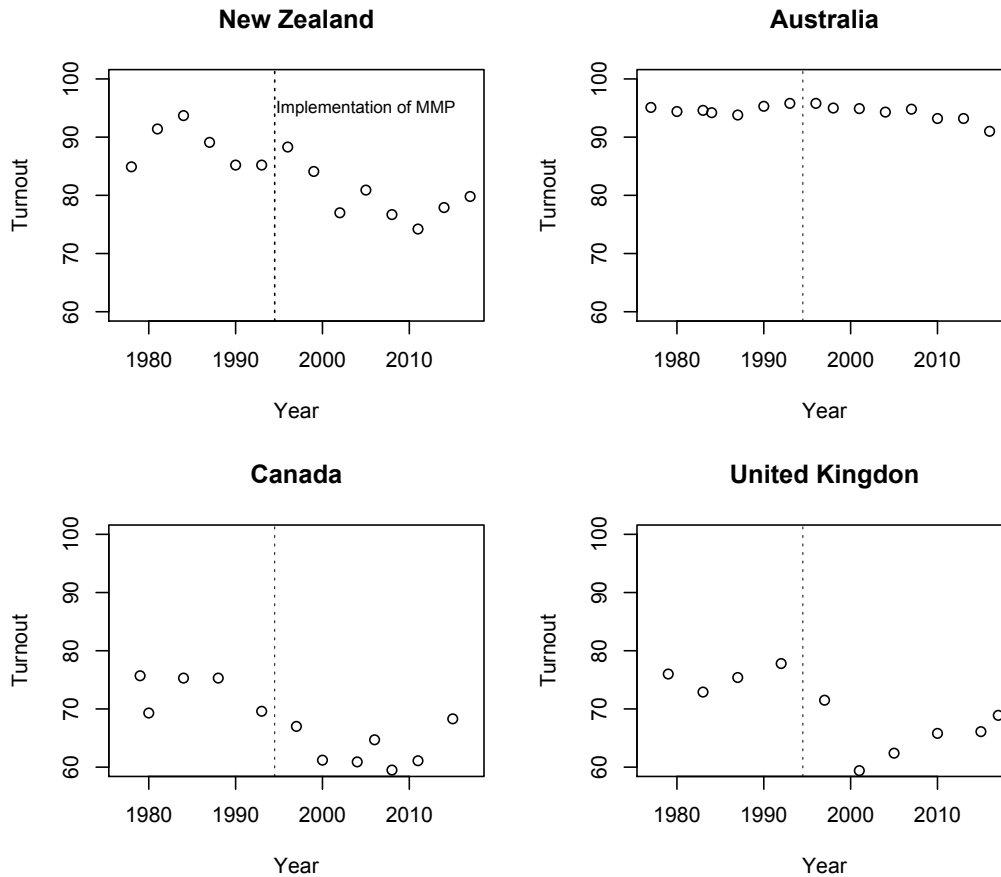


Figure 5 shows that in Australia rates of turnout have not changed substantially over the past four decades, but this result may be a function of the fact the Australian government offers incentives for citizens to vote. On the other hand, Canada and the United Kingdom share similar patterns of lowering levels of turnout with New Zealand across the last two and a half decades. Hence, it is possible that the decline in turnout is actually attributed to extraneous factors from the change in party system. In fact, [Vowles \(2010\)](#) provides evidence that younger generations were less likely to turnout, but the reason why is still not clear. Even so, considering the electoral reform decreased the disproportionality

in elections, which should have increased voter turnout according to classic works, it is remarkable that general pattern is negative, suggesting that, at least in part, the negative trend is a product of the increase in parties and novelty of coalition government.

3.3 Discussion

In this chapter, I examine the validity of the positive correlation between multiparty systems and voter turnout as evidence for the idea that more political parties in a system promote higher levels of efficacy among citizens. I argue this correlation is spurious, driven by the fact that the degree of proportionality of an election negatively affects both number of parties and turnout. Existing observational and experimental studies indicate that, after isolating confounding factors, the effect of more electoral options on voter behavior is actually negative (Blais and Carty 1990, Jackman 1987, Lau and Redlawsk 2001, Cunow 2014). But the exact mechanism for why this is the case we are less certain about (Blais and Dobrzynska 1998, Blais 2006, Cox, Fiva and Smith 2015). Hence, I try to assess the role of the number of candidates and effect of coalitions as alternative explanations for the negative effect more candidates seems to have on turnout.

Using data from local level electoral data in Colombia, I compare the relationship between number of candidates and turnout across rounds of mayoral elections with and without the presence of coalitions. The results indicate a clear negative effect on turnout associated with an increase in the number of candidates, whereas coalitions did not seem to have had any effect on turnout. I conduct a similar analysis of mayoral elections in Brazil, which again shows a negative effect of increasing the number of candidates even when

controlling for characteristics of the municipality, candidates and campaign. However, the results also indicate that turnout is lower in elections when candidates are part of larger coalitions, which provides support for the idea that citizens recognize and dislike when candidates are part of larger coalitions.

Finally, I look at how the transformation of party system in New Zealand affected levels of voter turnout. In contrast to the expectation that turnout would rise due to more proportional elections and higher congruency between voters and parties, levels of electoral participation decreased over the last two decades. While it is not clear whether this result is driven by exogenous factors like generation and sociodemographic changes, I argue this drop in turnout is, at least partially, explained by the increase in the number of parties and need for the major parties to government coalitions.

In sum, the analyses presented here challenge arguments that suggest an increase in electoral options would promote voter turnout due to higher individual efficacy. Instead, it provides evidence that corroborate the results presented in the previous chapter that individuals have a difficulty time managing complex informational environments and become less likely to engage with politics when the number of parties increase. The results also point toward a negative effect of coalitions on turnout in Brazil and New Zealand supporting claims that the public's preference for one-party government may be one of the reasons for the negative relationship between multiparty systems and voter turnout, after controlling for the degree of proportionality.

Chapter 4

A Closer Look at the Effect of Number of Parties on Political Knowledge

4.1 Democratic Politics and Political Knowledge

From Aristotle to Dahl, theorists of democracy have argued that a certain level of political knowledge by the citizenry is fundamental for the stability and effectiveness of a democratic regime. According to variations of this perspective, the populace needs not only to be appreciative of and willing to fight for democratic institutions, but also able to make informed decisions and hold representatives accountable. In the words of [Delli Carpini and Keeter \(1996, 5\)](#): “Knowledge is a keystone to other civic requisites. In the absence of adequate information neither passion nor reason is likely to lead to decisions that reflect the real interests of the public. And democratic principles must be understood to be accepted and acted on in any meaningful way.”

In reality, however, decades of survey research have shed light on the dearth of factual knowledge and lack of structured political opinions by the masses in democracies across the world, especially in the United States (e.g. [Berelson, Lazarsfeld and McPhee 1954](#), [Converse 1964](#), [Luskin 1987](#)). Scholars have provided different answers to this paradox. According to some, elections inhibit the impact of uninformed voters by having parties manage the political agenda and select candidates who are substantially more qualified than the average citizen ([Aldrich 1995](#), [Schattschneider 1942](#)). Others claim that poor measurement may have led researchers to underestimate the extent to which the public is knowledgeable ([Gibson and Caldeira 2009](#), [Mondak 1999](#), [Mondak and Davis 2001](#),

Prior and Lupia 2008). Another group of scholars argues the lack of knowledge among the public is a product of the information environment structured around political competition and the works of the media given they are responsible for the amount and type of political information citizens attain (Neuman, Just and Crippler 1992, Jerit, Barabas and Bolsen 2006, Iyengar et al. 2010).

This idea that contextual factors shape the extent to which the citizenry is politically informed has inspired some comparative scholars to argue that the number of parties in a political system is positively associated with a society's level of information, which would explain the low levels of knowledge by the American populace given the country's two-party system. According to Gordon and Segura (1997), arguably the most influential piece in the study of political knowledge across countries, political systems with multiple parties provide more opportunities for the mass public to be informed given that parties have the incentive to differentiate themselves and provide more and better information to the electorate.¹ Similar to the efficacy and mobilization arguments discussed in the previous chapters, this Downsian (1957) logic assumes that citizens are well-equipped to absorb and process an increasing amount of political information. Nonetheless, Gordon and Segura (1997) also recognize that the proliferation of parties may demand more cognitive engagement from citizens given more parties can lead to murkier differences between parties, which means that at some point the gain associated with the increase in number of parties should diminish, and possibly become negative.

Two subsequent articles follow this foundational piece and find similar results in

¹ Gordon and Segura (1997) broke new ground in the comparative study of political knowledge, and has had since then a lasting impact on the current literature. According to GoogleScholar, the article has been cited over 245 times as of June 25, 2017.

which the effect of parties on individual knowledge is positive at first, but negative after a threshold of 2.5 effective number of parties (Berggren 2001, Fraile 2013). Yet, other works that make use of distinct measures of knowledge show null or negative findings concerning the effect of the number of electoral choices on individual knowledge. Table 1 provides a summary of this literature by listing the authors, data, measurement of political knowledge, and estimated effect of the number of options on the menu of voters.

Table 4.1: Studies of Political Knowledge Across Countries

| Study | Data | Measure | Effect of Number of Parties |
|--|--------------------------|-----------------------------------|---|
| Gordon and Segura (1997) | Eurobarometer 1989 | Party Placement Distance | Positive then negative |
| Berggren (2001) | Eurobarometer 1989 | Party Placement Distance | Positive then negative |
| Lau and Redlawsk (2001) | Experimental data | Vote choice | More candidates, less correct vote choice |
| Rennó (2004) | Brazil 2002 Panel Survey | Recollection of candidates' names | Negative |
| Grönlund and Milner (2006) | CSES R1 | 3 Factual Questions | PR not higher than FPTP |
| Toka (2008) | CSES R1-2 | Correct voting | Null |
| Fraile (2013) | EES 2009 | Index of 7 True/False Questions | Bell-shaped |
| Cunow (2014) | Experimental data | Vote choice | More candidates, less correct vote choice |
| Clark (2016) | CSES R3 | Party Placement Distance | Null |
| Busch (2016) | CSES R1-2 | Party Placement Distance | Multiparty higher but ENLP negative |
| Fortin-Rittberger (2016) | CSES R2-3 | Factual Questions | Null |
| Fortunato, Stevenson and Vonnahme (2016) | CSES and ESS | Party Placement Order | Null |
| Turgeon and Lloyd (2017) | CSES | Party Placement Order | Null |

In sum, the existing literature presents mixed findings regarding this relationship.

While the three studies mentioned above indicate the relationship is positive at first, but

negative later, [Grönlund and Milner \(2006\)](#) find levels of political knowledge are not higher in countries with proportional representation systems (associated with multiparty systems) when compared to majoritarian systems (associated with two-party systems). [Busch \(2016\)](#) also uses the placement of parties in a left-right scale but finds that while individuals in systems with more than 2.5 effective parties seem to have higher levels of knowledge, the effect of an increase in the number of parties is negative, controlling for multiple factors.² Moreover, [Lau and Redlawsk \(2001\)](#) and [Cunow \(2014\)](#) find that giving respondents more candidates in hypothetical elections reduces the probability they will pick the candidate that best aligns with their preferences. [Rennó \(2004\)](#) finds that individuals are less likely to remember the name of candidates in scenarios with more candidates. A third group of recent studies, however, does not find the number of parties to be a statistically significant predictor of levels of knowledge across countries when controlling for a diverse set of factors ([Toka 2008](#), [Clark 2016](#), [Fortin-Rittberger 2016](#), [Fortunato, Stevenson and Vonnahme 2016](#), [Turgeon and Lloyd 2017](#)).³

The initial positive effect found by [Gordon and Segura \(1997\)](#), [Berggren \(2001\)](#), and [Fraile 2013](#) also stands in contrast to the theory posited here that, because settings with multiple parties increase the difficulty of managing political information and consequently reduce individuals' self-efficacy, we should not expect political engagement and levels of sophistication to be higher in multiparty contexts. Instead, the cognitive engagement with politics and desire to acquire more information should be lower in environments in which citizens do not believe they are capable of understanding the action of parties and being

² In a second model, the author finds the result to be null.

³ It should be noted that not all studies of the last group set as their primary objective the assessment of the relationship between effective number of parties (ENP) and knowledge, but instead use ENP as an statistical control.

effective political agents. In fact, informed political participation is both a product and cause of higher levels of perceived efficacy. That is, one's belief in his/her capability to understand and participate in politics should drive one's motivation to seek and process more information, and increased levels of political knowledge should enhance one's belief about their potential to understand and influence political processes. As a result, we should not expect a positive change in individuals' levels of political knowledge associated with increasing number of parties. If so, what explains the divergence between this finding and the expectation proposed here?

In this chapter, I argue that the results presented by [Gordon and Segura \(1997\)](#) are driven by inexact evaluation and interpretation of the results. More specifically, I present evidence that the estimated positive effect of increasing the number of parties is driven by a very small number of cases and due to an arbitrary decision for imputing values for "Don't know" responses.⁴ In addition, I use a collection of 85 national surveys in 46 countries collected by the Comparative Study of Electoral Systems (CSES) project to test the relationship between the effective number of political parties and average levels of knowledge. The results indicate that a larger number of political parties in the political system does not seem to affect average levels of information and agreement about parties' left-right positions, though it is associated with a larger gap in knowledge between those with lower and higher levels of education. Ultimately, the reinterpretation of [Gordon and Segura \(1997\)](#) and the analysis of CSES data indicate that the original strategy for imputing values is likely to lead to biased results.

⁴ Throughout the chapter, I use the term "Don't Know" to indicate both refusals and actual "Don't know" responses.

4.2 Measuring Political Knowledge Across Countries

While the necessity of a knowledgeable citizenry for the stability and quality of a democracy is still up for debate, there is little dispute among scholars around the benefits of a population of political sophisticates. Politically-informed individuals are more likely to recognize the value of democracy, to participate in politics ([Delli Carpini and Keeter 1996](#), [Inglehart and Welzel 2010](#)), to have consistent and coherent opinions ([Zaller 1992](#)), and to better use heuristics in making decisions ([Kuklinski et al. 2001](#)). However, the continual challenge faced by scholars is to adequately measure the construct of political sophistication, particularly across settings and groups ([Mondak 2001](#), [Mondak and Anderson 2004](#), [Peréz 2015](#)). Quantifying the level of political sophistication of individuals is increasingly difficult in a comparative setting where the diversity of systems and contexts may affect the validity and reliability of survey instruments due to variation in the importance of specific pieces of political information and consistencies across issues ([Clark 2016](#), [Luskin 1990](#), [Milner 2002](#)).

[Gordon and Segura \(1997\)](#) (henceforth called GS) seek to overcome this problem by proposing an original method of measuring political knowledge across countries that relies on the perception of ideological position of political parties in the left-right spectrum. According to this approach, respondents are asked to place their country's political parties on a scale from 1 to 10 where 1 means most left and 10 means most right, and researchers calculate how close a respondent's answer is to the "correct" position of the party, which can be based on independent data such as opinions of experts, or as in their main analysis,

assumed to be the average placement of all respondents who provided an answer.⁵ For example, if a respondent placed party A at 2 on the left-right scale but the sample average response was 3.3, the respondent's distance for party A would be 1.3. After this process is done for all parties and respondents asked in a national survey, the respondents' distances to the average party placement are averaged out and taken as a measure of political sophistication. That is, the lower the overall distance in party placement, the more knowledgeable an individual is estimated to be. For ease of interpretation, the measure is inverted by subtracting each score from the possible highest value (9), so higher figures indicate more knowledge.⁶ In cases in which respondents choose to not place a party in the spectrum, researchers imputed a value of the mean distance of all respondents who picked an answer *plus* one standard deviation of the mean distance. The authors' rationale behind this decision is that adding the penalty to the mean distance increases variance while penalizing those who are assumed to lack information on the parties. In other words, the measurement assumes missing responses would have been far from accurate- namely, the response would have misplaced the party by the average level of inaccuracy plus one standard deviation of the average answer.⁷

As stated by the authors, because the measure relies on the application of abstract

⁵ Busch (2016), for example, uses independent data from the Comparative Manifesto Project to mark the correct position of parties. GS report that they also conducted their analysis with expert placement of each party as the benchmark, and while most results did not change, the estimated relationship between number of effective parties and individual knowledge cease to yield statistically significant results (see page 141).

⁶ In mathematical form, the measure is calculated as follows:

$$PK_i = 9 - \left(\sum_{j=1}^n |p_{ij} - \hat{p}_j| \right) / n_j \quad (4.1)$$

where i indicates an individual respondent, j indicates a particular party, p_{ij} indicates the placement of party j by respondent i , \hat{p}_j indicates the average placement of party j by all respondents in the sample who provided a value, n_j indicates the number of parties asked in the survey, and PK_i indicates the level of political knowledge of respondent i .

⁷ An illustration of how this imputation approach works is presented in [appendix D](#).

terminology (left-right) and on parties rather than specific policy issues, it is designed to be reliable over time and valid across countries. Yet, based on findings from works that look at individuals' willingness and ability to place themselves and parties on the left-right spectrum, I would argue this measure still makes strong assumptions about the meaning of the scale, the salience of parties across time and space, and possibly even the way the scale is interpreted by respondents. For instance, the approach assumes that the ideological left-right spectrum is equally meaningful across countries, which we know can be problematic particularly in places where social cleavages did not shape the formation of party and party systems, such as those in Latin America (Dix 1989, Zechmeister 2006). But for the purpose of demonstrating the implication of more basic decisions behind the estimation of the relationship between number of parties and average levels of political knowledge across countries, I will focus here on the interpretation of their regression model's coefficient and the assumption behind the imputation of missing values.

4.3 Small N, Big Conclusion

GS and Berggren (2001) argue that more parties should have a positive impact on knowledge due to better opportunities for information attainment associated with multi-party systems in which parties have the incentive to carve out distinct and clear programs. This positive relationship, however, is hypothesized to be diluted as the number of parties "climbs significantly higher" because parties are less likely to differ and coalitions are more likely to be built, which consequently increases the informational demands from citizens. To test the validity of the argument, the authors use data from twelve European countries

surveyed by the 1989 Eurobarometer, as well as party-system data at the national level.

The hypothesized curvilinear effect is operationalized by dividing countries into two groups of more or less than 2.5 effective number of parties, and then interacting the dummy variable that sorts the groups with the original effective number of parties variable. Thus, instead of using a quadratic term or other traditional techniques of non-linear transformation that would evaluate the marginal effect of the variable for different values (Kam and Franzese 2007), this model estimates the average change in political knowledge associated with an increase of one unit in the effective number of parties for the two groups separately. The authors justify this decision by claiming that this model adequately accounts for the difference in incentives between two-party and multiparty system proposed by Downs (1957). Although this reasoning alone is questionable given neither their argument nor the operationalization of party system fragmentation is laid out in such way, the principal problem with this analysis is that the breakup of the already small number of cases leads the authors to make strong assertions about the primary effect of the number of effective parties based on a sample of three countries. That is, the categorization based on the cut-off of 2.5 effective number of parties divides the sample into one group of three countries with fewer than 2.5 effective number of parties and another of nine countries with more parties.⁸ Table 4.2 presents the classification of countries based on their effective number of legislative parties (ENLP), and the average levels of political knowledge per country estimated both in the authors' original analysis and replicated here.

The non-multiparty group is composed of Portugal, Great Britain and Greece. And

⁸ Given the lack of strong theoretical reasoning for grouping this parties, this division ends up amplifying the long discussed problem of small number of observations in comparative cross-national research (Lijphart 1971, Lieberman 1991, King, Keohane and Verba 1994, Mahoney 2003).

Table 4.2: Number of Parties and Levels of Knowledge Across Countries

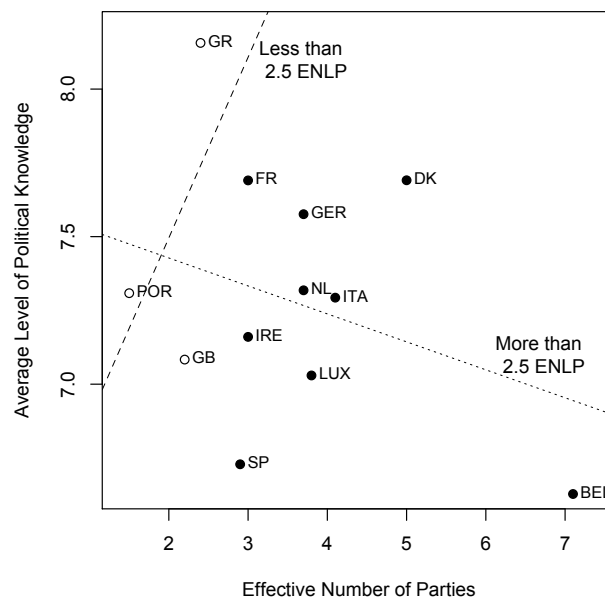
| Country | ENLP | Multi-Party Dummy | GS (1997) Country Mean | Replication Country Mean |
|---------------|------|-------------------|------------------------|--------------------------|
| Portugal | 1.5 | 0 | 7.31 | 7.31 |
| Great Britain | 2.2 | 0 | 7.08 | 7.08 |
| Greece | 2.4 | 0 | 8.15 | 8.16 |
| Spain | 2.9 | 1 | 6.73 | 6.73 |
| France | 3.0 | 1 | 7.69 | 7.69 |
| Ireland | 3.0 | 1 | 7.16 | 7.16 |
| Germany | 3.7 | 1 | 7.57 | 7.58 |
| Netherlands | 3.7 | 1 | 7.32 | 7.32 |
| Luxembourg | 3.8 | 1 | 7.03 | 7.03 |
| Italy | 4.1 | 1 | 7.22 | 7.29 |
| Denmark | 5.0 | 1 | 7.69 | 7.69 |
| Belgium | 7.1 | 1 | 6.63 | 6.63 |

while the number of parties between them vary slightly, the large difference between them is in the average level of political knowledge. Greeks present a substantial advantage over their counterparts, both in the original and replicated measurements.⁹ Because of the small number of countries, this lead by Greece is largely responsible for the conclusion that more parties produces more knowledge among the citizenry in countries with fewer than 2.5 effective number of parties. Figure 4.1 plots the bivariate relationships between the effective number of parties and the average levels of political knowledge for the two groups. The unfilled points and dashed line indicate the position and relationship for countries below the 2.5 cut-off, and the filled points and dotted line for the group above the threshold.

The elevated score of Greece (GR) in the average level of knowledge carries an extraordinary weight in the estimation of the relationship for the first group due to the small number of cases. Similarly, the outlier number of parties in Belgium (BEL) is key to the relationship for the other group. Still, the decisive factor for the results seems to be the de-

⁹ The two measures align almost perfectly. The exceptions are Greece, Germany and Italy, for which the results deviate minutely in the second digit.

Figure 4.1: Bivariate Relationship between ENLP and Levels of Political Knowledge, Original Specification

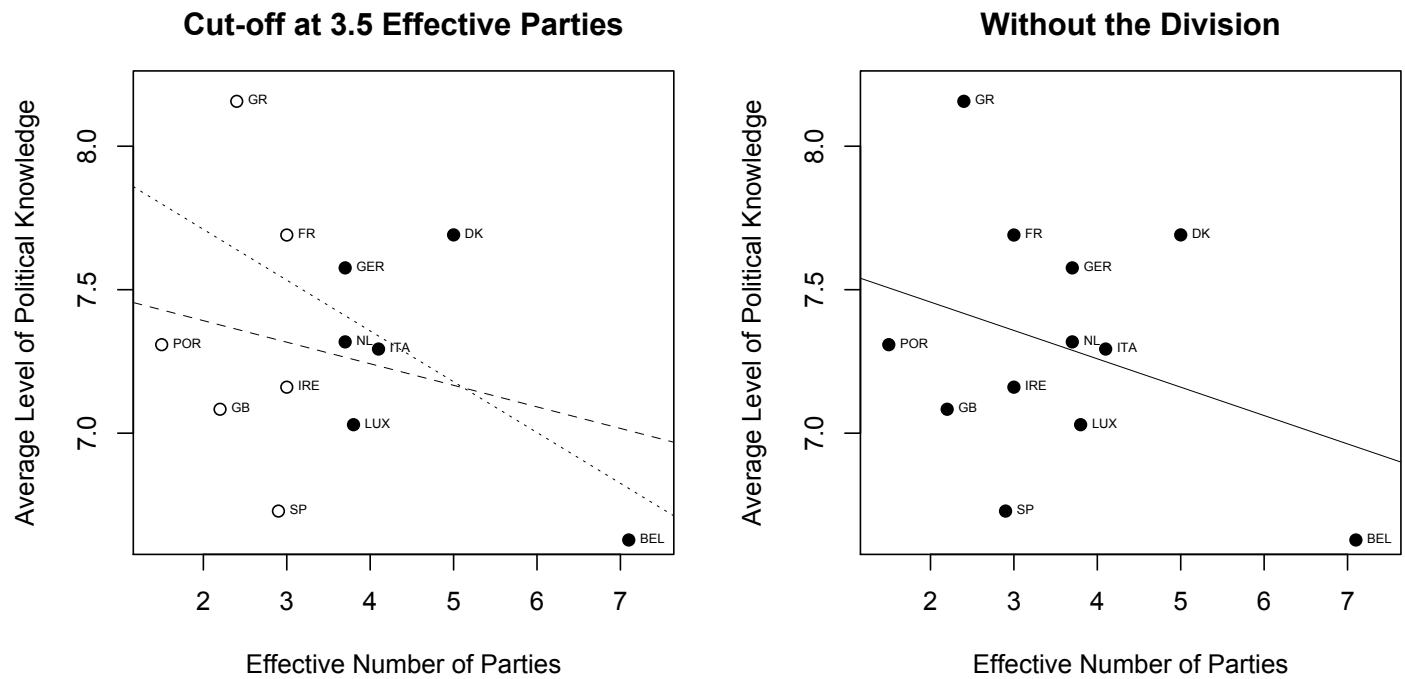


cision to divide the countries at 2.5. To show how this cut-off is critical, Figure 4.2 presents two variations of this analysis. The chart on the left shows the bivariate relationships if the groups were evenly split with a threshold of 3.5 effective number of parties. The chart on the right presents the relationship when the countries are not divided into categories.

The change in cut-off not only adds a few cases to the first group, which decreases the weight of Greece, but actually makes the bivariate relationship for the group with fewer parties slightly negative. The relationship for the second group stays negative, though it becomes even more reliant on Belgium's position. The chart on the right does not impose a separate analysis across groups and also presents a negative relationship between number of parties and knowledge, which contradicts the authors' original argument.

While this analyses illustrate the limitation of using the statistical approach with a small number of cases, the model proposed by GS is more sophisticated given it accounts

Figure 4.2: Bivariate Relationship between ENLP and Levels of Political Knowledge, Alternative Specifications



for a number of possible confounders. Their models include the following controls: the degree of electoral disproportionality, a measure of national competitiveness, a dummy variable indicating compulsory voting, a measure of degree of unicameralism and the number of years since the last national election.¹⁰ Therefore, to adequately assess the extent to which the categorization of countries affects the estimated relationship, I replicate the first model in table 4 of GS (page 140) and re-evaluate the relationship by first dropping the interactive term, then the multiparty system dummy, and finally, testing a quadratic term of effective number of parties.

It should also be noted that GS and [Berggren \(2001\)](#) use ordinary least squares (OLS) regression, which underestimates the statistical uncertainty of the coefficient param-

¹⁰ Models 2 and 3 on page 140 by GS also includes five individual-level variables (income, education, occupational impingement, television usage and newspaper usage), but they do not impact the results of the national-level predictors and lead to a substantial reduction in the number of observations due to missing.

eters (i.e. the standard errors) when analyzing nested data like respondents clustered within mutually exclusive countries (Raudenbush and Bryk 1992, Snijders and Bosker 1999).¹¹ To correct this issue, I run hierarchical linear models (HLM) that account for the nesting in estimating the standard errors. Hence, while the direction and magnitude of coefficients are not affected, the standard errors are larger in the replication and subsequent models. Table 4.3 shows the results of these regression analyses.

The original model by GS suggests that the addition of one unit in the effective number of parties is associated with an increase of over one point in the average level of political knowledge for countries with fewer than 2.5 ENLP, but a small negative effect for countries with more than the 2.5 ENLP threshold.¹² Moreover, according to the OLS regression, all predictors reach statistical significance. The replication multi-level model produces equivalent coefficients but more sober levels of uncertainty around the point estimates. The third model keeps the multiparty dummy but drops the interaction term (the hypothesis of a heterogenous effect), which leads to a negative but much smaller effect of number of parties. Finally, the attempt to model the relationship non-linearly points to a positive but far from statistically significant change in the average level of knowledge for a case with 0 ENLP (non-squared coefficient), and decreasing marginal effects for hypothetical cases with larger values.¹³ For instance, the marginal effect for a case with 2 ENLP

¹¹ In other words, the cross-national nature of the data means that observations (individuals' responses to the survey) are clustered within groups (countries). This means the estimation of statistical significance should account for the clustering of observations by country, otherwise the model assumes that observations are independent from one another. Formally, this means the model violates the Gauss-Markov Theorem in which unobserved factors (u_i) have a mean of 0 ($E(u_i)=0$), equal variance ($\text{var}(u_i) = \sigma^2$), and more importantly, that there is no covariation between the unobserved factors ($\text{cov}(u_i, u_j) = 0$).

¹² $\beta_{ENLP} + \beta_{ENLP \times \text{Multiparty}} = 1.092 - 1.257 = -0.165$. This coefficient is statistically significant with the biased OLS model, but not when estimated with the HLM model.

¹³ I decided not to center the ENLP variable in a way that would yield a meaningful coefficient for the non-squared term to maintain consistency across models in the table.

Table 4.3: Models of Cross-National Levels of Political Knowledge

| | GS Original Model | Replication | No Interaction | No Multiparty Dummy | Squared Term |
|-------------------------|----------------------|---------------------|---------------------|---------------------|---------------------|
| ENLP | 1.122*** (0.042) | 1.092* (0.489) | -0.166 (0.150) | -0.218* (0.111) | 0.134 (0.507) |
| Multiparty Dummy | 2.213*** (0.089) | 2.057* (0.995) | -0.346 (0.612) | | |
| ENLP x Multiparty | -1.275*** (0.041) | -1.257** (0.479) | | | |
| ENLP ² | | | | | -0.039 (0.055) |
| Nat. Competitiveness | 0.378*** (0.012) | 0.384** (0.146) | 0.281 (0.221) | 0.223 (0.182) | 0.195 (0.196) |
| Disproportionality | -0.059*** (0.003) | -0.058 (0.039) | -0.053 (0.061) | -0.053 (0.057) | -0.042 (0.061) |
| Compulsory | 0.042*** (0.024) | 0.108 (0.284) | 0.275 (0.435) | 0.404 (0.344) | 0.483 (0.379) |
| Degree of Unicameralism | 0.073*** (0.008) | 0.056 (0.098) | 0.040 (0.153) | 0.094 (0.111) | 0.124 (0.124) |
| Years Since Election | -0.079*** (0.008) | -0.068 (0.097) | -0.095 (0.151) | -0.047 (0.116) | -0.015 (0.130) |
| Intercept | 4.647*** (0.106) | 4.722*** (1.241) | 7.499*** (1.021) | 7.353*** (0.918) | 6.573*** (1.460) |
| Num. obs. | 11528 | 11528 | 11528 | 11528 | 11528 |
| R ² | 0.230 | | | | |
| Num. countries | | 12 | 12 | 12 | 12 |
| Var. (countries) | | 0.073 | 0.182 | 0.157 | 0.174 |
| Residual | | 0.527 | 0.527 | 0.527 | 0.527 |

Source: Eurobarometer 1989 and national-levels factors according to [Gordon and Segura \(1997\)](#)

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

would be roughly zero, and for a case with 4 ENLP would be approximately -0.18.¹⁴

The fluctuation in results produced by the different alternatives to modeling the data demonstrates the original findings suffer from a lack of robustness. The direction and significance of the parameter of interest is volatile depending on the model specification. This

¹⁴ The marginal effect of a value is equal to the non-squared coefficient plus two times the coefficient for the squared term times the value of x . In mathematical terms, it is the derivative of the polynomial term: $\frac{\partial y}{\partial x} = \beta_1 + 2 \beta_2 x$. Thus, in the case listed above, the marginal effect for a value of ENLP_{*i*} is 0.134 minus 2 times 0.039 ENLP_{*i*}. For more details on interpreting interactions, see [Kam and Franzese \(2007\)](#).

contradicts the authors' conviction of the hypothesized relationship and generalizability of their findings [Gordon and Segura \(1997, 5\)](#): "The political and constitutional arrangements of a society clearly affect the willingness of the citizenry to accumulate accurate and abstract political information. Our model effectively explained a substantial portion of the available cross-national variance, and did so using a more parsimonious model of systematic factors that... are generalizable to other environments." This imprecise interpretation of a complex relationship that relies on a small number of cases seems to have led scholars to make grander inferences than the data would support. In fact, this may well serve as an example of when scholars should be wary of certain categorizations and broad inference-making based on a limited sample.

4.4 How Missing Data is Handled Matters

The second limitation of the analysis by GS and [Berggren \(2001\)](#) derives from the decision to impute values for missing responses. Instances in which respondents did not place the party in the left-right scale, a value of the mean distance of all respondents plus one standard deviation of this mean distance for the specific party was imputed. This method thus assumes that respondents who did not provide a response would have, on average, inaccurately placed that party by one standard deviation of the average response more than the average response.

This approach deviates from the ways scholars have most often handled missing data, at least in the study of political knowledge. Traditionally, respondents who would chose to say they did not know the answer to factual questions such as "Who's the prime

minister of the United Kingdom?” would have been grouped with those who provided a wrong answer (Luskin 1987, Luskin 1990). In other words, the conventional approach to handling missing data in factual knowledge questions assumes respondents would have given a wrong answer, if they did. However, because factual questions are usually treated dichotomously, respondents who opted for DK were never penalized more than those who gave a wrong answer.¹⁵ In fact, GS’s decision to assign lower than the average wrong score to those who opt for not giving an answer stands in contrast to more recent studies that have not only questioned the assumption that “don’t know” responses would have been wrong (Mondak 2001, Grönlund and Milner 2006), but even argued that those who opt for DK are in fact more knowledgeable than those who give a wrong answer (Mondak 1999, Mondak and Anderson 2004, Miller and Orr 2008). While this new approach to thinking about missing data has received its share of criticisms (Luskin and Bullock 2011, Sturgis, Allum and Smith 2008), the literature suggests that the way DK responses are handled can often matter in measuring levels of political knowledge, and that assigning an extra penalty those who choose to not provide an answer might be problematic.

Given the interval nature of the placement distance measure, any imputation scheme would have to determine the extent to which those who did not provide an answer were or were not knowledgeable.¹⁶ Nonetheless, the specific decision to impute and penalize has substantial implications to the results because the patterns of missing and penalization vary by party and country. For example, item non-response for Portugal, Spain, and Belgium was roughly 40% while in France, Germany and Denmark, the average missing rate per

¹⁵ An exception to the dichotomous approach is Mondak and Davis (2001), in which DK responses are randomly assigned as correct.

¹⁶ Busch (2016) also uses party placement as the measure for political knowledge but excludes “Don’t know” responses from the analysis.

party was lower than 12%. Similarly, the average distance and its standard deviation per item vary substantially, likely as a function of the salience and ideology of the party, applicability of the scale to the party system, and number of parties asked.¹⁷

To demonstrate the effect of the assumption behind the imputation measure to the estimated effect of number of parties, I produced variants of the dependent variable with four different ways of handling the missing responses. Three of the alternatives increase the countries' average levels of political knowledge by decreasing the penalty given to missing responses. The first does not impute any values, which means there is no punishment but the number of observations is smaller. The second assigns scores for DK response based on half of the mean distance per party. Thus, the assumption behind this imputation approach is that those who chose to not pick a value would, on average, be closer to the average placement of the "correct" score (taken as the sample value) than the majority of respondents who actually picked a value. The third assigns scores based on the mean distance score, which implies the response would have been inaccurate in a similar fashion to the average respondent for that specific party. The fourth approach moves in the different direction and assumes that the response would have been even farther away than the imputation by GS. Namely, the missing responses would have been inaccurate by the average distance *plus two standard deviations* from the party baseline location.¹⁸ Table 4.4 presents

¹⁷ A full analysis of how the dynamics per party, order of the parties asked, and party system is outside the scope of this chapter, but it is important to note that even GS recognize that the applicability of the left-right scale is limited to the Belgium context (see footnote 21). Not surprisingly, the average distance across all parties in Belgium (1.78) was more than the double of Greece (0.75), where the economy has long been the central issue of party politics. Moreover, the number of parties in the survey may shape the way respondents use the space in the scale. In a two-party system like the U.S., respondents have the entire space to place the parties, while in a context with 8 parties, a socialist party should be placed left of a social-democratic party, which means the amount of space is much smaller. For that reason, [Fortunato, Stevenson and Vonnahme \(2016\)](#) and [Turgeon and Lloyd \(2017\)](#) choose to measure political knowledge based on the correct order rather the exact placement.

¹⁸ I also calculated a fifth alternative in which the imputed values are based on the distances of the parties

the average levels of political knowledge by country according to each of these measures, and in parentheses, the difference to the original replication by GS.

Table 4.4: Political Knowledge Across Countries- Alternatives to Handle Missing Data

| Country | Replication of Gordon and Segura | As Missing | Half of Mean | Equal to Mean | Mean Plus 2 Standard Deviations |
|---------------|----------------------------------|-------------|--------------|---------------|---------------------------------|
| Portugal | 7.31 | 7.78 (0.47) | 8.00 (0.69) | 7.75 (0.44) | 6.87 (-0.44) |
| Great-Britain | 7.08 | 7.40 (0.32) | 7.62 (0.53) | 7.40 (0.32) | 6.76 (-0.32) |
| Greece | 8.16 | 8.28 (0.12) | 8.35 (0.19) | 8.27 (0.12) | 8.04 (-0.12) |
| Spain | 6.73 | 7.20 (0.47) | 7.70 (0.97) | 7.32 (0.59) | 6.14 (-0.59) |
| France | 7.69 | 7.83 (0.14) | 7.89 (0.20) | 7.82 (0.13) | 7.56 (-0.13) |
| Ireland | 7.16 | 7.45 (0.29) | 7.61 (0.45) | 7.44 (0.28) | 6.88 (-0.28) |
| Germany | 7.58 | 7.68 (0.11) | 7.71 (0.14) | 7.67 (0.09) | 7.49 (-0.09) |
| Netherlands | 7.32 | 7.57 (0.25) | 7.66 (0.35) | 7.54 (0.22) | 7.10 (-0.22) |
| Luxembourg | 7.03 | 7.38 (0.35) | 7.63 (0.60) | 7.38 (0.35) | 6.68 (-0.35) |
| Italy | 7.29 | 7.50 (0.21) | 7.64 (0.34) | 7.51 (0.21) | 7.08 (-0.21) |
| Denmark | 7.69 | 7.84 (0.15) | 7.87 (0.18) | 7.81 (0.12) | 7.58 (-0.12) |
| Belgium | 6.63 | 7.20 (0.57) | 7.61 (0.98) | 7.22 (0.59) | 6.04 (-0.59) |

The three middle columns show an increase of average levels of political knowledge compared to the original measure, but the magnitude of the difference varies per country. While the increase is small in France, Germany, and Denmark (the three countries with lowest average levels of missing per item), the boost in scores is largest in Portugal, Spain and Belgium (the three with the highest rates of missing). The last column, on the other hand, shows a drop in levels of knowledge associated with the extra penalty of one standard deviation for rates of missing. This indicates that the different ways to handle missing data may impact the estimated relationship between effective number of parties and knowledge if these changes are correlated with the distribution of number of parties across countries.

We can assess the influence of GS's imputation strategy by looking at the change in the respondents provided an answer. That is, if a respondent did not offer a score for party A and C, but it did for B and D, scores would have been imputed for A and C based on the average of placement distances of B and D. This approach also increased the levels of knowledge per country, but in a less consistent fashion across countries than the straightforward mathematical transformations described above.

estimated relationship between effective number of parties and political knowledge across countries when using these alternative approaches. Table 4.5 presents the results of the hierarchical linear regressions with the same set of national-level predictors as GS but varying the approach to handle “Don’t know” responses.

Table 4.5: Levels of Political Knowledge- Different Alternatives to Handling Missing

| | Replication of GS | As Missing | Half of Mean | Equal to Mean | Mean Plus to 2 Standard Deviations |
|-------------------------|---------------------|---------------------|---------------------|---------------------|------------------------------------|
| ENLP | -0.218* (0.111) | -0.159* (0.067) | -0.109* (0.047) | -0.155* (0.063) | -0.280 (0.165) |
| Nat. Competitiveness | 0.223 (0.182) | 0.163 (0.110) | 0.126 (0.077) | 0.168 (0.104) | 0.278 (0.272) |
| Disproportionality | -0.053 (0.057) | -0.034 (0.034) | -0.004 (0.024) | -0.024 (0.032) | -0.081 (0.085) |
| Compulsory | 0.404 (0.344) | 0.366 (0.207) | 0.357* (0.146) | 0.378 (0.196) | 0.430 (0.514) |
| Degree of Unicameralism | 0.094 (0.111) | 0.103 (0.067) | 0.078 (0.047) | 0.086 (0.063) | 0.102 (0.166) |
| Years Since Election | -0.047 (0.116) | -0.011 (0.070) | -0.006 (0.049) | -0.020 (0.066) | -0.075 (0.173) |
| Intercept | 7.353*** (0.918) | 7.476*** (0.552) | 7.530*** (0.389) | 7.455*** (0.523) | 7.251*** (1.371) |
| Num. obs. | 11528 | 6995 | 11528 | 11528 | 11528 |
| Num. of countries | 12 | 12 | 12 | 12 | 12 |
| Var. (countries) | 0.157 | 0.056 | 0.028 | 0.051 | 0.350 |
| Residual | 0.527 | 0.482 | 0.412 | 0.353 | 1.037 |

Source: Eurobarometer 1989 and national-level factors according to [Gordon and Segura \(1997\)](#)

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

The first model shows the replicated version of GS’s approach (imputation of mean plus one standard deviation) without the interaction or multiparty dummy and serves as the baseline for comparison. The estimated relationship between the number of parties and political knowledge is negative and slightly above conventional levels of statistical significance. In the second regression in which “Don’t know” responses were left as missing,

the magnitude of the effect decreases, but so does the uncertainty around the negative coefficient, which indicates the imputation of values in the original analysis increased, on average, the distance between the countries, but the extent to which the effective number of parties could predict the knowledge scores was reduced. The same applies to the third model where the penalty for DK is only half of the mean distance. While the overall effect is smaller, the size of the standard error around the slope is less than half when using the original measure. That is, the slope of the line is less inclined, but the points are closer to the regression line. It should also be noted that in this model the estimated coefficient for countries with compulsory voting reaches statistical significance.¹⁹

Given the imputed values are exactly the average distances per party, the model with imputation equal to the mean presents results similar to the second regression in which the missing responses were left out.²⁰ However, the standard errors are smaller due to the increase in the number of observations in the regression. Thus, the result again shows a significant negative relationship with less uncertainty around it. Finally, the last column presents the results when introducing a larger penalty to missing responses in the same direction as the imputation scheme proposed by GS. This implies the scores for Belgium as well as Portugal and Spain drop lower, making the distance between the data points and line farther apart, reducing the proximity to reach statistical significance. I also test for a potential curvilinear relationship (with ENLP centered at 2), but the squared term

¹⁹ GS state that as sensitivity checks, they repeated the analysis with different measures in which the societal mean distance is imputed for missing values, and a second where individual mean were computed only across the distances provided, and that the magnitude or significance of results did not change. The reason for this interpretation was likely the fact they were using OLS regression techniques rather than hierarchical linear models.

²⁰ The difference stems from the number of imputed values per party placement item. That is, while the average distance per party would not change after the imputation, the average across parties is slightly affected.

is far from statistical significance in all of the regression models.²¹ This indicates, then, that the original imputation approach to penalize respondents who choose to not respond (instead of keeping the responses as missing or assuming they would have fared better than the average respondent) introduces variation that makes the estimation of a simple negative relationship between number of parties and levels of knowledge less likely to be significant. Consequently, the implication of this replication exercise is that the original finding that more parties in a political system improves knowledge at first but switches to the negative direction lacks robustness. As mentioned in the previous section, conclusions drawn from this analysis should be taken with considerable caution.

4.5 Testing with a New Dataset

One method to improve cross-national research that suffers from the “comparative problem”- few cases, many variables- is to increase the number of cases (Lijphart 1971, Przeworski and Teune 1970). A larger number of units reduces the impact of individual observations and allows for the inclusion of more variables in a model without compromising statistical power (Jackman 1985). The collection of surveys by the Comparative Study of Electoral Systems (CSES) project provide an opportunity to reproduce the analysis discussed above using the same operationalization of political knowledge but with a larger number of countries.

Similar to the 1989 Eurobarometer data, respondents to CSES surveys were asked to place a number of their country’s political parties on a left-right spectrum; the only difference is these surveys used a 11- rather 10-point scale (0-10 in which 0 means “most left”

²¹ The results of these models are presented in [appendix D](#).

and 10 “most right”). Following GS’s coding process of using the distance between an individual respondent and the sample mean placement of a political party, I calculated the level of political knowledge of participants from 85 surveys in 46 countries that comprise rounds 3 and 4 of the CSES project.²² These include surveys from a diverse set of democratic countries in the world with different levels of economic development and political systems from 2007 to 2016.²³

Aside from improving the estimation of the differences in political knowledge across countries with varying party systems, analyzing this data also allows for a reassessment of the impact of imputation strategies for “Don’t know” responses. Like in the previous section, I produced alternatives to GS’s imputation of mean distance plus one standard deviation: 1) not imputing any values, 2) imputing values with half of the mean (assuming less inaccuracy than the average respondent) and 3) imputing values with the mean plus two standard deviations from the mean (an increased punishment for not providing an answer).²⁴

The drawback of increasing the number and diversity of countries is that to isolate the relationship between fragmentation of party system and average levels of knowledge, the inclusion of a number of various statistical controls is required. The CSES dataset provides a list of standard survey and country-level variables including the Gross Domestic Product per capita (GDP/pc), recoded in thousands, Freedom House scores, age of the democratic system, dummies for bicameral and federal countries, compulsory voting, as

²² Three surveys are not included in the analysis due to either the absence of party placement items or missing effective number of legislative parties.

²³ A complete list of surveys by country and year is presented in [appendix D](#).

²⁴ I also calculated alternative with the imputation of the mean per party and distances for items respondents did provide a response, but for the sake of space and because the results are similar to the no imputation alternative, I decide not to present them here.

well as a count of months since the last lower house election.²⁵ At the individual level, to avoid differences in coding across countries, I use a parsimonious model based on sex, age (recoded in decades), age-squared and three categories of education level (less than secondary education, secondary education completed, and post-secondary completed).

Continuous variables age, GDP/pc, and Freedom House scores were centered by their grand mean in order to give meaning to the intercept and coefficient of interacted continuous variables.²⁶ Also for a clearer interpretation of the coefficient ENLP, I centered the variable by a value of 2 effective number of parties, which means the non-squared coefficient shows the average change in political knowledge associated with going from 2 to 3 ENLP.

For many of the 45 countries, there is more than one survey in the sample, which makes it is necessary to account for the non-independence between units, similar to the analysis of AmericasBarometer in chapter 2.²⁷ To do so, I treat the survey as the second-level unit of analysis and the country as the third, which means the shared characteristics of surveys from the same country are accounted by the third-level intercepts.²⁸ Finally, I also calculated the proportion of cases in which the placement of at least one party had to be imputed, which serves as an indicator of the extent to which the absence of responses

²⁵ Because nine recent surveys did not have an accompanying value for GDP/pc, I coded a value based on the World Bank online data.

²⁶ Grand mean- GDP/pc: \$29166.24; FH score: 5.47; age: 49.19.

²⁷ For instance, the ENLP of the U.S. was 1.94 in 2008 and 1.99 in 2012, whereas the ENLP in Germany was 4.06 in 2005 and 4.83 in 2009. If they were treated as two independent cases, the results would be biased due to repetition.

²⁸ The assumption behind this decision is that surveys of a same country are random draws of a population of potential surveys from that country and are not affected by one another. As a sensitivity check, I conduct the same analysis with only the last survey per country and present the results in the [appendix D](#). With the exception that both ENLP coefficients actually reach conventional levels of significance for the imputation with the standard deviations added, the results and implication are unchanged.

is driving the results.²⁹ Table 4.6 presents the results of the three-level hierarchical linear regressions for the different measures of political knowledge according to imputation strategy, with and without the control for the proportion of missing.³⁰

²⁹ The average proportion across countries was 0.4 (40%) with a standard deviation of 0.2.

³⁰ Due to wide differences across files, I decide to not weight any cases. While this could bias the estimates of some surveys, it is unclear the extent to which these potential deviations at the survey level are correlated with any of the estimations here, though I believe there is more work to be done in this topic. Moreover, the decision to model the data hierarchically should account for differences in sample size across survey. For a summary of the challenges in using survey weights in regression models, see ([Gelman 2007](#)).

Table 4.6: Political Knowledge across Countries, CSES R3-4

| | Mean Plus 1 Dev. | Mean Plus 1 Dev. | Missing | Missing | Half of Mean | Half of Mean | Mean Plus 2 Dev. | Mean Plus 2 Dev. |
|----------------------------------|------------------------|------------------------|----------------------|----------------------|----------------------|----------------------|------------------------|------------------------|
| Female | -0.164*** (0.005) | -0.164*** (0.005) | -0.070*** (0.006) | -0.070*** (0.006) | -0.007 (0.004) | -0.007 (0.004) | -0.277*** (0.007) | -0.277*** (0.007) |
| Age (in 10s) | -0.002 (0.002) | -0.002 (0.002) | -0.012*** (0.002) | -0.012*** (0.002) | -0.009*** (0.001) | -0.009*** (0.001) | 0.005* (0.002) | 0.005* (0.002) |
| Age (in 10s) ² | -0.009*** (0.001) | -0.009*** (0.001) | -0.003** (0.001) | -0.003** (0.001) | 0.000 (0.001) | 0.000 (0.001) | -0.016*** (0.001) | -0.016*** (0.001) |
| Secondary educ. | 0.226*** (0.006) | 0.226*** (0.006) | 0.130*** (0.008) | 0.130*** (0.008) | 0.043*** (0.006) | 0.043*** (0.006) | 0.361*** (0.009) | 0.361*** (0.009) |
| Post-Secondary | 0.473*** (0.008) | 0.473*** (0.008) | 0.314*** (0.010) | 0.314*** (0.010) | 0.159*** (0.007) | 0.159*** (0.007) | 0.693*** (0.012) | 0.692*** (0.012) |
| ENLP (centered) | 0.113 (0.068) | 0.044 (0.063) | 0.026 (0.050) | 0.001 (0.051) | 0.062 (0.056) | 0.059 (0.058) | 0.175 (0.094) | 0.062 (0.079) |
| ENLP (centered) ² | -0.013 (0.008) | -0.006 (0.007) | -0.003 (0.006) | 0.000 (0.006) | -0.011 (0.006) | -0.011 (0.007) | -0.020 (0.011) | -0.008 (0.009) |
| GDP/pc (in thousands) | 0.010* (0.005) | 0.008 (0.004) | 0.008* (0.003) | 0.007* (0.003) | 0.004 (0.004) | 0.004 (0.004) | 0.012 (0.007) | 0.009 (0.005) |
| Freedom House | 0.185** (0.069) | 0.115 (0.064) | 0.052 (0.051) | 0.021 (0.053) | 0.053 (0.056) | 0.050 (0.058) | 0.292** (0.097) | 0.177* (0.080) |
| Federal | -0.400* (0.175) | -0.310* (0.157) | -0.325* (0.129) | -0.293* (0.129) | -0.115 (0.141) | -0.111 (0.143) | -0.514* (0.245) | -0.345 (0.198) |
| Bicameral | 0.024 (0.146) | 0.012 (0.130) | -0.018 (0.107) | -0.025 (0.106) | 0.085 (0.118) | 0.085 (0.119) | 0.063 (0.203) | 0.043 (0.164) |
| Parliamentary | 0.107 (0.138) | 0.227 (0.126) | 0.126 (0.101) | 0.164 (0.102) | 0.011 (0.113) | 0.016 (0.116) | 0.100 (0.192) | 0.310 (0.159) |
| Compulsory Voting | -0.001 (0.222) | -0.107 (0.199) | -0.088 (0.164) | -0.126 (0.165) | 0.003 (0.178) | -0.002 (0.181) | 0.065 (0.311) | -0.112 (0.250) |
| Mos. from last house election | -0.005 (0.004) | -0.002 (0.004) | -0.003 (0.003) | -0.002 (0.003) | -0.004 (0.003) | -0.004 (0.004) | -0.007 (0.006) | -0.001 (0.005) |
| Percent Missing | | -1.134*** (0.254) | | -0.444 (0.245) | | -0.047 (0.236) | | -1.972*** (0.321) |
| Intercept | 7.861*** (0.260) | 8.169*** (0.243) | 8.210*** (0.189) | 8.339*** (0.201) | 8.369*** (0.213) | 8.381*** (0.224) | 7.494*** (0.361) | 8.019*** (0.307) |
| Num. obs. | 134216 | 134216 | 80546 | 80546 | 134216 | 134216 | 134216 | 134216 |
| Num. surveys | 85 | 85 | 83 | 83 | 85 | 85 | 85 | 85 |
| Num. countries | 46 | 46 | 45 | 45 | 46 | 46 | 46 | 46 |
| Var. (surveys) | 0.109 | 0.088 | 0.053 | 0.050 | 0.079 | 0.079 | 0.198 | 0.142 |
| Var. (countries) | 0.148 | 0.117 | 0.085 | 0.088 | 0.090 | 0.091 | 0.306 | 0.183 |
| Residual | 0.826 | 0.826 | 0.818 | 0.818 | 0.635 | 0.635 | 1.599 | 1.599 |

Source: Comparative Studies of Electoral Systems (CSES), Rounds 3 and 4

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Similar to previous studies, males and those with higher levels of education are predicted to have, on average, higher levels of knowledge across countries, which gives us some confidence in the measure. The first model shows that following GS's imputation approach, the relationship between effective number of parties and knowledge seem to follow a bell-shaped curve. Although the coefficients are not significant, the non-squared coefficient shows that, on average, an increase from 2 to 3 effective number of legislative parties is associated with more than a decimal of a point (0.113) in the country's average level of knowledge, but the marginal effect decreases gradually by .026 for every other extra party (i.e. a marginal effect of .087 from 3 to 4 ENLP, and 0.061 from 4 to 5 ENLP). However, the inclusion of the proportion of cases with at least one "Don't know" response substantially reduces the magnitude of the effect of ENLP approximating it to 0. In other words, because the proportion of missing is correlated with the number of parties and the average levels of knowledge across countries, the inclusion of the variable in the model affects the coefficient. The same applies to the imputation that penalizes respondents with the mean plus two standard deviations (the last two columns). The regression without the variable measuring proportion of missing indicates at least in magnitude the existence of a curvilinear relationship, but the introduction of the variable tapping the proportion of missing is not only highly significant, but also leads the ENLP coefficients to drop far below conventional levels of statistical significance.

The third and fourth models show the results when not imputing any values. The coefficients for the effect of number of parties is minute and far from significant. Moreover, the coefficient for proportion of missing, in contrast to the measures that rely on imputation, is smaller and not statistically significant, which corroborates the idea that imputation is a

fundamental component for the results that suggest a bell-shaped relationship. Finally, the strategy to impute values with half of the mean distance (i.e. assuming respondents who did not provide an answer would have placed the party half of the distance from the average respondent who provided an answer) also yields far from significant results for both the effective number of parties and the proportion of missing variable.

In sum, this analysis using a similar but larger dataset of levels of knowledge across countries reinforces the results from the previous sections by indicating the relationship between number of parties and knowledge of the citizenry does not seem to be curvilinear as scholars have suggested. Alternatively, the results here again show that the imputation strategy suggested by GS tilts the results in the direction of the curvilinear perspective due to patterns of “Don’t Know” responses and the penalty introduced by their imputation. Although not presented here, regressions with only the non-squared ENLP term also indicate that a larger number of effective parties is not associated with either lower or higher levels of knowledge. Instead, like most recent studies, the results indicate that the relationship between number of parties and average levels of political knowledge across countries does not fall in any particular direction, at least in statistical significance terms when using this measure.³¹

³¹ When analyzing the impact of a larger number of parties on individuals with varying levels of education, the results suggest that those with higher levels of education are significantly better able to handle contexts with more parties. More specifically, the impact of one additional unit in the effective number of parties is significantly higher for those who have completed post-secondary education than those who did not, though the estimated effect for this group does not seem to be distinguishable from 0. Another way to interpret this result is to say the difference in levels of knowledge between those who completed post-secondary education and those who did not is larger as the number of effective parties in a political system is also larger. Full results of the hierarchical liner model and a graph with the estimated coefficient for the groups with varying levels of education are presented in [appendix D](#).

Chapter 5

Conclusion

How does the number of political parties affect ordinary individuals' attitudes and behavior? A prevailing view among a number of scholars is that systems with more political parties increase citizens' political efficacy, or their belief in their ability to understand and effectively participate in politics, for two reasons. First, a larger number of parties is theorized to provide a more diverse set of options on the political menu of potential voters, motivating those who would otherwise feel alienated by a limited choice set to participate in politics (Dalton 2008, Karp 2012, Powell 1986). Second, a larger number of parties is theorized to increase competition for votes and outreach efforts from parties, thereby enhancing the information available to individuals that will in turn heighten their levels of political efficacy (Karp 2012, Karp and Banducci 1999).

In reviewing the literature, however, I find the evidence in favor of these arguments to be limited. Moreover, findings from decades of public opinion research raise important challenges to the idea that more variety and more information should strengthen citizens' feelings of political efficacy. Behavior scholars point toward evidence that most individuals are not always certain of their own political positions (Converse 1964, Hochschild 1981, Zaller and Feldman 1992) and have difficulties understanding the position of elites (Miller and Stokes 1963, Adams, Ezrow and Somer-Topçu 2011), which puts into question the idea that an increase in the number of parties would improve individuals' experiences processing an increasing complex informational environment. In fact, studies indicate that

ordinary individuals may attribute blame to political actors for non-political events (Achen and Bartels 2016, Healy, Malhotra and Mo 2010), and tend to become confused by an increased amount of information (Cunow 2014, Lau and Redlawsk 2006, Rahn, Aldrich and Borgida 1994). Therefore, the arguments that propose a larger number of parties should lead to higher levels of individual efficacy make strong assumptions about the general public's means to absorb political information and have structured issues opinions that do not necessarily hold.

This dissertation presents a contrasting view to the diversity of options and mobilization arguments. Building on previous works on political behavior and social cognitive theory, I argue that institutional arrangements that demand higher cognitive efforts from citizens, like more political parties in one's environment, have a negative effect on individuals' perceptions about their ability to understand and participate in politics. Moreover, I propose this effect should be particularly strong among those who have less cognitive resources to absorb and process political information such as individuals with lower levels of education.

I test my theory by exploring variation in the number of parties across time in New Zealand, across municipalities in Brazil, and across countries in the Americas. Results from chapter two indicate that in environments where there are more parties, levels of internal efficacy tend to be lower, especially among individuals who did not complete post-secondary education. In chapter three, I assess the extent to which this negative effect of more parties also applies to voter turnout. Comparing levels of turnout across municipalities in Colombia and Brazil, I find that when the number of mayoral candidates increase when compared to the previous municipal election, participation rates lower. Furthermore,

decreasing levels of turnout after New Zealand's electoral reform to increase the number of parties in the country's point toward a negative relationship between fragmentation of electoral competition and electoral engagement.

In chapter four, I review works that estimate the relationship between the number of parties and individuals' political knowledge, and conduct a detailed re-analysis of pioneering works that claim this relationship is positive. My replication indicates this result is largely driven by the specific measurement of knowledge, the operationalization of multi-party systems, and especially by the authors' approach imputation of missing data. I provide a re-assessment of this relationship with a larger dataset of national surveys throughout the world and do not find evidence that more parties has a positive impact on individuals' knowledge of politics.

These results have important implications for potential changes in the arrangement of party competition across countries. For instance, Gallup polls show that in 2016, 57% of Americans believed a third party was needed because the Republican and Democratic parties do a poor job in representing the people (Gallup 2016).¹ While the addition of a third viable party may provide some benefits, the implication of the theory and results presented here is that the introduction of more parties in American elections could have a detrimental effect on the public's perception about their ability to understand and participate in politics, especially for less educated individuals. Individuals who would most likely benefit from new parties belong to a politically-informed minority who have clarity that their opinions do not align with any of the two major parties. For the majority of citizens who do not

¹ The polls show that during the past decade, at least 46% Americans believed a third party was needed, with Independents being the group who most favor the idea.

have a clear set of preferences and struggle to understand the positions and actions of parties, the addition of a third party would likely make the process of digesting political information more difficult. Furthermore, a potential need for coalition-making in order to form a majority in legislative bodies could harm voter's ability to attribute responsibility to incumbent parties.

On the other end of continuum of number of parties, the expanded set of options on the menu of the general population in Brazil has not led to higher levels of efficacy due to effective representation and better political information for general population.² Instead high degree of party system fragmentation tends to be connected with individuals disengaging from politics due to difficulties in managing the informational environment (Rennó 2004, Cunow 2014), and even to political stability at the elite level (Rousseff 2015).³ It is important to recognize that the majority of Brazilians parties are not programmatic or highly institutionalized, but even so, the offer of multiple options when citizens do not have constrained belief-systems and cannot process large amounts of political information seems to increase the burden of making political decisions for the mass public. In fact, the country's Congress has recently recognized the issue of hyperfractionalization and passed legislation to prohibit coalitions for proportional elections and to create of an electoral threshold of 5% of votes in order for a party to gain seats in legislative bodies. Given the conclusions of previous works and the evidence presented here, it seems reasonable that a reduction in the number of parties would help ordinary citizens manage the political environment in

² In recent interviews, political scientists Scott Mainwaring and Marcia Ribeiro Dias have mentioned that Brazil have uniquely fragmented party system among all democratic experiences (Mainwaring 2015, Dias 2016).

³ After being impeached, former President Dilma Rousseff stated that the large number of parties has affected the stability of Brazil's democratic system by forcing presidents to make large coalition in order to produce a majority in Congress (Rousseff 2015).

hyperfractionalized systems.

These results do not imply that countries should necessarily strive to change their electoral rules to reduce the number of parties to two. A number of works show that proportional elections and larger sizes of districts positively produce a number of important outcomes such as higher levels of voter turnout (Blais and Carty 1990, Powell 1986), higher levels of satisfaction with democracy (Anderson and Guillory 1997, Anderson et al. 2005), and more representation among minorities (Norris 1997). Moreover, it is possible that this negative relationship between number of parties and political engagement is more likely to be found in political systems where political parties and the party system are less institutionalized. Much of the evidence presented here relied on data from countries from Latin America where, for the most part, building and maintaining a predictable party system “has been the exception rather than the norm” (Mainwaring 2018). The linkage between individuals’ political views and parties seem to be stronger in older and more institutionalized party systems like those of Western Europe, which means the assumptions behind the arguments that suggest an increase in efficacy associated with more options are more likely to hold. More and better data on individuals’ political efficacy across countries and time could shed light on this possibility.

It should be noted that throughout the dissertation there was limited discussion about the source of variability in number of parties and elections. This decision to focus on the consequences rather than the sources was made early on in order to dedicate more attention to the main research question and a development of theory, rather than divide efforts to engage with two related but often separate literatures. On this note, however, it seems fair to say that there is little variation in the characteristics party systems within countries

across short periods of time. Previous literature show that the structure of national-level political competition is largely driven by electoral laws (Duverger 1954, Cox 1997) and salient social cleavages (Lipset and Rokkan 1967, Torcal and Mainwaring 2003), which means there should not as much endogeneity at play in the cross-national comparisons. As noted in Chapters 2 and 3, on the other hand, the comparison across time in New Zealand can be problematic given the origins of the electoral reform was directly related to individuals' perceptions of elections and parties. The source of variation in the number of mayoral candidates across municipalities in Colombia and Brazil and its implications for causal inference are hard to pin point. The use of statistical of multiple controls was an attempt to account for potential biases. Moreover, the similarity between the results presented here and more controlled analysis of the same phenomenon (Cunow 2014, Lau and Redlawsk 2006) suggests the origins of the variation have not misled the analysis in any way.

It also was not an objective of this project to calculate an optimal number of parties in a system or election to improve individuals' feelings of efficacy. Yet, research by Carey and Hix (2011) suggests that proportional elections with mid-sized districts that lead to between four and six parties may serve as an optimal arrangement that can promote effective representation while producing simple government coalitions.

One difficulty in searching for an optimal number based on the empirics presented in this dissertation is that some of the analyses utilize the effective number of parties or candidates, which can imply ambiguous total number of parties or electoral options. Moreover, the analyses in chapters two and three that include both the total and effective number of candidates indicate that, similar to results by Huber, Kernell and Leoni (2005), the two measures may yield different estimates regarding the relationship between fragmentation

of party system and political behavior. Although this result seems to be driven by how contexts with a large number of parties are measured, the difference in how the effective and total number of parties affect political behavior should further explored by future works.

Another important point that deserves attention from scholars is the relationship between internal from external efficacy. Early works in political behavior paid a good deal of attention to the measurement and distribution of political efficacy, but over the last couple of decades, investigations about the mechanisms through which individuals develop these beliefs have been sparse. Moreover, while studies reveal that the two components of efficacy tend to be at least moderately correlated, it is important to know what and when context-level variables have distinct impacts on feelings about self-capacity and institutional responsiveness. For instance, chapter two shows that the immediate impact of the electoral reform in New Zealand was substantively positive for external efficacy, but positive then negative for internal efficacy.

Scholars may also explore the potential differences between comparisons between higher levels and change in number of parties. While this dissertation sought to perform cross-sectional and longitudinal analysis, the argument presented here does not differentiate between the two. Both higher levels of, and positive change (increase) in the number of political competitors is theorized to increase the complexity of the informational environment, and consequently lower individuals' feeling of internal efficacy. The marginal effect of extra electoral options or legislative parties may differ depending on the initial level of fragmentation or specificities of the political context such as new and salient issues that realign competition between parties.

Furthermore, the type and level of competition between parties and candidates may

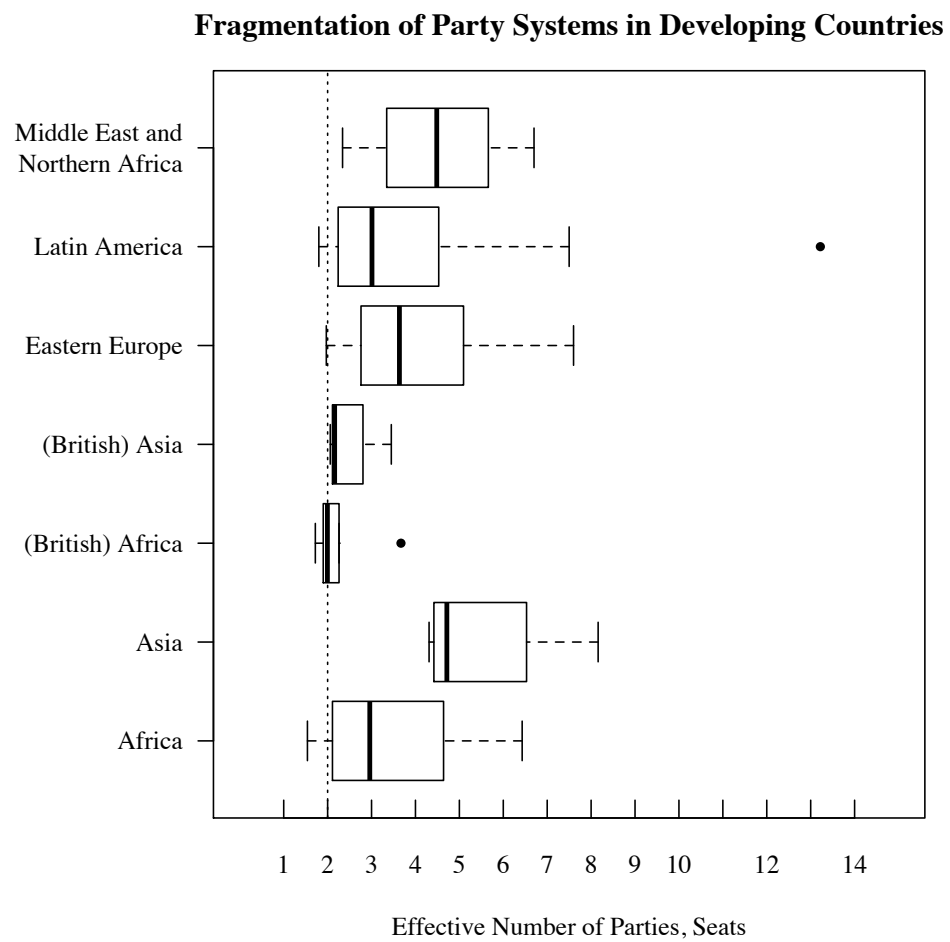
be one avenue for scholars to continue exploring varying effects of context-level factors on efficacy and behavior. As a diverse set of works point toward the importance of competition to political engagement and social outcomes ([Hiskey 2003](#), [Kam and Utych 2011](#), [Levine and Palfrey 2007](#), [Vowles 2010](#)), future research may explore the moderating effects of the number, type of electoral options and level of competitiveness on political engagement, and effective government.

These are among topics that I will continue to pursue. But for now, this dissertation addresses the question of how the number of parties shape political behavior. It presents a negative view of expanding the number of parties on political efficacy and engagement, especially for those with lower levels of education. Considering internal efficacy beliefs are predictors of support for democracy and political participation, observers and scholars of democracy may be well advised to take into consideration the disadvantage multiple parties can have on individuals' internal efficacy beliefs, particularly for non-consolidated democracies in Latin America, Eastern Europe, Africa, and Asia.

Appendix A

Supplementary Information to Chapter One

Figure A.1: Effective Number of Parliamentary Parties in Developing Countries by Region of the World



Source: Gallagher, Michael. 2017. [Election indices dataset](#), accessed 2017 01 23.

Appendix B

Supplementary Information to Chapter Two

Figure B.1: Distributions of Responses to Efficacy Questions, New Zealand 1993-1996

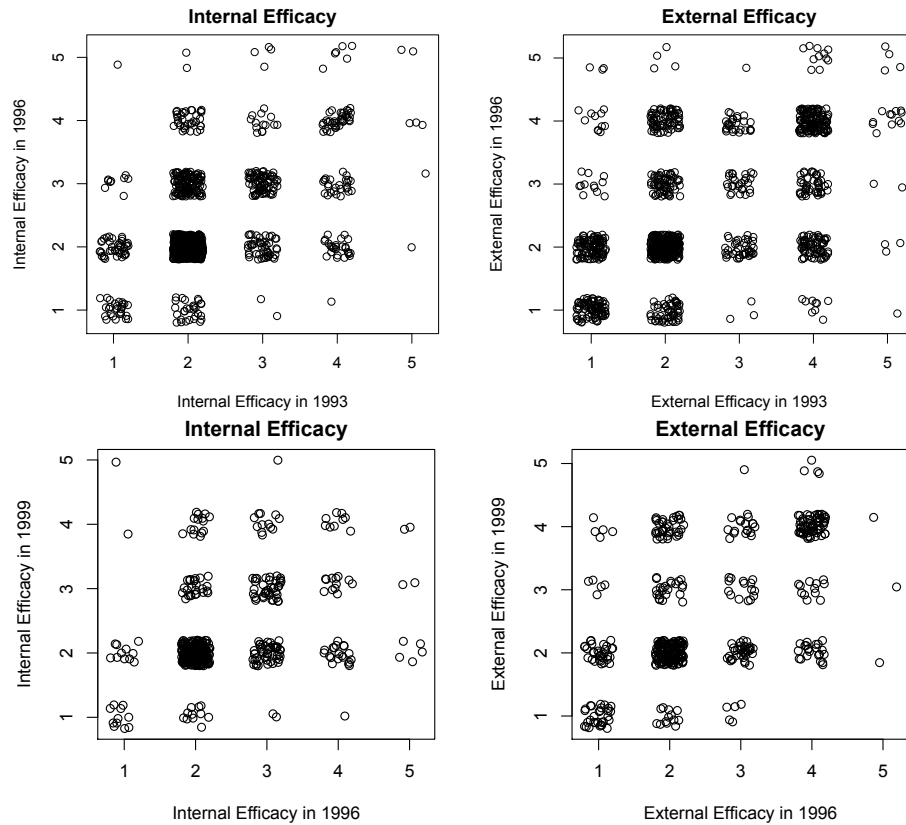


Figure B.2: Change in Efficacy Across Time, New Zealand 1993-1996

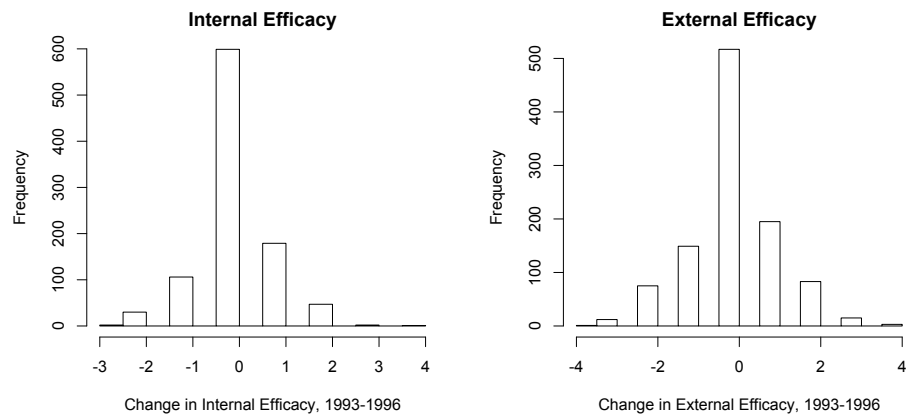


Table B.1: Change in Political Efficacy, New Zealand 1993-1996

| | Model 1 Internal | Model 2 External |
|----------------------------------|---------------------|---------------------|
| Male | 0.071 (0.055) | 0.012 (0.071) |
| Age | 0.001 (0.002) | -0.003 (0.003) |
| No formal education | 0.025 (0.075) | -0.050 (0.096) |
| Secondary education | 0.057 (0.070) | -0.127 (0.092) |
| Post-secondary education | -0.043 (0.091) | -0.036 (0.122) |
| Britain Nationality | 0.031 (0.091) | -0.031 (0.116) |
| Other Nationality | -0.079 (0.118) | -0.114 (0.155) |
| Region of country dummies | Yes | Yes |
| Maori ancestry, Yes | 0.156 (0.098) | -0.111 (0.126) |
| Maori ancestry, DK | -0.421* (0.165) | 0.264 (0.208) |
| Religious identification dummies | Yes | Yes |
| Intercept | 0.055 (0.094) | 0.134 (0.125) |
| Adj. R ² | 0.001 | -0.000 |
| Num. obs. | 915 | 991 |

New Zealand Elections Studies, 1993-1996

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Table B.2: Change in Political Efficacy, New Zealand 1996-1999

| | Model 1 Internal | Model 2 External |
|----------------------------------|---------------------|---------------------|
| Male | -0.003 (0.087) | -0.015 (0.096) |
| Age | 0.003 (0.003) | 0.001 (0.003) |
| No formal education | -0.233 (0.181) | -0.205 (0.193) |
| Secondary education | 0.155 (0.098) | 0.068 (0.109) |
| Post-secondary education | 0.289* (0.137) | -0.084 (0.151) |
| Region of country dummies | Yes | Yes |
| Maori ancestry, Yes | 0.006 (0.102) | 0.110 (0.112) |
| Maori ancestry, DK | 0.205 (0.348) | -0.047 (0.367) |
| Religious identification dummies | Yes | Yes |
| Intercept | -0.204 (0.135) | 0.166 (0.149) |
| Adj. R ² | 0.025 | 0.015 |
| Num. obs. | 428 | 446 |

New Zealand Elections Studies, 1996-1999

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Table B.3: Change in Political Efficacy, New Zealand 1999-2002

| | Model 1 Internal | Model 2 External |
|----------------------------------|---------------------|---------------------|
| Male | -0.003 (0.087) | -0.015 (0.096) |
| Age | 0.003 (0.003) | 0.001 (0.003) |
| No formal education | -0.233 (0.181) | -0.205 (0.193) |
| Secondary Education | 0.155 (0.098) | 0.068 (0.109) |
| Post-secondary Education | 0.289* (0.137) | -0.084 (0.151) |
| Region of country dummies | Yes | Yes |
| Maori ancestry, Yes | 0.006 (0.102) | 0.110 (0.112) |
| Maori ancestry, DK | 0.205 (0.348) | -0.047 (0.367) |
| Religious identification dummies | Yes | Yes |
| Intercept | -0.204 (0.135) | 0.166 (0.149) |
| Adj. R ² | 0.025 | 0.015 |
| Num. obs. | 428 | 446 |

New Zealand Elections Studies, 1999-2002

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Figure B.3: Number of Candidates in All and Sampled Municipalities, Brazil 2012

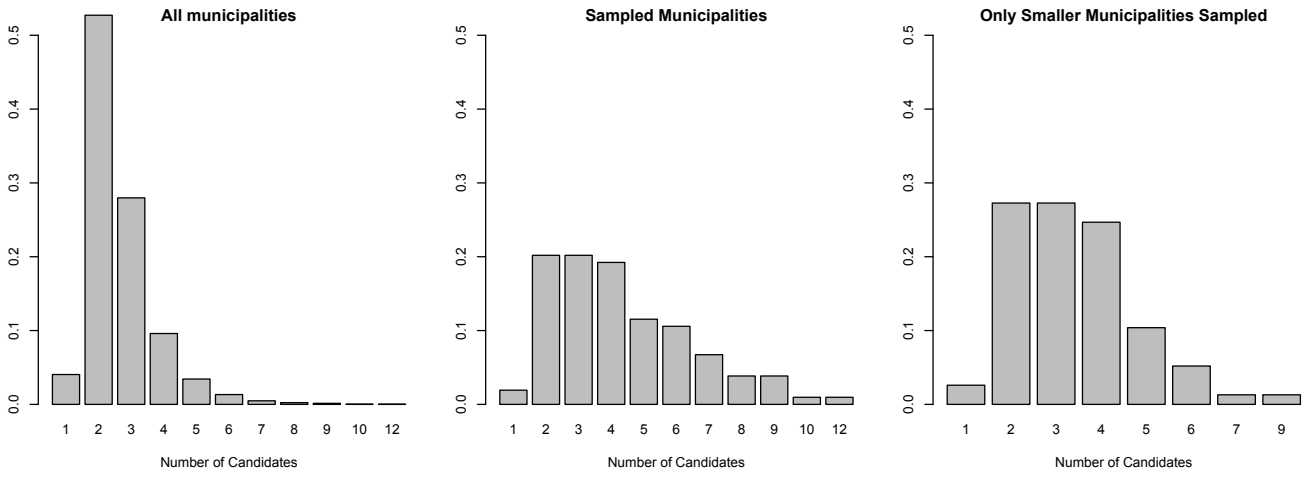


Figure B.4: Total and Effective Number of Candidates in Sampled Municipalities, Brazil 2014

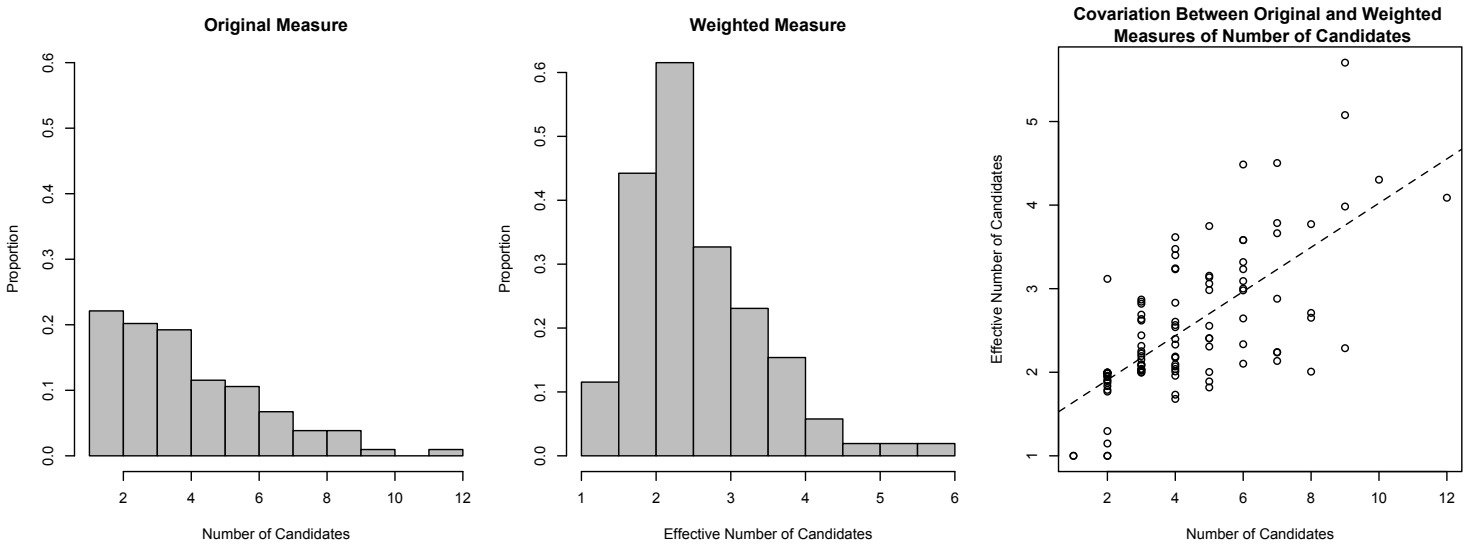


Figure B.5: Effect of Increasing Unit in Effective Number of Parties on Efficacy, Brazil 2014

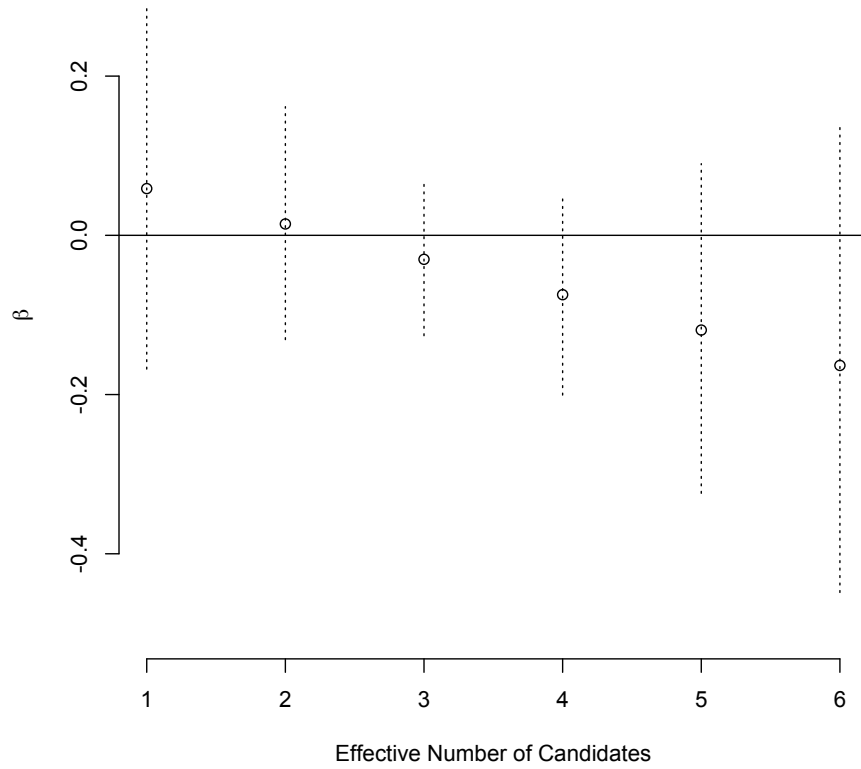


Table B.4: Correlation between Party System Characteristics

| | |
|----------------------|----------------------|
| n=137 obs | ENLP |
| Electoral Volatility | .039 |
| n=78 obs | ENLP |
| Polarization (PELA) | .064 |
| n=48 obs | Electoral Volatility |
| Polarization (PELA) | .251 |

Electoral volatility values from 2008 and 2010 come from [Alcántara \(2012\)](#), and 2012 and 2014 values come from my own collection of data and calculations.

Table B.5: Hierarchical Linear Models of Internal Efficacy across Municipalities with less than 200,000 voters, Brazil 2014

| | Model 1 | Model 2 | Model 3 | Model 4 |
|-------------------------------|---------------------|---------------------|---------------------|---------------------|
| Internal efficacy (national) | 0.649*** (0.026) | 0.647*** (0.026) | 0.646*** (0.026) | 0.648*** (0.026) |
| Female | -0.206* (0.087) | -0.207* (0.087) | -0.207* (0.087) | -0.206* (0.087) |
| Age | 0.005 (0.003) | 0.004 (0.003) | 0.005 (0.003) | 0.005 (0.003) |
| No formal education | -0.781** (0.246) | -0.765** (0.246) | -0.765** (0.246) | -0.781** (0.246) |
| Secondary education | 0.226 (0.116) | 0.222 (0.116) | 0.230* (0.116) | 0.227 (0.116) |
| Post-Secondary education | 0.466* (0.193) | 0.474* (0.193) | 0.486* (0.193) | 0.466* (0.193) |
| Urban | -0.236 (0.156) | -0.285 (0.156) | -0.268 (0.156) | -0.236 (0.157) |
| Wealth Quintiles | Yes | Yes | Yes | Yes |
| Number of candidates | -0.114 (0.069) | | | -0.114 (0.075) |
| ENC (centered) | | -0.060 (0.100) | 0.076 (0.148) | 0.000 (0.106) |
| ENC (centered) ² | | | -0.099 (0.079) | |
| Incumbent | 0.222 (0.129) | 0.187 (0.130) | 0.166 (0.131) | 0.222 (0.131) |
| Institutionalized parties | 0.165 (0.093) | 0.139 (0.094) | 0.135 (0.093) | 0.165 (0.094) |
| Average size of coalition | -0.094* (0.037) | -0.064 (0.033) | -0.051 (0.035) | -0.094* (0.038) |
| Non-ideological coalitions | -0.093 (0.140) | -0.061 (0.141) | -0.079 (0.142) | -0.093 (0.141) |
| Size of Municipality (5 cat.) | Yes | Yes | Yes | Yes |
| Region categories (5 cat.) | Yes | Yes | Yes | Yes |
| (Intercept) | 1.843*** (0.460) | 1.472*** (0.400) | 1.363*** (0.409) | 1.841*** (0.464) |
| Num. obs. | 915 | 915 | 915 | 915 |
| Num. municipalities | 77 | 77 | 77 | 77 |
| Var. (municipalities) | 0.079 | 0.088 | 0.087 | 0.083 |
| Var: Residual | 1.688 | 1.688 | 1.687 | 1.688 |

Source: AmericasBarometer Brazil 2014 and Brazil's Superior Electoral Tribunal (TSE)

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Table B.6: Heterogenous Effect of Number of Candidates on Education Levels, Brazil 2014

| | Model 1 |
|--|---------------------|
| Internal efficacy (national) | Yes |
| Female | Yes |
| Age | Yes |
| No formal education | -0.203 (1.697) |
| Secondary education | 0.621 (0.578) |
| Post-Secondary education | -0.580 (1.077) |
| Urban | Yes |
| Wealth Quintiles | Yes |
| Number of candidates | -0.106 (0.066) |
| Institutionalized parties | 0.196 (0.113) |
| Non-ideological coalitions | 0.077 (0.175) |
| Incumbent | 0.125 (0.155) |
| Average size of coalition | -0.082 (0.050) |
| Size of Municipality (5 cat.) | Yes |
| Region categories (5 cat.) | Yes |
| ENC (centered) | Yes |
| Number of candidates * No formal education | 0.214 (0.196) |
| Number of candidates * Secondary education | 0.010 (0.068) |
| Number of candidates * Post-Secondary education | 0.074 (0.120) |
| Institutionalized parties * No formal education | -0.450 (0.547) |
| Institutionalized parties * Secondary education | -0.190 (0.127) |
| Institutionalized parties * Post-Secondary education | -0.066 (0.191) |
| Non-ideological coalitions * Educ. cats | Yes |
| Incumbent * Educ. cats | Yes |
| Average size of coalition * Educ. cats | Yes |
| Size of Municipality (5 cat.) * Educ. cats | Yes |
| Region categories (5 cat.) * Educ. cats | Yes |
| Intercept | 1.809*** (0.547) |
| Num. obs. | 1429 |
| Num. municipalities | 104 |
| Var. (municipalities) | 0.072 |
| Var. Residual | 1.504 |

Source: AmericasBarometer Brazil 2014 and Brazil's Superior Electoral Tribunal (TSE)

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Table B.7: Internal Efficacy across Municipalities by Number of Candidates, Brazil 2014

| | Model 1 |
|-------------------------------|---------------------|
| Internal efficacy (national) | 0.650*** (0.026) |
| Female | -0.206* (0.087) |
| Age | 0.005 (0.003) |
| No formal education | -0.800** (0.246) |
| Secondary education | 0.225 (0.116) |
| Post-Secondary education | 0.448* (0.192) |
| Urban | -0.290 (0.157) |
| Wealth Quintiles | Yes |
| 1 Candidate | -0.640 (0.390) |
| 3 Candidates | -0.460** (0.161) |
| 4 Candidates | -0.457* (0.204) |
| 5-8 Candidates | -0.460 (0.287) |
| 9+ Candidates | -0.664 (0.598) |
| Institutionalized parties | 0.158 (0.092) |
| Incumbent | 0.250* (0.128) |
| Average size of coalition | -0.094* (0.039) |
| Non-ideological coalitions | -0.181 (0.138) |
| Turnout 2012 | 1.905 (1.463) |
| Size of Municipality (5 cat.) | Yes |
| Region categories (5 cat.) | Yes |
| Intercept | 0.511 (1.310) |
| Num. obs. | 915 |
| Num. municipalities | 77 |
| Var. (municipalities) | 0.062 |
| Var. Residual | 1.689 |

Source: AmericasBarometer Brazil 2014 and Brazil's Superior Electoral Tribunal (TSE)

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Table B.8: Heterogenous Effects of ENLP by Level of Education, AmericasBarometer 2008-2014

| | Model 1 |
|---|----------------------|
| Male | Yes |
| Age | Yes |
| Age ² | Yes |
| No formal education | 0.247 (0.459) |
| Secondary education | -0.546** (0.180) |
| Post-Secondary education | -1.421*** (0.250) |
| Educ. (DK/NA) | -2.865*** (0.766) |
| Urban | Yes |
| Urban (NA) | Yes |
| ENLP (centered) | -0.053* (0.022) |
| Federal | Yes |
| Bicameral | Yes |
| Seats (log) | Yes |
| Freedom House | Yes |
| Age of Democracy | Yes |
| Human Development Index | Yes |
| No. months near election (log) | Yes |
| Year dummies | Yes |
| ENLP (centered) * No formal education | 0.019 (0.016) |
| ENLP (centered) * Secondary education | 0.013* (0.006) |
| ENLP (centered) * Post-Secondary education | 0.044*** (0.008) |
| ENLP (centered) * Educ. (DK/NA) | -0.046 (0.029) |
| Federal * Educ. cats | Yes |
| Bicameral * Educ. cats | Yes |
| Seats (log) * Educ. cats | Yes |
| Freedom House * Educ. cats | Yes |
| Age of Democracy * Educ. cats | Yes |
| HDI * Educ. cats | Yes |
| No. months near election (log) * Educ. cats | Yes |
| Intercept | 3.871*** (0.675) |
| Num. obs. | 147853 |
| Num. surveys | 91 |
| Num. countries | 24 |
| Var: surveys | 0.036 |
| Var: countries | 0.037 |
| Var: Residual | 3.106 |

Source: AmericasBarometer 2008-2014 and other country-level indicators.

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Appendix C

Supplementary Information to Chapter Three

Figure C.1: Turnout Rates in Mayoral Elections in Colombia, 2003-2011

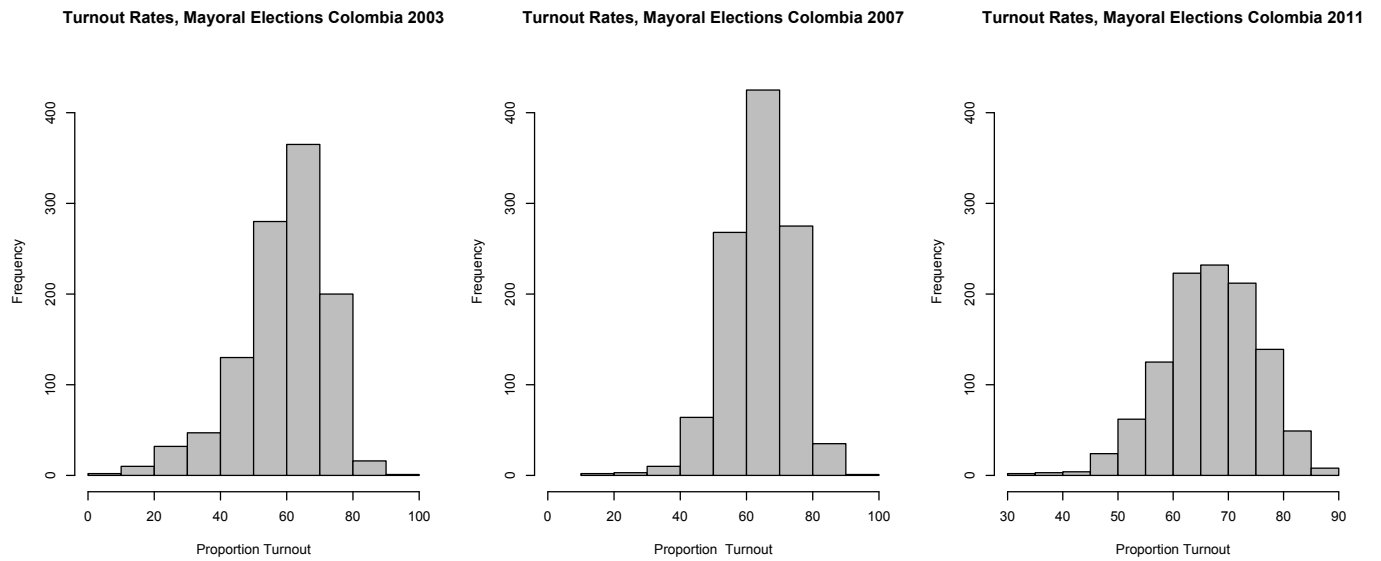


Table C.1: Levels of Turnout across Municipalities with Categorical Variable

| | Δ Turnout, 2007 | Δ Turnout, 2011 |
|-------------------------------------|------------------------|------------------------|
| Turnout _{t-1} | -0.470*** (0.019) | 0.704*** (0.018) |
| 1 Candidate | -3.430* (1.587) | -6.528** (2.100) |
| 3 Candidates | 0.151 (0.537) | -0.849* (0.365) |
| 4 Candidates | -0.291 (0.573) | -1.020** (0.390) |
| 5-8 Candidates | -1.648** (0.553) | -1.663*** (0.391) |
| 9+ Candidates | -2.181* (1.078) | 0.416 (1.089) |
| Number of Candidates _{t-1} | -0.051 (0.122) | -0.021 (0.076) |
| Margin of Victory _{t-1} | 0.017 (0.011) | 0.007 (0.009) |
| Winner coalition _t | | 0.876 (0.857) |
| Number of coalitions _t | | -0.702 (0.533) |
| Size of Electorate- Very Small | 2.044** (0.787) | 1.748** (0.546) |
| Size of Electorate- Small | 0.099 (0.744) | 0.250 (0.508) |
| Size of Electorate- Large | -1.144 (1.586) | -1.823 (1.101) |
| Size of Electorate- Very Large | -2.715 (1.552) | -3.363** (1.050) |
| Dummies for department | Yes | Yes |
| Intercept | 33.016*** (5.336) | 26.956*** (3.843) |
| Adj. R ² | 0.518 | 0.835 |
| Num. obs. | 890 | 906 |

Source: Electoral National Institute of Colombia

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

The models indicate that elections with one candidate have lower levels of turnout by about 3.4 and 6.5 points compared to two-candidate elections, which corroborates the idea that a minimal number of alternatives important for fostering individual engagement.¹ On the other hand, elections with a larger number of candidates are associated with lower levels of turnout. While there were no statistically significant differences with elections between two and four candidates in 2007, turnout rates in municipalities with elections with five through eight and nine or more mayoral candidates were lower by roughly 1.6, even controlling for the level of electoral turnout and number of candidates in the last race.

¹ A possible explanation for the fact turnout rates are not even lower in uncontested mayoral elections is that voters still get to vote for governor and local councilmen.

Figure C.2: Turnout Rates in Mayoral Elections in Brazil, 2008-2012

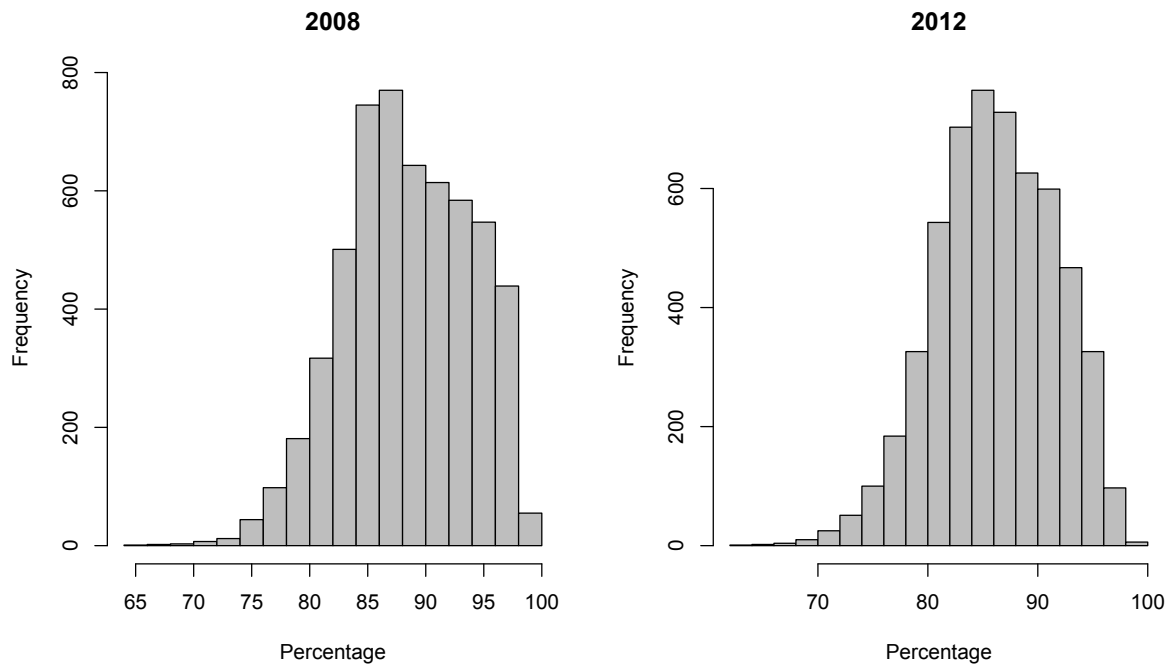


Figure C.3: Map of Municipalities by Number of Candidates, Brazil 2012

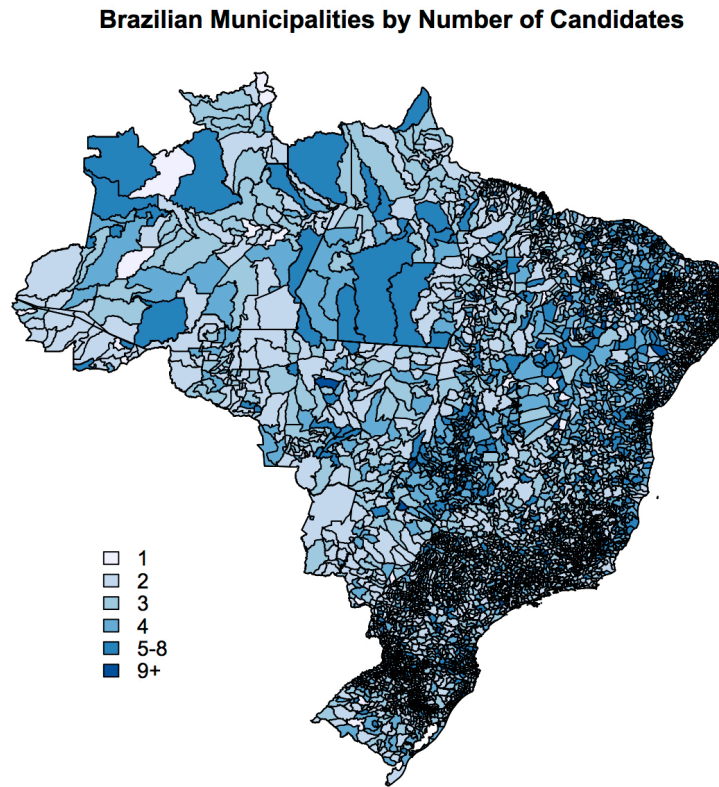


Table C.2: Levels of Turnout across Municipalities including Campaign Expenditures, Brazil 2012

| | Turnout _t | Δ Turnout | Δ Turnout |
|---|----------------------|----------------------|----------------------|
| Turnout _{t-1} | | -0.198*** (0.007) | -0.199*** (0.007) |
| Number of Candidates _t | -0.868*** (0.147) | -0.217** (0.078) | |
| Δ Number of Candidates | | | -0.196* (0.078) |
| Number of Candidates _{t-1} | | | -0.254** (0.080) |
| Incumbent _t | 0.127 (0.131) | 0.060 (0.069) | 0.071 (0.069) |
| Institutionalized Parties _t | -0.160 (0.103) | -0.086 (0.054) | -0.085 (0.054) |
| Average Size of Coalitions _t | -0.460*** (0.050) | -0.062* (0.027) | -0.058* (0.027) |
| Size of Coalition of Winning Candidate _t | -0.012 (0.026) | -0.001 (0.014) | -0.000 (0.014) |
| Non-ideological Coalitions _t | 0.293* (0.145) | 0.093 (0.076) | 0.093 (0.076) |
| Number of Male Candidates _t | -0.110 (0.112) | 0.068 (0.059) | 0.067 (0.059) |
| Number of Married Candidates _t | 0.163 (0.085) | 0.097* (0.045) | 0.092* (0.045) |
| Number of Candidates with Post-Secondary Education _t | -0.233** (0.074) | -0.060 (0.039) | -0.059 (0.039) |
| Log of Maximal Expenditures by Candidates | -0.497*** (0.068) | -0.069 (0.036) | -0.064 (0.036) |
| Size of Electorate- Small | -1.048*** (0.240) | 0.156 (0.127) | 0.168 (0.128) |
| Size of Electorate- Medium | -0.298 (0.326) | 0.292 (0.172) | 0.312 (0.172) |
| Size of Electorate- Large | 1.229* (0.532) | 0.654* (0.281) | 0.722* (0.283) |
| Size of Electorate- Very Large | 3.307*** (0.667) | 1.252*** (0.353) | 1.360*** (0.357) |
| Dummies for states | Yes | Yes | Yes |
| Intercept | 94.501*** (1.235) | 16.840*** (0.952) | 16.941*** (0.953) |
| Adj. R ² | 0.375 | 0.465 | 0.465 |
| Num. obs. | 4883 | 4883 | 4883 |

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Table C.3: Levels of Turnout across Municipalities with Categorical Number of Candidates, Brazil 2012

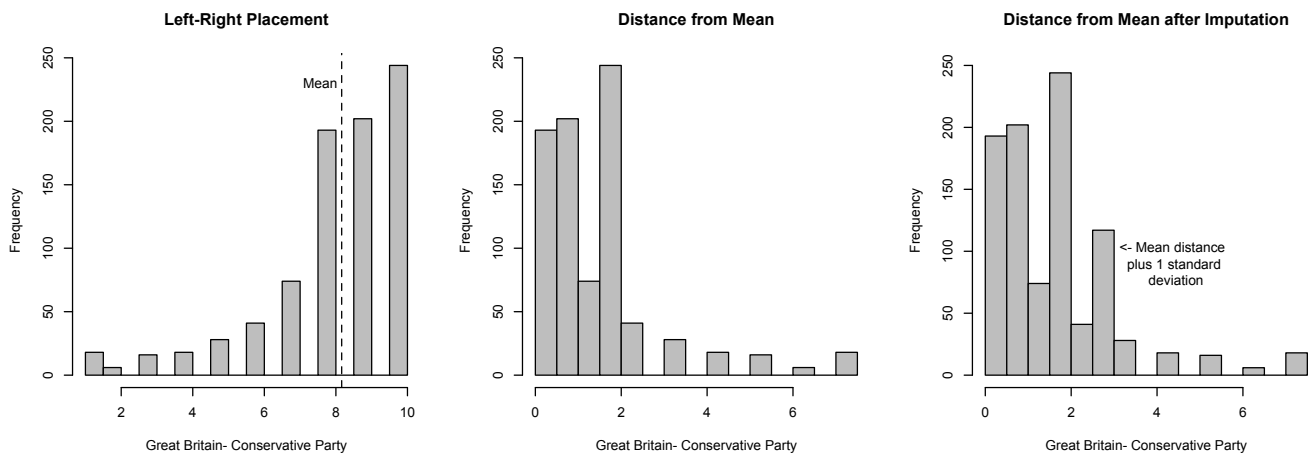
| | Turnout _t | Δ Turnout |
|---|----------------------|----------------------|
| Turnout _{t-1} | | -0.200*** (0.007) |
| 1 Candidate | -0.557 (0.319) | -0.959*** (0.167) |
| 3 Candidates | -1.496*** (0.182) | -0.444*** (0.096) |
| 4 Candidates | -2.396*** (0.315) | -0.503** (0.166) |
| 5-8 Candidates | -2.874*** (0.501) | -0.769** (0.264) |
| 9+ Candidates | -1.313 (1.641) | -0.377 (0.862) |
| Number of Candidates _{t-1} | -0.309*** (0.054) | -0.066* (0.028) |
| Incumbent _t | 0.155 (0.123) | 0.015 (0.065) |
| Institutionalized Parties _t | -0.102 (0.098) | -0.075 (0.051) |
| Average Size of Coalitions _t | -0.545*** (0.046) | -0.079** (0.024) |
| Size of Coalition of Winning Candidate _t | 0.015 (0.026) | 0.005 (0.013) |
| Non-ideological Coalitions _t | 0.283* (0.135) | 0.058 (0.071) |
| Number of Male Candidates _t | -0.156 (0.104) | 0.063 (0.055) |
| Number of Married Candidates _t | 0.190* (0.081) | 0.111** (0.042) |
| Number of Candidates with Post-Secondary Education _t | -0.265*** (0.070) | -0.071 (0.037) |
| Size of Electorate- Small | -1.331*** (0.228) | 0.149 (0.120) |
| Size of Electorate- Medium | -0.729* (0.309) | 0.259 (0.162) |
| Size of Electorate- Large | 0.388 (0.519) | 0.526 (0.272) |
| Size of Electorate- Very Large | 1.290 (0.669) | 0.877* (0.351) |
| Dummies for states | Yes | Yes |
| Intercept | 88.312*** (0.978) | 16.203*** (0.789) |
| Adj. R ² | 0.385 | 0.469 |
| Num. obs. | 5562 | 5562 |

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Appendix D

Supplementary Information to Chapter Four

Figure D.1: Respondents' Placement of the British Conservative Party and Associated Measures of Political Knowledge



The graph on the left shows the distribution of responses placing the British Conservative Party on the left-right spectrum. The top three numbers picked were 10, 9 and 8, and the mean was just above 8 (8.16). The graph in the middle displays the distance from the mean response. Those who picked 8 were only 0.16 away and those who picked 9 were less than one point (0.84) away from the “correct” answer. Those who picked less than 7 were more than 2 points away.

The graph on the right shows the same distribution of distance from the mean, but with the addition of the values imputed according to the strategy proposed by [Gordon and Segura \(1997\)](#). Those who did not place the Conservative Party on a left-right spectrum (approximately 12% of the sample) received a distance score equal to the mean distance plus one standard deviation of the mean, in this case, about 3 points (2.86), which is worse than 78% of the sample.

Table D.1: Models of Cross-National Levels of Political Knowledge Allowing for Curvilinearity- Different Alternatives to Handling Missing

| | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 |
|------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| ENLP (centered) | -0.022 (0.299) | -0.147 (0.191) | -0.197 (0.126) | -0.139 (0.181) | 0.096 (0.427) |
| ENLP (centered) ² | -0.039 (0.055) | -0.002 (0.035) | 0.017 (0.023) | -0.003 (0.033) | -0.075 (0.078) |
| Nat. Competitiveness | 0.195 (0.196) | 0.161 (0.125) | 0.139 (0.083) | 0.166 (0.119) | 0.223 (0.280) |
| Disproportionality | -0.042 (0.061) | -0.033 (0.039) | -0.009 (0.026) | -0.023 (0.037) | -0.061 (0.088) |
| Compulsory | 0.483 (0.379) | 0.371 (0.242) | 0.323* (0.160) | 0.385 (0.229) | 0.581 (0.542) |
| Degree of Unicameralism | 0.124 (0.124) | 0.104 (0.079) | 0.065 (0.052) | 0.088 (0.075) | 0.159 (0.178) |
| Years Since Election | -0.015 (0.130) | -0.009 (0.083) | -0.021 (0.055) | -0.017 (0.079) | -0.012 (0.187) |
| Intercept | 6.685*** (0.958) | 7.143*** (0.612) | 7.414*** (0.404) | 7.126*** (0.580) | 6.244*** (1.371) |
| Num. obs. | 11528 | 6995 | 11528 | 11528 | 11528 |
| Num. of countries | 12 | 12 | 12 | 12 | 12 |
| Var. (countries) | 0.174 | 0.070 | 0.031 | 0.063 | 0.356 |
| Residual | 0.527 | 0.482 | 0.412 | 0.353 | 1.037 |

Source: Eurobarometer 1989 and national-level factors according to [Gordon and Segura \(1997\)](#)

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Table D.2: Political Knowledge across Countries, CSES Rounds 3 and 4

| | Mean Plus 1 Dev. | Mean Plus 1 Dev. | Missing | Missing | Half of Mean | Half of Mean | Mean Plus 2 Dev. | Mean Plus 2 Dev. |
|----------------------------------|------------------------|------------------------|----------------------|----------------------|----------------------|----------------------|------------------------|------------------------|
| Female | -0.160*** (0.007) | -0.160*** (0.007) | -0.070*** (0.009) | -0.070*** (0.009) | -0.035*** (0.006) | -0.035*** (0.006) | -0.272*** (0.010) | -0.272*** (0.010) |
| Age (in 10s) | 0.004 (0.002) | 0.004 (0.002) | -0.010*** (0.003) | -0.010*** (0.003) | -0.005* (0.002) | -0.005* (0.002) | 0.013*** (0.003) | 0.013*** (0.003) |
| Age (in 10s) ² | -0.011*** (0.001) | -0.011*** (0.001) | -0.005** (0.001) | -0.005** (0.001) | -0.002** (0.001) | -0.002** (0.001) | -0.018*** (0.002) | -0.018*** (0.002) |
| Secondary | 0.234*** (0.009) | 0.234*** (0.009) | 0.133*** (0.012) | 0.133*** (0.012) | 0.072*** (0.008) | 0.072*** (0.008) | 0.375*** (0.013) | 0.375*** (0.013) |
| Post-Secondary | 0.466*** (0.013) | 0.466*** (0.013) | 0.317*** (0.016) | 0.317*** (0.016) | 0.212*** (0.011) | 0.212*** (0.011) | 0.679*** (0.019) | 0.679*** (0.019) |
| ENLP (centered) | 0.203* (0.097) | 0.066 (0.106) | 0.070 (0.075) | 0.064 (0.085) | 0.045 (0.080) | 0.022 (0.095) | 0.316* (0.134) | 0.056 (0.134) |
| ENLP (centered) ² | -0.023* (0.011) | -0.008 (0.012) | -0.007 (0.008) | -0.006 (0.009) | -0.007 (0.009) | -0.004 (0.010) | -0.036* (0.015) | -0.008 (0.015) |
| GDP/pc (in thousands) | 0.007 (0.006) | 0.005 (0.006) | 0.007 (0.005) | 0.007 (0.005) | 0.006 (0.005) | 0.006 (0.005) | 0.008 (0.009) | 0.004 (0.007) |
| Freedom House | 0.307*** (0.088) | 0.235** (0.087) | 0.139* (0.066) | 0.134 (0.072) | 0.109 (0.073) | 0.096 (0.078) | 0.455*** (0.123) | 0.318** (0.110) |
| Federal | -0.168 (0.260) | -0.186 (0.242) | -0.239 (0.195) | -0.238 (0.198) | -0.249 (0.215) | -0.252 (0.218) | -0.122 (0.360) | -0.158 (0.306) |
| Bicameral | 0.132 (0.200) | 0.122 (0.186) | 0.028 (0.149) | 0.027 (0.151) | 0.030 (0.166) | 0.029 (0.168) | 0.239 (0.278) | 0.220 (0.236) |
| Parliamentary | -0.201 (0.210) | -0.037 (0.206) | -0.053 (0.156) | -0.045 (0.166) | -0.107 (0.174) | -0.079 (0.185) | -0.323 (0.291) | -0.012 (0.261) |
| Compulsory Voting | -0.004 (0.262) | -0.188 (0.255) | -0.113 (0.196) | -0.122 (0.206) | -0.140 (0.217) | -0.172 (0.229) | 0.097 (0.363) | -0.255 (0.322) |
| Mos. from last house election | -0.010 (0.007) | -0.003 (0.007) | -0.005 (0.005) | -0.005 (0.006) | -0.003 (0.006) | -0.002 (0.006) | -0.015 (0.009) | -0.002 (0.009) |
| Percent Missing | | -1.188* (0.475) | | -0.072 (0.422) | | -0.205 (0.427) | | -2.257*** (0.601) |
| Intercept | 8.060*** (0.396) | 8.335*** (0.384) | 8.336*** (0.294) | 8.355*** (0.319) | 8.412*** (0.327) | 8.460*** (0.346) | 7.781*** (0.548) | 8.303*** (0.486) |
| Num. obs. | 66866 | 66866 | 39199 | 39199 | 66866 | 66866 | 66866 | 66866 |
| Num. surveys | 44 | 44 | 43 | 43 | 44 | 44 | 44 | 44 |
| Var. (surveys) | 0.276 | 0.239 | 0.150 | 0.155 | 0.189 | 0.194 | 0.531 | 0.383 |
| Residual | 0.839 | 0.839 | 0.830 | 0.830 | 0.589 | 0.589 | 1.653 | 1.653 |

Source: Comparative Studies of Electoral Systems (CSES), Rounds 3 and 4

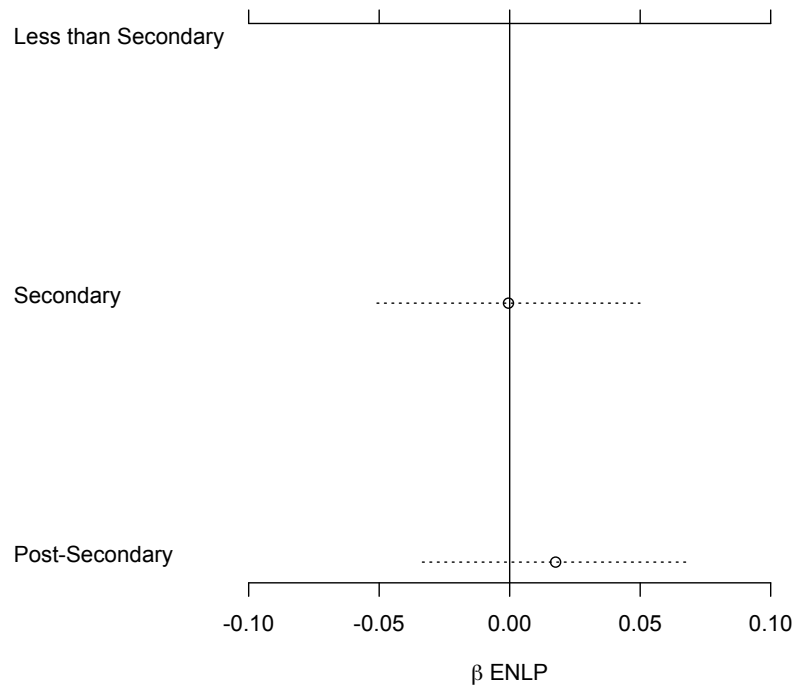
*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Table D.3: HLM Models with Cross-Level Interactions Between Levels of Education and National-Level Factors on Political Knowledge across Countries, CSES R3-4

| | Level of Political Knowledge (DK=Missing) |
|--|---|
| Female | Yes |
| Age (in 10s) | Yes |
| Secondary education | 0.167*** (0.023) |
| Post-Secondary education | 0.286*** (0.033) |
| ENLP (centered) | 0.002 (0.026) |
| Federal | -0.306* (0.130) |
| Bicameral | Yes |
| Parliamentary | Yes |
| GDP/pc (in thousands) | 0.007* (0.003) |
| Freedom House | 0.031 (0.052) |
| Compulsory | Yes |
| Mos. from last house election | Yes |
| ENLP * Secondary education | -0.003 (0.005) |
| ENLP * Post-Secondary education | 0.015* (0.006) |
| Federal * Secondary education | -0.050* (0.021) |
| Federal * Post-Secondary education | 0.002 (0.028) |
| Bicameral * Secondary education | Yes |
| Bicameral * Post-Secondary education | Yes |
| Parliamentary * Secondary education | Yes |
| Parliamentary * Post-Secondary education | Yes |
| GDP/pc * Secondary education | 0.002** (0.001) |
| GDP/pc * Post-Secondary education | 0.002** (0.001) |
| Freedom House * Secondary education | 0.022 (0.012) |
| Freedom House * Post-Secondary education | 0.043** (0.016) |
| Compulsory * Secondary education | Yes |
| Compulsory * Post-Secondary education | Yes |
| Intercept | 8.211*** (0.187) |
| Num. obs. | 80546 |
| Num. surveys | 83 |
| Num. countries | 45 |
| Var. (surveys) | 0.051 |
| Var. (countries) | 0.091 |
| Var: Residual | 0.818 |

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Figure D.2: Estimated Impact of a Larger Number of ENLP by Individuals' Levels of Education



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