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in Austrian Local Elections“

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1. Introduction

How the institutional set-up of elections influences the political process and outcomes has been an ongoing debate in political science literature. The design of election laws relates, *inter alia*, to the level of competitiveness of elections (e.g., Iaryczower & Mattozzi, 2013; Jones, 1999; Vowles et al., 2017) as well as the extend of participation from voters in these elections (Cancela & Geys, 2016; Sanz, 2017; Stockemer, 2017). In this master thesis, I consider how a mixed electoral system, i.e. a system that combines both elements from proportional representation (PR) and majoritarian elections (Herron, Kuniaki, et al., 2018; Herron & Nishikawa, 2001), affects electoral competitiveness and participation.

Specifically, I study how the institutional set-up of Austrian local elections affects the actual and effective number of parties, the margin of victory, as well as turnout at municipal council elections, exploiting variation in the method of mayor election by comparing municipalities with direct mayoral elections to those without. Since the 1990s, several Austrian states have drastically reformed the electoral system of local elections with the introduction of direct mayoral elections (Gamper, 2012; Stainer-Hämmerle, 2022). This change is part of a wider European trend, with several other countries also opting to switch to such a system, hoping for this reform to act as a counterweight to decreasing political participation and perceived crisis of representation at the local level as well as to increase the accountability of local political leaders (Baldini, 2002; Copus et al., 2016; Kuhlmann, 2009; Magnier, 2006; Magre & Bertrana, 2007; Wollmann, 2008).

In Austria, the switch to directly elected mayors has not been implemented by the entire country. Five states now combine a PR election of municipal council members with a direct majoritarian runoff election for mayors, while local elections in three other states are still restricted to the (PR) election of the municipal council, with mayors being indirectly elected by the council members (Gamper, 2012). Furthermore, the state of Vorarlberg allows municipalities to decide themselves whether or not to elect mayors directly. I utilize both the municipality-level variation in Vorarlberg as well as the state-level variation in the rest of Austria to study the effect of holding simultaneous majoritarian elections on competitiveness and turnout in PR elections in two separate studies.

Using cross-state variation in the introduction of direct mayoral elections and estimating multivariate regression models based on municipal council elections since 2000, Study 1 finds that municipal council elections are on average more competitive - both the actual and the effective number of parties is higher, while the margin of victory is lower - and have higher turnout in case of concurrent direct mayoral elections. The drawback from Study 1 is that there is no within-state variation in the electoral system due to data unavailability before 2000. The main findings are however backed up by Study 2 that tests the same hypotheses on data from local elections in Vorarlberg between 1985 and 2015, where there is both variation across and within municipalities concerning the direct elections of mayors. Again, both competitiveness and turnout are higher in case of direct mayoral elections based on difference-in-differences models that try to identify the causal effect of electoral system choice. Event-study analyses suggest that the parallel-trends-assumption does not hold for electoral competitiveness. For turnout on the other hand, Study 2 suggests that direct mayoral elections lead to an increase of 3.7 percentage points.

This master thesis contributes to the literature in several ways. First, many existing studies on the effects of electoral systems utilize cross-country comparisons to measure how different institutional settings influence variables such as competitiveness and turnout. This research design suffers from the possibility of (uncontrolled) confounding factors, e.g., differences in turnout between two countries with differing election laws could also be due to a plethora of other (unobserved) factors besides differences in the institutional set-up. Using variation within a country (Study 1) and even within a state (Study 2), I reduce the potential of unobserved confounders as elections are held in a much more comparable political context.

Second, only few studies (e.g., Eggers, 2015; Fujiwara, 2011; Gulino, 2021; Sanz, 2017) can credibly show that differences in turnout, competitiveness or voting behavior are caused by differing election laws, by exploiting (quasi-)random differences in the institutional set-up of elections. In Study 2, I add to these studies by employing a difference-in-differences (DiD) design combined with treatment propensity score weighting accounting for potential endogeneity in electoral system choice to identify the causal effects of electoral rules. While the main assumption of the DiD design only holds for one of the dependent variables, I still contribute to the literature by showing that having direct mayoral elections increases turnout at local elections.

Third, I add to the small but growing research on mixed electoral systems. While comparative political science has often restricted itself to comparing 'pure' PR elections to majoritarian elections, several countries nowadays employ a mixture of electoral rules (Herron, Kuniaki, et al., 2018). The results of this master thesis provide further evidence that in mixed electoral systems elections that

follow a different set of rules are neither independent from each other nor are they simply a weighted sum of the effects of the 'pure' electoral systems. Instead, the findings suggest that there exists spillover (or contamination) from one electoral system to the other, and that the effects depend on the specific design of the mixed electoral system. This accords with the existing literature on mixed electoral systems (e.g., Lago & Martínez, 2007; Rich, 2015).

Fourth, this thesis contributes to the study of local elections in Austria, which aside from few notable exceptions (e.g., Ennser-Jedenastik & Hansen, 2013; Essletzbichler & Forcher, 2022; Heinisch et al., 2018; Köppl-Turyna, 2016) remains under-researched by social scientists. This is a major shortcoming for understanding political processes and outcomes in Austria in general, as local politics serves as a recruitment source for Austrian parties and is also the level of politics where voters are closest to their representatives (Anderwald, 2021).

Finally, beside the scientific contributions, researching the effect of direct mayoral elections on competitiveness and participation is also relevant from a societal viewpoint. On the one hand, understanding whether such a reform fosters competitiveness and turnout, can help in designing institutions that fulfil these desirable characteristics of elections. On the other hand, since this is the first study to assess the impact of the local election reforms in the 1990s, its results also offer an evaluation of these changes, as increasing the participation of voters in local politics has been one of the main reasons this reform was put forward (Novak, 1995).

This master thesis is structured as follows: Chapter 2 gives an overview of local politics in Austria in general, with a specific focus on local elections and the reforms that introduced direct mayoral elections. Following this, Chapter 3 discusses existing research on electoral competitiveness and turnout, emphasizing the role of electoral institutions. This forms the basis for several theoretical considerations and subsequent hypotheses. Chapters 4 and 5 then summarize the data, applied methods, and the results from Study 1 and Study 2 respectively. Finally, Chapter 6 recaps the main findings and addresses the limitations of this thesis, before concluding with setting them into the context of existing literature on the effects of electoral systems and discussing possible ways forward for future research.

2. Local Politics and Elections in Austria

Austria is a federal republic divided into nine federal states (*'Bundesländer'*), each with its own constitution and government. These states are further split into municipalities (*'Gemeinden'*), which are the smallest political and administrative units in Austria (Anderwald, 2021; Gamper, 2012). In total, there are 2,093 Austrian municipalities, with the amount of municipalities differing significantly between states. While the state of Vienna only consists of a single municipality, there are 573 municipalities in Lower Austria (see Table 2.1). The overwhelming majority of Austrian municipalities (88.2%) have a population of at most 5,000 inhabitants, and only 17 municipalities surpass the threshold of 20,000 inhabitants (Anderwald, 2021). Municipalities do not have legislative and judicial competencies, but perform only administrative tasks that are explicitly conferred to them either by federal or state law. As such, municipalities perform administrative tasks delegated to them, but also act as autonomous bodies (Gamper, 2012; Stainer-Hämmerle, 2022). Municipalities are granted the right to self-government in several aspects of public life, covering inter alia municipal planning and development (e.g., creation of zoning planes, approval of building permits), service provision (e.g., water supply, waste management), and public safety (e.g., provision of fire emergency services) (Oppitz, 2021; Stainer-Hämmerle, 2022). In this autonomous sphere, municipalities govern based solely on regulations (*'Verordnungen'*) as opposed to laws due to the absence of legislative powers. These regulations have to be in accordance with federal and state laws, although municipalities are not tied to explicit instructions from the political and administrative tiers above (Gamper, 2012; Stainer-Hämmerle, 2022).

Governance at the municipal level falls into the responsibility of three political and administrative bodies: The municipal council (*'Gemeinderat'*), the municipal board (*'Gemeindevorstand'*)¹, and the mayor (*'Bürgermeister'*). The municipal council is the supreme body at the local level. It not only decides on matters such as the municipal budget, but also elects the members of the municipal board

¹This body is also referred to as city council (*Stadtrat'*) in cities or city senate (*Stadtsenat'*) in towns with their own statutes (Gamper, 2012).

Table 2.1: Municipalities in Austria: Electoral systems

State	N	Term (years)	N MC Members	Electoral System: MC	Direct Mayoral Elections
Burgenland	171	5	9-25	Proportional Representation	Yes (since 1992)
Carinthia	132	6	11-35 (Klagenfurt/Villach: 45)	Proportional Representation	Yes (since 1991)
Lower Austria	573	5	13-45	Proportional Representation	No
Salzburg	119	5	9-25 (Salzburg: 40)	Proportional Representation	Yes (since 1994)
Styria	286	5	9-31 (Graz: 56)	Proportional Representation	No
Tyrol	277	6	9-21 (Innsbruck: 40)	Proportional Representation	Yes (since 1992)
Upper Austria	438	6	9-37 (Linz: 61)	Proportional Representation	Yes (since 1997)
Vienna	1	5	100	Proportional Representation	No
Vorarlberg	96	5	9-36	Proportional Representation and <i>Mehrheitswahl</i>	Possible (since 2000)

Note: MC: Municipal council. Table based on Anderwald (2021) and Stainer-Hämmerle (2022).

and in case of no direct mayoral elections also the mayor from its own ranks (Gamper, 2012; Oppitz, 2021). It is a multi-member body that is directly elected by the citizens of the municipalities, with the number of delegates dependent on the population size of a municipality (see Table 2.1). The size of the municipal board ranges from four to fifteen members, depending on the size of the municipal council. The mayor is always part of the municipal board, all other members are elected proportional to the party sizes in the municipal council. Its competencies vary from state to state, but usually include the preparation of municipal council meetings as well as tasks that have been delegated to the board from the council (Oppitz, 2021; Stainer-Hämmerle, 2022). The mayor is either elected directly by the citizens of a municipality or by the municipal council (see Table 2.1). The responsibilities include inter alia the external representation of the municipality and the administration of the municipal property. The mayor is also the chairman or chairwoman of both the municipal council and board, and supervises all local civil servants (Gamper, 2012; Oppitz, 2021; Stainer-Hämmerle, 2022). Mayors are liable for all mistakes and breaches of the law by the administrative bodies of the municipality (Mödlhammer, 2021; Stainer-Hämmerle, 2022).

The party system at the local level is similar to the one on the state and federal level. While the local party system is among the most nationalized in Western Europe, independent lists have gained importance recently. The varying degree of party system nationalization across states is partially explained by the strength of the regional party branches (Ennser-Jedenastik & Hansen,

2013; Stainer-Hämmerle, 2022). In contrast to the diminishing support of the two main parties *ÖVP* (centre-right) and *SPÖ* (centre-left) at the national level, they are still dominant at the municipal level. Together, they make up for more than 90% of all mayors. The *ÖVP* is especially strong in smaller municipalities. As these municipalities make up the overwhelming majority of all Austrian municipalities, more than 1,500 mayors are associated with the *ÖVP* (Anderwald, 2021; Stainer-Hämmerle, 2022). Increasingly, parties affiliated to the major Austrian parties run under different names at local elections, often referencing the list leader or mayor (Ennser-Jedenastik & Hansen, 2013).

Members of the municipal council are elected by municipality population for a term of five to six years depending on the state (see Table 2.1). The contesting parties are attributed seats in the municipal council proportional to their share of the votes (i.e., proportional representation). Eligible to vote are Austrian and EU citizens who have their main residence in a given municipality. An exception to this is Lower Austria, where recently also Austrian and EU citizens with a secondary residence were allowed (Stainer-Hämmerle, 2021). Special cases of municipal council elections in terms of electoral rules are found in Tyrol and Vorarlberg. In Tyrol, it is possible for separate lists contesting the elections to be linked (*'gekoppelte Listen'*). When attributing seats in the municipal council and other offices (e.g., the municipal board), the votes for linked lists are combined (Stainer-Hämmerle, 2021, 2022). In Vorarlberg, municipalities can opt for holding municipal council elections under a system called *Mehrheitswahl*, where there are no lists or parties contesting an election, but voters can name eligible citizens on a blank ballot sheet. Seats in the municipal council are then attributed to those with the most mentions, but elected citizens can relinquish their seats (Köppl-Turyna, 2016; Stainer-Hämmerle, 2021, 2022). In each state, municipal council elections are usually held at the same day, although some of the larger towns with own statutes differ from this (Stainer-Hämmerle, 2021).

The major difference in local elections between municipalities, which is at the heart of this thesis, concerns the way in which the mayor is elected. Until the 1990s, mayors were always elected by the members of the municipal council. Starting with Carinthia in 1991, several states have now implemented direct mayoral elections which follow a majoritarian system with run-off elections in case none of the candidates reaches an absolute majority of the votes in the first round. The first round of mayoral elections are held at the same day as municipal council elections (Perlot & Filzmaier, 2022; Stainer-Hämmerle, 2021). Candidates that want to run for mayor are also required to be list leader of one of the parties contesting the municipal council election (Magre & Bertrana, 2007; Stainer-Hämmerle, 2021, 2022). While under the indirect election mayors can build upon the support of a

majority of the municipal council, in case of direct mayoral elections it is possible that mayors are faced with a majority against them in the municipal council. In case of direct mayoral elections, a mayor can only be removed from office following a referendum, while under indirect elections the municipal council can hold a vote of no-confidence (Stainer-Hämmerle, 2021, 2022).

The introduction of direct mayoral mayors in Austria is part of a common trend in Western Europe, where several countries tried to reinvigorate public interest in (local) politics by reforming their election systems (Magre & Bertrana, 2007). In Austria, the feasibility of the reform was debated especially in relation to its legal standing, with the constitutional court ruling the reform unconstitutional after several states already conducted direct mayoral elections (Novak, 1995; Stainer-Hämmerle, 2021). To allow for the direct election of mayors, the federal constitution was amended following this decision, with states obtaining the possibility to allow for direct elections in their respective state constitutions. While mayors in Lower Austria, Styria and Vienna are still not directly elected, all other states have implemented the reform state-wide (see Table 2.1). An exception to this is Vorarlberg, which has implemented the reform in 2000 but allowed municipalities to opt out. In all municipalities in Vorarlberg where the municipal council elections are based on the *Mehrheitswahl* system, mayors are not directly elected. In all others, municipalities can choose whether they want to hold direct mayoral elections or not (Stainer-Hämmerle, 2021, 2022). The variation in the ways in which mayors are elected are the backbone of this master thesis, in which I evaluate whether and how direct mayoral elections impact competitiveness and turnout at municipal council elections.

3. Theory and Hypotheses: Direct Mayoral Elections, Competitiveness, and Turnout

The reforms of local elections in Austria that introduced direct mayoral elections changed the electoral system at the municipal level. Electoral systems determine the conversion of voter preferences into election outcomes, and thereby impact political outcomes mechanically. Additionally, the choice of an electoral system also influences the behavior of both the supply side of politics (parties and candidates) as well as the demand side (voters), for example by determining entry and exit of parties into the political arena or the participation decision of the voters (Colomer, 2004; Herron, Pekkanen, et al., 2018). Due to its major importance for political processes and outcomes, research on the effects of electoral systems is one of the main topics in comparative political science (Benoit, 2007).

The most prominent distinction concerning electoral systems is probably the division into majoritarian (or plurality) systems and proportional representation (PR) systems. In elections under a majoritarian system, candidates or parties usually compete for a single seat or political office, which is allocated to the contender with the most votes, either in relative terms (first-past-the-post) or in absolute terms (which necessitates a run-off election if no contender gains at least 50 percent of all the votes). Under PR, seats are allocated proportional to the parties' vote shares (Herron, Pekkanen, et al., 2018). A common finding in comparative political science is that PR leads *inter alia* to a multi-party system compared to a two-party-system under majoritarian (first-past-the-post) elections (e.g., Dickson & Scheve, 2010; Fiva & Hix, 2021; Neto & Cox, 1997; Shugart & Taagepera, 2018), a pattern commonly referred to as Duverger's Law (Duverger, 1969). Further, elections under PR are associated with higher levels of turnout compared to majoritarian elections (e.g., Eggers, 2015; Funk & Gathmann, 2013; Smith, 2018).

However, not all electoral systems can be neatly categorized into this dichotomous scheme. Several countries for example employ mixed-member systems, in which members of the elected party are first elected based on majoritarian elections on the district level, before additional seats are distributed among the parties to achieve proportionality between seats and vote shares over all districts (Herron, Kuniaki, et al., 2018). In other countries, simultaneous elections for different offices at the same governance level happen under different electoral systems (Lago & Martínez, 2007). In both cases, the inherent effects of both majoritarian and PR systems are not combined independently, but interact with each other, and are therefore 'contaminated' (Herron, Kuniaki, et al., 2018; Herron & Nishikawa, 2001; Lago & Martínez, 2007; Rich, 2015).

While the electoral system is a relatively stable characteristic of the political landscape, reforms are not uncommon. For example, New Zealand switched from a first-past-the-post (FPTP) majoritarian system to a mixed-member system in the 1990s (Lago & Martínez i Coma, 2022; Vowles, 2010), while Norway even completely transitioned to proportional representation in 1919 (Fiva & Hix, 2021). Other countries such as Brazil introduced run-off elections instead of FPTP to achieve greater proportionality (Fujiwara, 2011). A common feature of electoral system reform at the local level in Western Europe is the introduction of directly elected mayors (Magre & Bertrana, 2007). While such reforms are often used to evaluate the causal impact of electoral systems on a wide range of factors such as turnout, competitiveness or fiscal performance (e.g., Fiva & Hix, 2021; Fujiwara, 2011; Funk & Gathmann, 2013; Köppl-Turyna, 2016; Lucardi, 2019; Riera, 2020), these reforms are at least partially determined by political circumstances (Benoit, 2007; Colomer, 2004; Magre & Bertrana, 2007; Nunez & Jacobs, 2016). The potential endogeneity of electoral system reforms therefore always needs to be taken into account when assessing their impacts.

In the six Austrian states that introduced direct mayoral elections, the electoral system at the local level switched from a pure PR system to a mixed system, with two simultaneous elections at the same level under different electoral systems. While the elections for the municipal council continue to be held under proportional representation, the newly introduced mayoral elections follow a majoritarian system with potential run-off elections. In this thesis, I analyze how the reform affected both electoral competitiveness and participation at municipal council elections, i.e. whether there are spillover (contamination) effects from one electoral system to the other. In the remainder of this chapter, I discuss research on competitiveness and turnout with a focus on the effects of electoral systems, and propose several hypotheses as to how these were affected by the introduction of direct mayoral elections.

3.1 Electoral Competitiveness

The specific set-up of electoral institution is not just a legal matter, but as discussed above also influences the behavior of political actors and electoral outcomes, and therefore both the supply and demand side of politics as well as the interaction of the two. In this section, I focus on one feature that can be influenced by electoral rules: the competitiveness of elections. I first give an overview of the different aspects of electoral competitiveness, before turning to the three key features of competition that are considered in this master thesis: the actual and the effective number of parties as well as the margin of victory. I then summarize my hypotheses as to how these indicators might be affected by the introduction of directly elected mayors.

Competition between parties or candidates for votes at elections is one of the defining features of representative democracy (Bischoff, 2006; Cox et al., 2020). While electoral competition refers to the availability of different options for voters at an elections, i.e. to whether an election is contested, electoral competitiveness measures how closely contested an election is (Cox et al., 2020). As such, electoral competition is a prerequisite for electoral competitiveness (Hyde & Marinov, 2012). Another key element of competitiveness is the uncertainty of electoral outcomes, i.e. the higher the uncertainty the higher the degree of competitiveness, as uncertainty about the results should act as an incentive for parties or candidates to compete more heavily with each other (Blais & Lago, 2009). As Cox et al. (2020) argue, how much the outcome uncertainty will incentivize parties to compete further depends on the importance of an elections.

A large number of empirical studies use electoral competitiveness as an explanatory variable. Research has shown that competitiveness influences among other things turnout (e.g., Eichhorn & Linhart, 2021; Stockemer, 2015; Vowles et al., 2017), party positions (e.g., Abou-Chadi & Orlowski, 2016), policy decisions (e.g., Finnegan, 2022; Hübscher & Sattler, 2017; Immergut & Abou-Chadi, 2014), fiscal performance of governments (e.g., Ariza Marín et al., 2021), or responsiveness of political elites (e.g., Dropp & Peskowitz, 2012; Franchino et al., 2022). These studies make use of a wide range of indicators for electoral competitiveness, ranging from the (effective) number of parties and victory margins to more complex measurements such as loss probabilities or parties' insulation from electoral competition.

Several studies also analyze possible explanations for differences in competitiveness. For example, several socio-economic characteristics of election districts have been shown to be correlated with competitiveness. Elections are generally more competitive in districts with a larger population, more diversity in terms of both ideology and socio-economic characteristics, and with higher socio-economic

standards (e.g., Aistrup, 2004; Hogan, 2003a, 2003b; Högström, 2018; Koetzle, 1998; Winer et al., 2014). More populated districts and districts with more representatives to be elected also generally feature more electoral competitiveness (e.g., Gerring et al., 2015; Högström, 2018; Lucardi, 2019), while urbanization and competitiveness are positively correlated in most but not all studies (e.g., Boyne & Ashworth, 1997; Hogan, 2003b; Koetzle, 1998). The theoretical argument behind all these relationships is that those districts are more likely to offer enough electoral support for a multitude of parties, while in smaller and more homogeneous districts there may be less cleavages allowing for competition for votes among parties (Bischoff, 2006).

Competing parties and candidates themselves as well as the political and legal framework that they operate in can also influence the level of electoral competitiveness. Elections are more competitive in electoral districts where parties are better organized and more unified, and less competitive if the incumbent runs again (e.g., Barrilleaux, 1986; Hogan, 2003b). Further, competitiveness also depends on the candidate selection procedure (Winer et al., 2014). The method as to how electoral districts are drawn also matters for competitiveness, with redistricting by independent commissions resulting in more competition compared to redistricting by partisan commissions (Lindgren & Southwell, 2013). Finally, several studies show that electoral competitiveness also depends on campaign funding laws, with on average less competitive elections when campaigns strongly rely on private funding as well as if spending limits are higher (e.g., Abramowitz, 1991; Fourniaies, 2021; Gross et al., 2002).

Central to this thesis is however the impact of electoral laws - specifically the choice of electoral system - on electoral competitiveness. One of the most famous hypotheses in political science - Duverger's Law - proposes a causal link between the electoral system and the number of parties competing with each other: Under a majoritarian system with single-member districts (SMDs), there is a tendency towards a party system with only two major parties, while under proportional representation (PR) multi-party systems are more likely to emerge. This is on the one hand due to the electoral mechanism that translates votes in seats and on the other hand due to its effect on voting behavior, as voters will ex-ante react to the electoral mechanism, and are likely to abandon minor parties under majoritarian rules (Duverger, 1969). Although causality is hard to establish due to potential endogeneity of electoral system choice (Benoit, 2007), several studies show that the proposed pattern by Duverger indeed exists (e.g., Dickson & Scheve, 2010; Fiva & Hix, 2021; Neto & Cox, 1997; Reed, 2001; Taagepera, 2007). The relationship between electoral rules and the (effective) number of parties has been extended, with several studies for example showing that even under plurality rule multi-party systems can emerge. In elections under runoff rules - i.e., with a second round of elections between the two contenders with the most votes in case of no contender reaching an absolute majority of

the votes - competitiveness in terms of the number of parties is higher than in first-past-the-post elections (FPTP) - i.e., where the candidate/party with the relative majority of the votes is elected (e.g., Bordignon et al., 2016; Fujiwara, 2011).

Research on the relationship between electoral systems and competitiveness has also studied the impact of mixed systems which can be summarized into two groups (Rich, 2015). The first group of mixed systems are elections that employ elements of both the majoritarian and PR system, for instance by electing members of parliament using SMDs initially and then compensate underrepresented parties by giving out additional seats to obtain proportionality between votes and seats (Moser, 1999). Under such systems, elections are more competitive with more parties in contention. However, there are contamination effects from the SMD election to the proportional part of the election, which could lead to parties dropping out in the long-term and thus to a potential reduction in competitiveness (Herron & Nishikawa, 2001). Evidence from New Zealand supports this long-term impact of the majoritarian aspect of the election on the competitiveness: After a switch from SMDs to mixed system elections in the 1990s, the effective number of parties initial rose but then converged again to its counterfactual level under majoritarian electoral rules (Riera, 2020). The second group of mixed systems are elections for different offices at the same time which happen simultaneously but under different systems. This type of mixed system is what arises from the introduction of directly elected mayors, with having both a majoritarian election for the mayor's office and a PR elections for the municipal council simultaneously. For a similiar set-up of elections for the Upper and Lower House in Spain, Lago and Martínez (2007) find that there are contamination effects between the two separate elections. How contamination effects come to be in mixed systems heavily depends on their specific design (Rich, 2015).

While empirical studies on the impact of electoral systems on electoral competitiveness almost exclusively focus on the (effective) number of parties or candidates as an indicator for how competitive an election is, research in political science has proposed several other measurements for competitiveness (e.g., Blais & Lago, 2009; Cox et al., 2020; Dash et al., 2019; Kayser & Lindstädt, 2015; A. Wagner & Krause, 2021), often focusing on different aspects of competitiveness. In early groundwork on the competition between parties, Strøm (1989a, 1989b) considers several dimensions of competition, among others electoral volatility, alternation of government participation, and fractionalization of the party system. An electoral unit is more competitive when vote-switching between parties are more common, as then elections become more volatile and parties increasingly compete for the same votes. Further, competitiveness increases if government participation alternates, as then parties have

something to lose from elections and have a higher incentive to act more competitive. And finally, a inter-party competition becomes stronger if the system is more fractionalized, as then entry of new parties is easier (Strøm, 1989a, 1989b).

Other early studies often considered how evenly distributed seat or votes are between the different parties (Bischoff, 2006). These measurements are in turn closely connected to the fractionalization of the party system, one of the dimensions considered by Strøm (1989a, 1989b). Concentration measures such as the Herfindahl-Hirschmann (HH) index give an indication of how unequal the distribution is, with more unequally distributed votes (or seats) between parties indicating less competitiveness (Ariza Marín et al., 2021). As the sum of the vote (seat) shares of all parties sum up to 1, the HH index reduces to the sum of the squared vote (seat) shares. The effective number of parties, a measure developed by Laakso and Taagepera (1979), builds on the Herfindahl-Hirschmann index and is calculated as the inverse of the HH index. As discussed above, this measure is most commonly used when studying the impact of electoral systems on party competition. For the same amount of parties, the effective number of parties is lower the more unevenly the vote shares are distributed, and it is equal to the real number of parties if all parties obtain the same amount of votes. A lower effective number of parties signal less competitive elections. However, although this operationalization is the most widely used measure of the effective number of parties, it has been criticized to misrepresent highly fragmented and highly concentrated party systems, and therefore alternative operationalizations have been proposed (e.g., Golosov, 2010).

In single-member majoritarian systems with two competing candidates, the margin of victory calculated as the difference in vote shares between the first- and second-placed parties or candidates also falls into the same group of competitiveness measures, with votes being more evenly distributed between candidates the closer the gap in terms of votes (Cox, 1988; Cox et al., 2020). Margins of victory have however also been used outside of elections in single-member districts with only two parties (e.g., Freire et al., 2012). In this case the margin of victory measures how dominant the biggest party/candidate is. In both cases larger margins of victory indicate less competitive elections. Related to the margin of victory is a measure proposed by Gerring et al. (2015), who measure competitiveness by subtracting the percentage share of votes for the party/candidate with the (relative) majority of votes from 100. In this case, larger values indicate higher competitiveness (Gerring et al., 2015; Högström, 2018).

In recent years, several new conceptualizations and measurements of electoral competitiveness have been proposed. For example, Blais and Lago (2009) define (electoral) competitiveness by the minimal number of votes needed for any party to gain one more seat. Cox et al. (2020) extend this measure by

also taking into consideration the importance of a seat or an office that is up for election. While these conceptualizations of competitiveness heavily build on the outcome of elections based on the votes or vote shares parties or candidates have received, another set of conceptualizations considers electoral volatility as the key for measuring competitiveness. Electoral volatility essentially measures how much voters switch between parties from one election to the other, and can therefore be interpreted as an indicator of how uncertain an election outcome is. More volatile elections are considered to have a higher degree of uncertainty and therefore are more competitive (Casal Bértoa et al., 2017; Pedersen, 1979; A. Wagner & Krause, 2021). Finally, one of the most recent measurements of electoral competitiveness by A. Wagner and Krause (2021) considers the availability of voters to different parties as a key feature of competition, measured by propensities to vote for different parties.

While all of these indicators for electoral competitiveness have their merits, not all can be applied to studying spillover effects from direct mayoral elections into municipal council elections in Austria. For the measure of electoral availability of voters proposed by A. Wagner and Krause (2021) extensive survey data would be needed which is unavailable for local elections. With volatility measures the key issue is that local party systems are not overly stable, with party splits a common feature, often only for a few rounds of local elections before merging again. In this case there is no clear solution as to how to distribute the votes received by the original party in the election before the split, especially if there is no obvious main successor party. Furthermore, name changes for the same party - often based on the main candidate - are also common at municipal council elections (Ennser-Jedenastik & Hansen, 2013) which makes associating vote shares for a party in the election $t - 1$ to election t extremely tedious on a large scale in terms of time and space.

Therefore I focus on three indicators of electoral competitiveness that each cover a different aspect: The actual number of parties, the effective number of parties, and the margin of victory at municipal council elections. While none of these measures are a perfect indicator for electoral competitiveness, in combination they can provide valuable insight as to how electoral competitiveness reacted to the system reform. The number of parties corresponds to the set of choice options that voters can choose from. Changes in this variable, due to spillover effects from direct mayoral elections, give an indication as to how the reform affects party entry and exit. As not all choice options may be relevant for the voters and thus also not for the electoral competitiveness, the effective number of parties then shows how the distribution of votes between parties reacted to the introduction of direct mayoral elections. The effective number of parties can however also rise due to entry of a new party, even if this party is only in competition with smaller parties, leading to a more comfortable position for the major party and thus arguably less competitiveness. Therefore, the margin of victory gives an insight into

how much the election reform benefited or harmed the majority party. In the remaining part of this subsection, I summarize my theoretical expectations as to how these three indicators are affected by the introduction of direct mayoral elections.

The (actual) number of parties or candidates is an indicator that is seldom studied in research on the effect of electoral system choice. Comparing majoritarian and PR systems, the theoretical expectation is that the amount of choice options at elections - i.e., parties competing for votes - should be smaller under a majoritarian system, as this system favors competition between two dominant parties (Duverger, 1969; Iaryczower & Mattozzi, 2013). Benoit (2001) provides evidence for this relationship, showing that the actual number of parties contesting an election is lower under majoritarian elections rules, although the magnitude of this difference diminishes with district size. This however does not offer a clear prediction as to whether there is a potential spillover effect from the majoritarian system logic to a simultaneous election following a PR system.

As discussed in Section 2, parties running for seats in the municipal council are not required to field a candidate for the mayor's office in case of direct mayoral elections, while candidates for the mayoral office need to be the first-placed candidate of a party contesting the municipal council election. Theoretically, both an increase and a decrease in the actual number of parties in municipal council elections due to direct mayoral elections can be argued for. On the one hand, the introduction of directly elected mayors creates a new high-profile and possibly more prestigious election centered around a single candidate. This could be an incentive to political outsiders as well as to members of already existing parties to participate in this candidate-centered election themselves, if they see an opportunity to win this election. This in turn would lead to the creation of new parties, either by new entrants into the political arena or via party splits. On the other hand, the logic of the majoritarian election of the mayor should lead to stronger electoral support for the major parties at municipal council elections in absence of extensive split-ticket voting. If this spillover effect is strong enough, parties could drop out of municipal council elections in the medium run. Further, parties would also drop out if they initially only contested the council elections to obtain the mayor's office indirectly, but do not stand a chance in winning the mayor's office in direct elections. In this case, the number of parties contesting municipal council elections would decrease.

However, several arguments oppose this potential negative effect. First, split-ticket voting is possible and it is unlikely that voters will only support two major parties at municipal council elections. Second, the majoritarian mayoral elections are run-off elections. These usually have a higher number of candidates that are also receiving a notable share of the votes in the initial round compared to first-past-the-post elections with two dominant candidates (Bordignon et al., 2016; Fujiwara, 2011).

Since the municipal council election coincides with the initial round of the mayoral elections, the trend to two major candidates and their respective parties should be less pronounced. Third, parties can also achieve both policy aims and offices when not winning the mayoral elections but obtaining seats in the municipal council. There should therefore also be an incentive for parties to run in municipal council elections even if they stand no chance of becoming the mayor's party. Hence, I expect the positive effects to dominate the negative ones and the first hypothesis therefore is:

H1: In municipalities with direct mayoral elections, the actual number of parties is higher than in municipalities with indirect mayoral elections.

Opposed to the actual number of parties, the effective number of parties is a competitiveness indicator regularly studied when assessing the impact of electoral system choice on electoral competitiveness and party competition in general. Several studies support the theoretical expectation from Duverger's law that the PR system lead to a higher effect number of parties compared to the majoritarian system (e.g., Dickson & Scheve, 2010; Fiva & Hix, 2021; Neto & Cox, 1997). The extend of competition between parties at different elections is however not independent from each other in the case of two simultaneous elections under different rules. For example, Lago and Martínez (2007) show that in Spain competitiveness at the district level is essentially identical between Upper House elections following a majoritarian election system and Lower House elections following a PR system if the number of seats in both chambers is identical for a district. If a district has more members in the Lower compared to the Upper House, the effective number of parties is lower in Upper House elections at the district level, but the difference is smaller than it would be expected if elections are independent (Lago & Martínez, 2007). This supports the claim that there exist spillover dynamics between elections based on different electoral systems.

How should the introduction of direct mayor election then impact the effective number of parties at municipal council elections? On the one hand, as the first hypothesis expects the actual number to increase, this could lead to an increase in the effective number of parties as well. On the other hand, the additional focus on the main candidate in municipalities with direct mayoral elections should make campaigning more personalized, which in turn should increase the incumbency bonus. If split-ticket voting is not extensively prevalent, direct mayoral elections could therefore also lead to an increase in the vote share of the incumbent's party at municipal council elections. Even if new parties enter the competition as is expected by H1, votes would be more unequally distributed and the effective number of parties would fall. As existing literature on mayoral elections shows that these are characterized by very strong incumbency effects (Freier, 2015; Gulino, 2021; Taylor & McEleney, 2019), and mayoral candidates are also always the list leader of their respective parties at municipal

council elections (Magre & Bertrana, 2007), I expect that the spillover effect due to the introduction of direct mayoral elections leads to a decrease in the effective number of parties at municipal council elections. The second hypothesis therefore is:

H2: In municipalities with direct mayoral elections, the effective number of parties is lower than in municipalities with indirect mayoral elections.

The effective number of parties could of course also be lower in municipalities with direct mayoral elections, if the local election reform led to parties exiting the competition for municipal council seats.² To evaluate whether direct mayoral elections indeed leads to a more unequal distribution of the votes, I also consider the effect of the reform on the margin of victory between first- and second-placed party. While this measure is widely used as an indicator for competitiveness in politics with a majoritarian system and single-member districts (e.g., Gross et al., 2002; Lindgren & Southwell, 2013; Winer et al., 2014), it has been criticized as an invalid competitiveness measure in PR systems, as the margin of victory in this case does not necessarily capture the extend of uncertainty about an election outcome (Blais & Lago, 2009).

Although the arguments against it being a measure for general competitiveness in PR systems are strong, I argue that the margin of victory provides valuable insights in the specific case of this thesis, as it can be seen as an indicator of how much the dominant party at municipal council elections profits or lose from direct mayoral elections. As election campaigns for the mayoral office and the municipal council are unlikely to be independent from each other, municipal council elections will become more personalized following the introduction of direct mayoral elections. Due to strong incumbency effects in mayoral elections (Freier, 2015; Gulino, 2021; Kukołowicz & Górecki, 2018; Taylor & McEleney, 2019) and under the assumption that split-ticket voting is not extremely prevalent, I expect a spillover effect from the mayoral elections to the municipal council elections that increases the margin of victory of the dominant (mayor's) party. The third hypothesis on the impact of direct mayoral elections on the competitiveness of municipal council elections is therefore:

H3: In municipalities with direct mayoral elections, the margin of victory between the first- and second-placed party is higher than in municipalities with indirect mayoral elections.

Next to the general mechanism between majoritarian elections and competitiveness, I expect that the incumbency bonus of mayors is the main driver behind the spillover effects that lead to a lower effective number of parties and a larger margin of victory at municipal council elections. Research

²Note that this mechanism is in contrast to H1, which expects that new parties enter due to direct mayoral elections.

has also shown that elections in general are less competitive if the incumbent runs again (Barrilleaux, 1986; Hogan, 2003b; Taylor & McEleney, 2019). Both H2 and H3 build on the assumption that local elections become more personalized and that the incumbent mayor's party profit most from this. The extend on this effect should however depend on whether incumbent mayors themselves run again for office. Even though there could still be an incumbency bonus for the party of the incumbent mayor in the case where the incumbent is no longer a candidate, for example because voters are satisfied with the general governance of the ruling party, it will likely be smaller as the new main candidate will in general be less known to the electorate. It is then less clear if more personalized campaigns indeed help the ruling party. Therefore I expect the negative effect on competitiveness measured by the effective number of parties (H2) and the margin of victory (H3) to be less pronounced if the incumbent does not run again.

Further, the decision of the incumbent mayor to run again could also influence the decision of new actors to enter the electoral competition. In general, mayors in Austria are in office for a long time, often over decades, and unseating them in elections seems to be hard. Potentially new political actors should have better chances of winning mayoral elections in cases where the incumbent does not run again, and therefore be more incentivized to enter the political competition in absence of the incumbent. Therefore I expect the positive effect of direct mayoral elections on competitiveness measured by the actual number of parties (H1) to be stronger if the incumbent does not run again.

H4: The effect of direct mayoral elections on the three measures of electoral competitiveness is dependent on incumbent candidacy.

- *H4a:* The (positive) difference in the actual number of parties between municipalities with and without direct mayoral elections is more pronounced if the incumbent mayor does not run again.
- *H4b:* The (negative) difference in the effective number of parties between municipalities with and without direct mayoral elections is less pronounced if the incumbent mayor does not run again.
- *H4c:* The (negative) difference in the margin of victory between municipalities with and without direct mayoral elections is less pronounced if the incumbent mayor does not run again.

The effect of direct mayoral elections on competitiveness could also be moderated by the size of the municipality. As argued above, I expect spillover effects to be *inter alia* a side product of a more personalized election campaign due to a bigger role of a party's main candidate. However, local council elections in small municipalities where citizens know each other might already be very personalized. The bonus to the ruling party due to name recognition of the main candidate may therefore be increasing with the population size. Incumbent parties could thus profit more from direct mayoral elections in larger municipalities, which should lead to a smaller effective number of parties and a larger margin of victory. Further, the pool of potential new candidates is larger in more populated municipalities and therefore it should be more likely for new parties to be created.

H5: The effect of direct mayoral elections on the three measures of electoral competitiveness is dependent on the population size.

- *H5a:* The (positive) difference in the actual number of parties between municipalities with and without direct mayoral elections is more pronounced with increasing population size.
- *H5b:* The (negative) difference in the effective number of parties between municipalities with and without direct mayoral elections is more pronounced with increasing population size.
- *H5c:* The (negative) difference in the margin of victory between municipalities with and without direct mayoral elections is more pronounced with increasing population size.

3.2 Turnout

The study of electoral participation is among the most researched topics among scholars of political behavior, an interest at least partially driven by decreasing levels of turnout in many established democracies since the end of the second world war (Blais et al., 2004; Cancela & Geys, 2016; Gray & Caul, 2000). Two different meta-analyses of studies on turnout by Cancela and Geys (2016) and Stockemer (2017) both list around 150 publications on the issue of turnout since the early 2000s. These cover a range of different explanations for electoral participation, both on the level on the individual voter as well as on the macro level, i.e. turnout rates, the second core interest of this thesis.

Blais (2006) and Cancela and Geys (2016) group the different determinants of turnout proposed by political scientists in three categories: institutional, political and socio-economic factors. While institutional and political factors are the channels through which I argue that the introduction of directly elected mayors influence turnout at municipal council elections, I shortly summarize evidence on the connection between socio-economic conditions and turnout, as these possibly act as confounders. One of the most widely used determinants of turnout in empirical research is population size, a pattern supported by a large number of studies (Cancela & Geys, 2016; Stockemer, 2017). Theoretically, lower population should lead to closer ties among voters but also between voters and representatives, and mobilization should be easier in smaller communities (Blais, 2006; Stockemer, 2017). Other demographic factors include urbanity and population density, both associated with lower turnout (Henderson & McEwen, 2010; Tavares & Raudla, 2018).

Further socio-economic indicators include economic conditions. While the significance of GDP per capita for turnout is not a robust finding (Frank & Martínez i Coma, 2021; Stockemer, 2017), turnout is significantly lower in the poorest countries, whereas no differences are found among all others (Blais & Aarts, 2006). Empirical evidence on the connection between income inequality and turnout however is very mixed (Cancela & Geys, 2016; Stockemer, 2017). Other indicators of economic hardship have been more successful in explaining turnout, with unemployment levels and foreclosure rates negatively impacting turnout (Azzollini, 2021; Shah & Wichowsky, 2019; Wilford, 2020).

A positive correlation between average education levels or related concepts such as literacy rates and turnout is also a common finding in literature on the macro level (Stockemer, 2017). Several micro level studies have been able to credibly show that education has a positive causal effect on participating in elections, although this effect is more pronounced for less important elections (Ahlskog, 2021; Sondheimer & Green, 2010). Next to the often used socio-economic factors described above, the impact of a wide range of other indicators such as religious and ethnic diversity, unionization or corruption on turnout has been analyzed by individual studies (Bellettini et al., 2016; Fieldhouse & Cutts, 2008; Frank & Martínez i Coma, 2021; Stockemer & Calca, 2013).

Institutional determinants of turnout include - inter alia - the electoral system, concurrent elections, the importance of an election, and electoral rules such as compulsory voting or the voting age, and are often seen to be the most relevant factors for aggregate-level turnout (Blais, 2006; Cancela & Geys, 2016; Jackman, 1987; Stockemer, 2017). This is one of the main channels through which I argue that direct mayoral elections could impact turnout at municipal council elections, as the election reform

introduced a new election that first follows a different election system, leading to possible spillover effects, second is held concurrent to the municipal council elections, and third could be seen as more important to the voters.

Concerning the electoral system, research typically finds higher turnout under PR election systems compared to non-PR systems in established democracies (e.g. Blais & Carty, 1990; Blais & Dobrzynska, 1998; Rose, 2004). There are several theoretical arguments for this positive link between PR systems and aggregate-level turnout. First, a PR system means that the translation of votes to seats is at least to some degree proportional. This acts as an incentive to vote for supporters of both major and minor parties or candidates, as each additional vote has the possibility to get a party an additional seat. Second, the party system under PR is typically bigger compared to party systems under majoritarian elections. As there are more options to choose from, it would make it more likely that an individual voter finds a party that represents his or her political preferences. Third, under a majoritarian system the outcome of an election is more probable to be a foregone conclusion. In single-member districts potential voters of opposing parties may be disincentivized to vote if a given district is considered a safe seat for the incumbent party (Blais & Aarts, 2006; Stockemer, 2017).

Although this positive link is a common result in studies focusing on established democracies in the Western hemisphere with only few exceptions (e.g. Vowles, 2010), results are mixed when looking beyond these countries (e.g., Blais & Dobrzynska, 1998; Fornos et al., 2004; Kuenzi & Lambright, 2007). However, the few studies that go beyond an analysis of cross-national variation and try to identify the causal effect of proportional representation support the theoretical argument for a positive relationship between PR and turnout (e.g., Eggers, 2015; Funk & Gathmann, 2013). Related to the design of the electoral system, there are not only differences in turnout between proportional representation and majoritarian elections, but also between the specific designs of majoritarian elections. Exploiting an arbitrary threshold based on population size, where mayoral elections in Italy change from a single ballot (first-past-the-post) to a dual ballot system, Barone and de Blasio (2013) show that turnout increases under the dual ballot system, in which mayors need an absolute majority to be elected.

Another institutional factor that increases turnout is the number of elections that are held at the same time (e.g. Carreras, 2018; Dettrey & Schwindt-Bayer, 2009; Nikolenyi, 2010; Schakel & Dandoy, 2014). The US case may be the most well-known example for this effect, where turnout in midterm elections is usually significantly lower compared to years with presidential elections (Plane & Gershtenson, 2004). As the meta-analysis by Cancela and Geys (2016) shows, this effect is more pronounced on the local level compared to the national level. In general, turnout for less important elections is boosted if

they are held concurrent with more salient elections, while vice versa studies find weaker or no effects (Bracco & Revelli, 2018; Cantoni et al., 2021; Nikolenyi, 2010). Several studies try to identify the causal relationship between concurrent elections and turnout. For example, Garmann (2016) shows for municipalities in Hesse, where there is random variation in whether mayors and local council are elected at the same date due to different term lengths, a concurrent election increases turnout by more than five percentage points. Leininger et al. (2018) show that the (random) concurrence of mayoral and European elections in Germany increases turnout by more than ten percentage points. Bracco and Revelli (2018) and Cantoni et al. (2021) find similar results for concurrent elections at the local level and at the European level in Italy.

Next to the amount of elections that are held, the importance of an election is also a key determinant for aggregate-level turnout (Stockemer, 2017). Second- and third-order elections - such as European or local elections - are usually characterized by significantly lower levels compared to first-order elections at the national level (Boomgaarden et al., 2016; Lefevere & Van Aelst, 2014; Schakel & Dandoy, 2014). The importance of an election is related to the political power of the elected body (Blais, 2006). Turnout for parliamentary elections decreases compared to presidential elections with increasing presidential powers (Elgie & Fauvelle-Aymar, 2012). Turnout is also lower in countries with bicameralism (Stockemer, 2017). Finally, elections where a higher share of seats are awarded are characterized by higher turnout (Blais & Dobrzynska, 1998).

Other electoral rules and regulations also impact the aggregate turnout level. Lower age limits for elections reduces aggregate-level turnout, as younger people are less likely to vote (Blais, 2006; Eichhorn & Linhart, 2021; M. Wagner et al., 2012). As expected, elections with compulsory voting are characterized by higher turnout (e.g., Fowler, 2013; Jaitman, 2013). Regulations that allow for easier access to voting are also associated with higher turnout (Blais, 2006). Several studies show that postal or absentee voting increases aggregate turnout (Bechtel & Schmid, 2021; Funk, 2010; Hodler et al., 2015). However, the effect is quite heterogeneous. On the individual level, it is stronger among high-earners (Bechtel & Schmid, 2021). In smaller communities, the introduction of postal voting even has a negative impact on turnout due to a reduction in social pressure (Funk, 2010). Finally, registration requirements have a negative impact on aggregate-level turnout (Cancela & Geys, 2016; Stockemer, 2017).

Political factors form the second group of determinants of turnout through which I expect direct mayoral elections to influence turnout at municipal council elections. These are often closely related to or even at least partially determined by the institutional set-up. For example, the size and fragmentation of the party system is dependent on the electoral system (Shugart & Taagepera, 2018).

Among the political factors most often included in studies of aggregate-level turnout are the choice options that voters have, i.e. the amount of parties or candidates from which a voter can select from (Blais, 2006; Cancela & Geys, 2016). Literature offers competing theoretical arguments for the relationship between the number of parties or candidates and turnout. On the one hand, more choice options could increase turnout, as it becomes easier for voters to find a party in alignment with his or her preferences. Also, more parties or candidates could lead to more voter mobilization. On the other hand, voters might be put off voting as increased fragmentation leads to choice overload (Blais, 2006; Stockemer, 2017; Zagórski, 2021). Concerning the absolute number of choice options, Bol and Ivandic (2020) find that an additional candidate on the ballot paper increases turnout in second round elections by over four percentage points.

Most studies however do not measure the number of parties or candidates in absolute terms, as voters usually only consider "meaningful" choices (Wessels & Schmitt, 2008), commonly using the effective number of parties/candidates. Empirical evidence indicates that the effective amount of choice options does not impact turnout. While some studies find contradicting significant effects, most have to reject the hypothesis of a relationship between the number of parties or candidates and turnout (Cancela & Geys, 2016; Frank & Martínez i Coma, 2021; Stockemer, 2017). However, the reason for this null finding could also be that the relationship between fragmentation and turnout is not linear. Instead, Taagepera et al. (2014) show that turnout increases at first with increasing choice options, as parties now cover a larger range of preferences, but later decreases due to choice overload.

Another political determinant that is included in many studies on turnout levels is the closeness of an election. Theoretically, voters should have more incentive to vote in close elections, as the potential influence of an individual vote is higher (Cox, 1988). Empirical evidence is mixed, although the majority of studies confirm this theoretical expectation (Cancela & Geys, 2016; Stockemer, 2017). A potential reason for the rejection of this hypothesis could be that most studies measure closeness as the margin between the first and second candidate or party. In PR systems, this may be an inadequate indicator for the competitiveness of an election, especially as the competition between coalition blocs may matter more (Blais, 2006). Högström (2018) takes this into consideration, but finds that while higher winning margins between the first and second party decrease turnout, winning margins between traditional party blocs have no effect on turnout.

As the positive relationship between the closeness of an election and turnout is - at least in plurality systems - an established finding, several studies try to identify the causal link between these two indicators. If there is a direct link, voters would decide to participate based on their own beliefs

of the closeness of an election. Großer and Schram (2010) find that turnout is higher when voters receive information about the state of an election from polls, especially if the polls indicate a close race. However, using a randomized controlled trial where participants are treated with different polls, Gerber et al. (2020) show that although voters update their views on the closeness of an election, their turnout decision remains unchanged. This indicates that the closeness of an election might only indirectly influence turnout, as parties have more incentives to mobilize and media coverage is higher if there is a close race, both of which are related to higher turnout levels (Söderlund et al., 2011).

Personalization as a (political) determinant of turnout is a relatively new addition to the literature. Up to now, no study has yet analyzed whether more personalized elections are related to higher turnout at the aggregate level. However, some evidence exists at the micro level, showing that personalization indeed fosters turnout. In the last decades, party identification has become less important for turnout decisions, while party leader evaluations have become more relevant (Ferreira da Silva et al., 2021). Schmitt et al. (2015) find that knowledge about main candidates translates into a higher probability to vote at European parliamentary elections. Citizens are also more likely to vote if they like the main candidate of their preferred party more (Ferreira da Silva, 2018).

How could the introduction of direct mayoral elections then influence turnout in municipal council elections? On the one hand, the reform could lead to a decrease in aggregate turnout. Several studies credibly show that holding elections under a majoritarian system leads to lower levels in turnout (e.g., Eggers, 2015; Funk & Gathmann, 2013). If voters mainly care about the mayor's office which is elected under a majoritarian system, and less about the outcome of municipal council elections following a PR system, this could have a spillover effect, leading to lower turnout. Further, as argued in Section 3.1, I expect that while the introduction of direct mayoral elections should increase the actual number of parties at municipal council elections, it should lead to a lower number of effective parties and a higher margin of victory, both indicating less competitive elections. Since less competitive elections can lead to lower turnout (e.g., Cox, 1988), this could also decrease electoral participation at municipal council elections.

On the other hand, it is also feasible that the reform has a positive effect on turnout. Research shows that turnout is higher when the office that is elected is of greater importance and when several elections are held at the same time (e.g., Carreras, 2018; Schakel & Dandoy, 2014; Stockemer, 2017). The effect of concurrent elections is especially pronounced for second-order elections (Bracco & Revelli, 2018; Cantoni et al., 2021). The introduction of a second simultaneous election in form of the direct mayoral election could therefore increase turnout. Turnout could further be boosted if voters perceive the mayoral elections as more important than the stand-alone municipal council elections.

Additionally, the introduction of direct mayoral elections will likely lead to a greater focus on the party's main candidate and thus to more personalized election campaigns. As higher personalization fosters turnout (Ferreira da Silva, 2018; Schmitt et al., 2015), this could also lead to an increase in turnout due to the reform. Finally, local elections are often low-information elections (Anderson et al., 2020; Taylor & McEleney, 2019), where voters that do not know what the contesting parties stand for may choose to abstain. In contrast, in direct mayoral elections, voters only need to be able to differentiate between a small number of individuals. As the mayoral candidates are also the main candidates of their respective parties at the municipal council elections, this could cause an increase in turnout.

Overall, I expect the positive effects of the introduction of direct mayoral elections to outweigh the negative ones. The sixth hypothesis of this thesis therefore is:

H6: Turnout is higher in municipalities with direct mayoral elections than in municipalities with indirect mayoral elections.

Similar to the effects of direct mayoral elections on competitiveness, I do not expect them to be homogeneous but instead dependent on the political and demographic context of an election. Considering the candidacy of the incumbent mayor, H4 expected less competitive elections if the incumbent runs again, and that the impact of direct mayoral elections that leads to less competitiveness in terms of the effective number of parties and the margin of victory at municipal council elections is stronger in this case. As already discussed above, competitiveness fosters turnout. Additionally, Austrian mayors are usually in office for a long time, often over decades. Thus voters may assume that elections in which the incumbent is again a candidate are foregone conclusions and abstain from participating in local elections all together.

H7: The positive effect of direct mayoral elections on turnout in municipal council elections is weaker if the incumbent mayor runs again.

I further expect the effect of direct mayoral elections on turnout to be dependent on the population size. A common finding of studies on turnout is that smaller polities have higher turnout rates (Cancela & Geys, 2016; Frandsen, 2002; Stockemer, 2017). Additional increases in turnout due to direct mayoral elections may therefore be more pronounced in larger municipalities, as these typically start from a lower initial level. Furthermore, I expect that one of the channels through which direct mayoral elections impact turnout at municipal council elections is the increased personalization of elections campaigns. In small municipalities, where voters often know many candidates from personal

contact, municipal council elections themselves may already be heavily personalized, leading to less mobilization gains due to another candidate-focused election. Therefore, the final hypothesis of this thesis is:

H8: The positive effect of direct mayoral elections on turnout in municipal council elections is stronger with increasing population size.

4. Study 1 - Comparative Analysis of the Impact of Direct Mayoral Elections in six Austrian States

To empirically test the hypotheses that have been put forward in the previous chapter, two different studies are conducted. The first study analyzes the impact of direct mayoral elections comparatively over six Austrian states - Burgenland, Carinthia, Lower Austria, Salzburg, Styria and Upper Austria. The states of Tyrol, Vienna and Vorarlberg were excluded for various reasons. For Tyrol, the fact that the electoral laws allow a single party to run as multiple lists on the ballot sheet in local elections leads to incomparable measurements of competitiveness when these measurements are based on the lists. Vienna was excluded as it only consists of a single municipality, which is furthermore equal in its institutional standing to other Austrian states and not other Austrian municipalities. Finally, Vorarlberg was excluded as it leaves the the decision of having a separate mayoral election to the municipalities. The electoral laws therefore vary between municipalities in Vorarlberg at the same elections, a fact that will be exploited in the second study.

Although such a comparative analysis of different electoral systems offers first insights into the mechanisms and (potential) effects of the variable of interest, it is difficult to make causal claims based on those patterns. Therefore, a second study analyzes the impact of the change in the electoral system for the special case of Vorarlberg where there is within-state variation in the way mayors get elected. In this chapter, I will present the findings from the first study, preceded by a section on the data and methods used to obtain these results. A short discussion of the findings concludes this section.

4.1 Data and Methods

4.1.1 Data

To empirically test my hypotheses, a wide array of data had to be collected. These can be broadly categorized into three categories: Election results, socio-economic covariates and candidacy of incumbent mayors. Originally, the aim was to include all local elections of the time frame between 1980 and 2019 in the models, to on the one hand include elections before the introduction of direct mayoral elections in Burgenland, Carinthia, Salzburg and Upper Austria, and on the other hand to exclude local elections held during the COVID19 pandemic, as the pandemic and the measures associated with it may have considerably influenced turnout and other variables of interest. But as almost all of the data on important socio-economic covariates was only (publicly) available at the municipality level since 2000, the multivariate analyses only include elections between 2000 and 2019. This however means that there is no within-state variation concerning the election process of mayors over this time frame, as in all of the four states with direct mayoral elections these have already been introduced in the 1990s.

For the state of Styria, I further had to reduce the time frame for the multivariate models due to extensive municipal amalgamations in 2015 which reduced the number of Styrian municipalities from 542 to 287 (Heinisch et al., 2018). Therefore, for many of the municipalities in Styria there is no comparable case in the 2015 elections. This is especially problematic for the hypotheses that postulated an interaction between the impact of direct mayoral elections on competitiveness and candidacy of the incumbent mayor. Consider the case where two municipalities are merged, and the mayor from one municipality runs for a seat on the municipality council, whereas the mayor from the other municipality does not. In this case, measuring whether the incumbent runs again would not lead to results comparable to other elections, as the incumbent on the ballot sheet is only the incumbent of a given part of the electorate. Simply excluding all municipalities that were affected by the reform would lead to an unrepresentative sample of Styrian municipalities, as highly populated municipalities would be over-represented in this subsample. Therefore, I chose to exclude the Styrian local elections of 2015 altogether from the empirical analysis and hence for the case of Styria only the time frame between 2000 and 2010 is covered in these models.

A further restriction on the sample for the multivariate analysis stemmed from the third data source, the candidacy of incumbent mayors. For some of the states with direct mayoral elections, official election results on those elections do not include the candidate name, but simply mention the party from the elections to the municipal council that fielded the candidate. For example, the statistics

department of Upper Austria only provides a list of all candidates for the mayoral elections from 2015 onwards, meaning that for the elections before incumbency data was only available after extensive research. For the two states without direct mayoral elections, this problem was even more pronounced as incumbents who run again do so via the election as a member of the municipal council, and these ballot sheets are not available for past elections neither in Lower Austria nor in Styria. Furthermore, there is also no available comprehensive data source on mayors in Austria over the whole time frame of interest. To keep the necessary research within the bounds of a master thesis and still include data from all of the six mentioned Austrian states, a sample of 40 municipalities was drawn from each state for which the candidacy of the incumbent for either the mayoral office in the case of states with direct mayoral elections or otherwise as leader of his or her list at the municipal elections was coded.³

Additionally, to avoid potentially influential outliers in the data set, all state capitals as well as all municipalities with at least 20,000 inhabitants in 2021 were excluded for a number of reasons.⁴ First, some of these towns have their local elections on different days than the rest of the state, for example Sankt Pölten or Graz. Second, several larger municipalities in Austria, including all state capitals but also other towns such as Krems, Wels or Steyr, have their own town statues (Gamper, 2012), which distinguishes them from 'regular' municipalities. Third, election campaigns in these towns may differ from those in smaller municipalities, as parties may be more invested in the local elections there due to greater spoils of holding power here - e.g., higher budgets and more offices - but also as there is a more pronounced media coverage of the local political developments for these larger cities.

Finally, next to the municipality amalgamation reform in Styria in 2015, there were several other municipality mergers in the relevant time period. These 13 municipalities, for which the mergers resulted in six new or enlarged municipalities, were also excluded from the data set.⁵ The final data set for the multivariate analyzes then consists of N=840 observations from 21 elections, where each observation refers to a single round of local elections at a given municipality. As discussed in the following subsection on the methods used in Study 1, I also perform robustness checks of the multivariate results with all the possible data without the incumbency variable. All other restrictions such as the time frame and the exclusion of larger or merged municipalities are still upheld. This

³A detailed description of the sampling and coding process is given further below in this section.

⁴This includes three municipalities in Carinthia (Klagenfurt, Villach, Wolfsberg), eight in Lower Austria (Sankt Pölten, Wiener Neustadt, Klosterneuburg, Baden, Krems, Amstetten, Mödling, Schwechat), two in Salzburg (Salzburg, Hallein), three in Styria (Graz, Leoben, Kapfenberg), and five in Upper Austria (Linz, Wels, Steyr, Leonding, Traun) (Statistik Austria, n.d.-b). Furthermore, Eisenstadt was also excluded due to being the capital of Burgenland, although it has less than 20,000 inhabitants.

⁵In Styria, in 2005 Sankt Ruprecht ob der Murau and Falkendorf were merged to St. Ruprecht-Falkendorf, and in 2013 Buch-Geiseldorf and Sankt Magdalena am Lemberg were merged to Buch-St. Magdalena, and Gai and Hafning bei Trofaich were incorporated into the already existing municipality of Trofaiach. In Upper Austria, in 2007 Weyer Land and Weyer Stadt formed the new municipality Weyer, and in 2015 Aigen im Mühlkreis and Schlögl were merged to Aigen-Schlögl, as well as Rohrbach and Berg bei Rohrbach to Rohrbach-Berg. All other states had no changes in their municipality structure in the relevant time period (Statistik Austria, n.d.-a).

Table 4.1: Summary of observations in data sets, Study 1

	Direct Mayor	Term Limit	First Election	Last Election	N Elections	N
Burgenland						
Regression Data	Yes	5	2002	2017	4	160
Reg. Data (extended)	Yes	5	2002	2017	4	677
Descriptive Data	Yes (since 1992)	5	1982	2017	8	1288
Carinthia						
Regression Data	Yes	6	2003	2015	3	120
Reg. Data (extended)	Yes	6	2003	2015	3	387
Descriptive Data	Yes (since 1991)	6	1985	2015	6	762
Lower Austria						
Regression Data	No	5	2000	2015	4	160
Reg. Data (extended)	No	5	2000	2015	4	2242
Descriptive Data	No	5	1995	2015	5	2820
Salzburg						
Regression Data	Yes	5	2004	2019	4	160
Reg. Data (extended)	Yes	5	2004	2019	4	466
Descriptive Data	Yes (since 1994)	5	1984	2019	8	936
Styria						
Regression Data	No	5	2000	2010	3	120
Reg. Data (extended)	No	5	2000	2010	3	1591
Descriptive Data	No	5	1990	2010	5	2670
Upper Austria						
Regression Data	Yes	6	2003	2015	3	120
Reg. Data (extended)	Yes	6	2003	2015	3	1291
Descriptive Data	Yes (since 1997)	6	1985	2015	6	2604
Overall						
Regression Data			2000	2019	21	840
Reg. Data (extended)			2000	2019	21	6654
Descriptive Data			1982	2019	38	11080

data set contains N=6,654 observations from 21 elections. Additionally, for the descriptive part of the results of Study 1, I use all available election data, which extends the time frame to 1982 to 2019, while the restrictions on larger or merged municipalities still apply. This largest data set has a total of N=11,080 observations from 38 elections. Table 4.1 summarizes the different data sets also at the state level.

As mentioned in the beginning of this section, the data collected for each observation can be broadly summarized in three categories: Data on elections, socio-economic covariates and data on the candidacy of incumbent mayors. For the first category, I mainly draw from publicly available sources provided by the Austrian states. For the sake of this thesis, the data on elections for the municipal council needs to fulfill the following properties: First, information on the turnout at the municipality level had to be either directly provided, or the exact calculation of it should be enabled via data on

eligible voters and votes cast. Second, for the measurement of the dependent variables on electoral competitiveness, the vote shares for every single party needs to be obtained from the data, either directly or via information on the votes cast for a single party and the amount of valid votes cast.

However, the availability of data on local elections that fulfill these properties varies wildly between the different states. For Salzburg, detailed results of all local elections since 1949 are publicly available (Land Salzburg, n.d.-a, n.d.-b), which therefore covers the initially planned time frame from 1980 to 2019. For every other state included in Study 1, the publicly available data is more restricted. In these cases, I contacted the relevant departments in the state administration asking to provide additional data. Detailed local elections results are publicly available from 2002 onwards for Burgenland (eGovernment Burgenland, n.d.), from 1992 onwards for Carinthia (Land Kärnten, n.d.-a, n.d.-b), and from 1997 onwards for Upper Austria (Land Oberösterreich, n.d.). The statistics departments of these states further provided detailed local election results for all other local elections since 1980. For Styria, results of local elections since 1990 can be accessed publicly (Land Steiermark, n.d.). For the local elections in 1980 and 1985, results were provided upon request, but as the results of other parties besides ÖVP, SPÖ and FPÖ are aggregated, several of the main indicators of electoral competitiveness cannot be obtained and thus these two elections inside the initially planned time frame are not covered. Furthermore, although data is available for the elections in 2015 and 2020, these are also not included in the data set due to the municipality reforms in Styria as mentioned above. Finally, local elections results are available since 1995 for Lower Austria (Land Niederösterreich, n.d.-a, n.d.-b, n.d.-c, n.d.-d, n.d.-e). For the missing three elections in the relevant time frame - 1980, 1985, 1990 - the competent authority could not provide any results. Table 4.1 provides an overview of which elections are included in each data set type for each state.

The data on local elections is utilized to measure the dependent variables in this study. For the hypotheses on the effect of direct mayoral elections on electoral competitiveness at local elections, these are the number of parties, the effective parties, and the margin of victory. The number of parties is measured by the number of parties on the ballot sheet for the elections of the municipal council. Although this indicator shows the number of choice possibilities for a voter, it gives the same weight to insignificant parties that only managed to get a handful of votes as it gives to dominant parties. To distinguish electoral competitiveness in municipalities with one dominant party and several smaller ones from those with evenly sized parties, the effective number of parties is calculated. In the classic operationalization by Laakso and Taagepera (1979), the effective number of parties is calculated the following way:

$$\text{Eff. } N_{LT} = \frac{1}{\sum_{i=1}^x s_i^2} \quad (4.1)$$

where s_i is the share of votes for party i of all valid votes. This index has a lower bound of 1 which arises if a single party manages to get all valid votes. For the same amount of parties, the effective number of parties is lower the more unevenly the vote shares are distributed, and it is equal to the real number of parties if all parties obtain the same amount of votes. However, although this operationalization is the most widely used measure for the effective number of parties, it has been criticized to misrepresent highly fragmented and highly concentrated party systems (Goloso, 2010). The latter problem is especially relevant when studying party systems at the local level in Austria, as it is not uncommon for the largest party to exceed a vote share of 50 percent. Therefore, I test the robustness of the results concerning the effective number of parties with an alternative measurement of this indicator proposed by Goloso (2010), which calculates it the following way:

$$\text{Eff. } N_G = \sum_{i=1}^x \frac{s_i}{s_i + s_1^2 - s_i^2} \quad (4.2)$$

where s_i is the vote share of party i , and s_1 is the vote share of the largest party. This index produces significantly smaller values for party systems with one dominant party that obtains a vote share above 50 percent, compared to the original one proposed by Laakso and Taagepera (1979). The final dependent variable for electoral competitiveness is the margin of victory, which is measured by the difference in the vote shares of the two largest parties, in percentage points. The theoretical lower limit of this measure is therefore 0 for the case where the two largest parties have exactly the same vote share, while the upper limit is 100 when one party manages to obtain all the votes.

Turnout, the dependent variable for all remaining hypotheses, is also taken from this source, and measured by the percentage share of cast votes of all eligible voters. Therefore, this variable theoretically ranges from 0 to 100. To give an overview of the distribution of the dependent variables, Table 4.2 summarizes all the available data on elections. Furthermore, Tables A.1 and A.2 in the Appendix summarize the distribution of the dependent variables only for the regression data with the incumbency data and the extended regression data respectively.

The main independent variable of interest - the direct (simultaneous) election of the mayor - is also based on the elections data. It is measured as a dummy variable that takes on the value 0 if there is no direct mayoral election and 1 if there is. For the regression data sets (both the restricted one with incumbency indicators and the extended one), this dummy is always 1 for all municipalities in Burgenland, Carinthia, Salzburg and Upper Austria, as direct mayoral elections were introduced in those states before 2000. For the data set that is used for the descriptive analysis which includes elections before the introduction of these direct elections, this dummy is 0 for all local elections in

Table 4.2: Distribution of DVs (all data on elections), Study 1

	Mean	SD	Min	Max
Burgenland (N=1288)				
N Parties	2.801	0.796	1.000	6.000
Eff. N _{LT}	2.107	0.366	0.400	3.842
Eff. N _G	1.815	0.334	1.000	3.366
Margin of Victory	23.638	16.106	0.072	100.000
Turnout	87.819	5.491	62.073	97.556
Carinthia (N=762)				
N Parties	3.833	0.871	2.000	7.000
Eff. N _{LT}	2.819	0.445	1.596	4.532
Eff. N _G	2.370	0.447	1.331	4.066
Margin of Victory	17.808	11.827	0.000	53.632
Turnout	84.865	5.087	63.844	96.881
Lower Austria (N=2820)				
N Parties	3.072	0.908	1.000	6.000
Eff. N _{LT}	2.048	0.487	1.000	4.232
Eff. N _G	1.690	0.400	1.000	3.829
Margin of Victory	38.820	19.031	0.150	100.000
Turnout	76.174	7.545	43.980	96.190
Salzburg (N=936)				
N Parties	3.251	0.701	1.000	6.000
Eff. N _{LT}	2.417	0.446	1.000	4.199
Eff. N _G	2.004	0.401	1.000	3.557
Margin of Victory	25.834	15.564	0.000	100.000
Turnout	80.929	7.361	56.455	97.569
Styria (N=2670)				
N Parties	3.064	0.935	1.000	8.000
Eff. N _{LT}	2.133	0.479	1.000	5.818
Eff. N _G	1.756	0.396	1.000	5.096
Margin of Victory	35.416	18.489	0.000	100.000
Turnout	85.855	6.548	57.055	103.419
Upper Austria (N=2604)				
N Parties	3.124	0.719	1.000	8.000
Eff. N _{LT}	2.316	0.505	1.000	4.566
Eff. N _G	1.920	0.448	1.000	4.157
Margin of Victory	29.431	17.391	0.000	100.000
Turnout	86.237	5.150	61.790	99.229
Overall (N=11080)				
N Parties	3.118	0.871	1.000	8.000
Eff. N _{LT}	2.222	0.512	0.400	5.818
Eff. N _G	1.848	0.443	1.000	5.096
Margin of Victory	31.486	18.625	0.000	100.000
Turnout	83.225	7.774	43.980	103.419

these states before the introduction of direct mayoral elections.⁶ For municipalities in Lower Austria and Styria, this dummy is always 0, as direct mayoral elections have not yet been introduced in these states.

The second category of data, the socio-economic covariates, were obtained from *STATcube*, the database of *Statistik Austria* (Statistik Austria, n.d.-c).⁷ For time series data on population and communal tax, the catalogue provides data for each municipality on a yearly basis since 2000. In Austria, communal tax is paid by companies directly to the municipalities where their business is placed, and is based on the earnings of their employees at this location. I use data on communal tax revenue of municipalities as a proxy for the economic status of their inhabitants, but note that this is an imperfect proxy, as not all employees of a company necessarily live in the same municipality as their work place is. To compare communal tax revenue between municipalities of different sizes, per capita values are taken.

Two other indicators are included in the set of socio-economic covariates, namely the shares of the population of a municipality aged 65 and over and with a university degree respectively. For this, I use census data from *STATcube*. The time series at the municipal level are however incomplete for the time frame between 2000 and 2019, as the yearly collection of census data in Austria has only been established in 2011, whereas before such data has been collected every ten years. To impute the amount of inhabitants in a municipality aged 65 and over as well as the population with a university degree, I fit linear regression models for each municipality where I regress the natural logarithm of the dependent variable - the amount of people aged 65 and over and the amount of people with a university degree - on a linear time trend, using data from the censuses in 1991, 2001, and 2011 to 2019. The log is taken to avoid non-positive imputations based on the fitted values. These models fit the data quite well, with an average R^2 of 0.898 (SD=0.187) for the models with the population aged 65 and over as a dependent variable, and an average R^2 of 0.965 (SD=0.077) for the models with the population with a university degree as the dependent variable. The fitted values are then used to impute the missing observations. Again, the covariates are normalized by stating them as percentages of the total population of a municipality, to enable the comparison between different municipalities. Tables A.3 and A.4 in the appendix provide the main summary statistics of the socio-economic covariates.

⁶See Table 4.1 for an overview of when direct elections were introduced in these four states.

⁷Note that most of the data from *STATcube* used in this thesis can only be accessed with a subscription.

Table 4.3: Response rates of municipalities to incumbency survey, Study 1

	N (Sample)	N (Response)	Response Rate
Burgenland	40	22	55.0%
Carinthia	40	25	62.5%
Lower Austria	40	9	22.5%
Salzburg	40	21	52.5%
Styria	40	18	45.0%
Upper Austria	40	23	57.5%
Overall	240	118	49.2%

The second category of data - information on the candidacy of incumbent mayors - was hardest to obtain. As neither time series data of mayors⁸ nor candidate lists at local elections, with the exception of some mayoral elections, are available, this data had to be collected. To keep the data collection process within the bounds of a master thesis, I drew a random sample of 40 municipalities from each of the six states. The sample was drawn from a subset of all municipalities of a state, excluding capitals and municipalities with at least 20,000 inhabitants as well as all municipalities that were subject to municipality mergers in the relevant time period.⁹ The sampled municipalities from each state are listed in Tables A.5 to A.10 in the appendix section A.2.2. When comparing the distributions of the variables of the sampled municipalities to all municipalities in the same time frame¹⁰ in the appendix section A.2.1, no notable differences between the sampled municipalities and all municipalities are found.

The 240 sampled municipalities were then contacted via email and asked to fill out an Excel sheet with simple Yes/No answers on whether the incumbent mayor either was again candidate for the mayoral elections in case of direct mayoral elections, or was leader of a list at the municipal council elections in case of indirect mayoral elections. Response rates to this first contact were low, ranging from a maximum of eleven municipalities in Styria (27.5%) to only four municipalities in Lower Austria (10%). Four to six weeks after the email contact, all municipalities that had not yet answered the survey were contacted by phone. This led to an increase in the response rate, with almost half of the sampled municipalities providing the necessary information afterwards. Again, response rates varied between states, with 62.5% of all sampled Carinthian municipalities returning the survey, while only 22.5% did this in Lower Austria. Table 4.3 provides an overview of the response rates.

⁸Hoffer (1994) has published a yearly index on Austrian politicians, parties and mayors, but this only covers the time frame from 1994 to 2009.

⁹See Footnote 4 and Footnote 5 for more information on which municipalities are excluded.

¹⁰Sampled municipalities make up the 'Regression data', while all municipalities in the same time frame make up the 'Extended regression data'.

Table 4.4: Incumbent mayor is candidate (Study 1)

	No	Yes	N
Burgenland	15.6 %	84.4 %	160
Carinthia	16.7 %	83.3 %	120
Lower Austria	16.2 %	83.8 %	160
Salzburg	18.8 %	81.2 %	160
Styria	13.3 %	86.7 %	120
Upper Austria	7.5 %	92.5 %	120
Overall	15 %	85 %	840

To achieve full information for all sampled municipalities, I collected data on the municipalities that refused or failed to answer the survey myself. For this, I used a wide range of sources including an index of Austrian politicians, parties and mayors by Hoffer (1994), which is available for the years 1994-2009, homepages and 'community books'¹¹ of the municipalities, their respective Wikipedia pages, as well as reports in (local) newspapers, which can be accessed via the *APA Online Manager*, a media database of the Austrian Press Agency. In cases of uncertainty, the municipalities were contacted again, asking for specific information, e.g. whether a mayor resigned from his or her office before or after an election. With this data, the survey was completed for all remaining municipalities, resulting in full information for the whole sample of 240 municipalities concerning the candidacy of the incumbent mayor. Table 4.4 summarizes the distribution of this dummy variable in the sample. In an overwhelming majority of all elections (85%), the incumbent mayor was again a candidate, either for the mayor's office or in case of indirect mayoral elections as a list leader for the municipal council elections. In more than half (N=137) of all 240 municipalities in the sample, there was no local election without the incumbent mayor as candidate. This was because of either a long-serving mayor, or because mayors resigned from office during their office term.

4.1.2 Methods

The hypotheses on the impact of direct mayoral elections are tested in multiple ways in Study 1. First, I use all the available data on elections ('*Descriptive data*') to see whether the postulated effects are in line with the univariate patterns of electoral competitiveness and turnout. Second, the main part of the analysis is based on multivariate regression models, using data from the 240 municipalities for which incumbent candidacy data is available. These models will be estimated by:

$$y_{i,t} = \alpha + \beta \times D_{i,t} + \mathbf{Z}_{i,t} \times \boldsymbol{\gamma}_z + u_{i,t} \quad (4.3)$$

¹¹For many Austrian municipalities, the municipality itself has published a book on its own history.

where $y_{i,t}$ is the relevant dependent variable - (effective) number of parties, margin of victory, turnout - for municipality i at the local elections at time t , $D_{i,t}$ is a dummy for direct mayoral elections and $Z_{i,t}$ is a $1 \times k$ vector of selected control variables for a given municipality i at year t . The control variables are the socio-economic covariates discussed in the section above and include population, the share of inhabitants aged 65 and over, the share of inhabitants with a university degree, as well as the communal tax per capita. In case of turnout, I also include a linear time trend to control for a secular decrease in participation as well as the effective number of parties as a proxy for electoral competitiveness. To test the hypotheses with interactions, the model is expanded with an interactions between the dummy $D_{i,t}$ and the interaction variable, either the incumbent candidacy dummy or the population size.

However, estimating the models as simple OLS regressions is not suitable for the data at hand, as the observations are both nested within the municipalities as well as within the specific election of a state. It cannot be safely assumed that the election in municipality i at time t is independent of the one at time $t+1$, because the underlying determinants of turnout or electoral competitiveness have remained stable in this municipality. At the same time, for two municipalities i and j in the same state, it cannot be expected that these are independent of each other at the election at time t , as there may well be state-wide trends in turnout or electoral competitiveness. Since therefore the observations cannot be assumed to be independent, estimating the models as simple OLS regressions can result in drastically underestimated standard errors, which in turn will lead to misleading statistical inference based on these standard errors (Cameron & Miller, 2015).

Such a nested data structure can be corrected for in several ways. One possibility is including fixed effects (Best & Wolf, 2015). In my case, this would mean expanding the model in Equation 4.3 with municipality- and election-dummies.¹² It would also be possible to include year-dummies instead, but this would imply the same trends in two different states where local elections are held in the same year, which may well not be the case. The problem arising here is that a fixed effect model will estimate the parameter β only based on within-unit variation (Best & Wolf, 2015). But since the data only covers elections from 2000 onwards, there is no within variation inside the municipalities in the main dependent variable, as either there are always or never direct mayoral elections. The second possibility is to recalculate the variance-covariance matrix of the error term, by using clustered standard errors, which is the option used in this thesis. As the data is clustered two ways, I apply multi-way clustering based on Cameron et al. (2011). The variance-covariance matrix of the error

¹²For the election dummies, as all local elections from the same state that are included in the sample are held at the same date, this would mean that for example one election dummy would take on the value 1 for all observations in Burgenland in 2002, and 0 for all other observations.

term is thus estimated with clustering in municipalities as well as elections. Applying this in the software **R** (R Core Team, 2022), where all the empirical analysis of this thesis is performed, I use the package `multiwayvcov` by Graham et al. (2016) for multi-way clustering of OLS linear regressions.¹³

To ensure the validity of the results, several robustness checks are performed. First, the hypotheses on the effective number of parties are re-estimated using the operationalization by Golosov (2010) for the dependent variable instead of the classical one by Laakso and Taagepera (1979). Second, all models are again estimated using subsamples excluding all municipalities in Upper Austria or all from Carinthia. This is due to the fact that in Upper Austria, elections at the municipality level are held at the same date as elections at the state level, which in turn could have spillover effects from the higher to the lower level in terms of electoral competitiveness as well as turnout. For example, competitiveness may be influenced by issues at the state level and not the municipality level, or better organized and financed campaigns may lead to higher turnout rates. For Carinthia, the actual and effective number of parties is notably higher throughout the whole period and even before the introduction of directly elected mayors. Excluding this state will show whether effects of direct mayoral elections are only driven by this outlier state. Third, I check whether the findings for all hypotheses excluding the interactions with incumbent mayor candidacy are the same for the larger data set of all local elections in the six included Austrian states since 2000 (i.e. the Extended regression data set). For this data set, I again estimate the models with the second variation of the effective number of parties operationalization and with the subsamples excluding Upper Austria and Carinthia separately. Furthermore, due to the substantially larger number of observations I am also able to check with this data whether the results are driven by outliers, specifically by either very small or very big municipalities. For this, I perform a subsample analysis excluding the first and last decile of municipalities based on the population size.

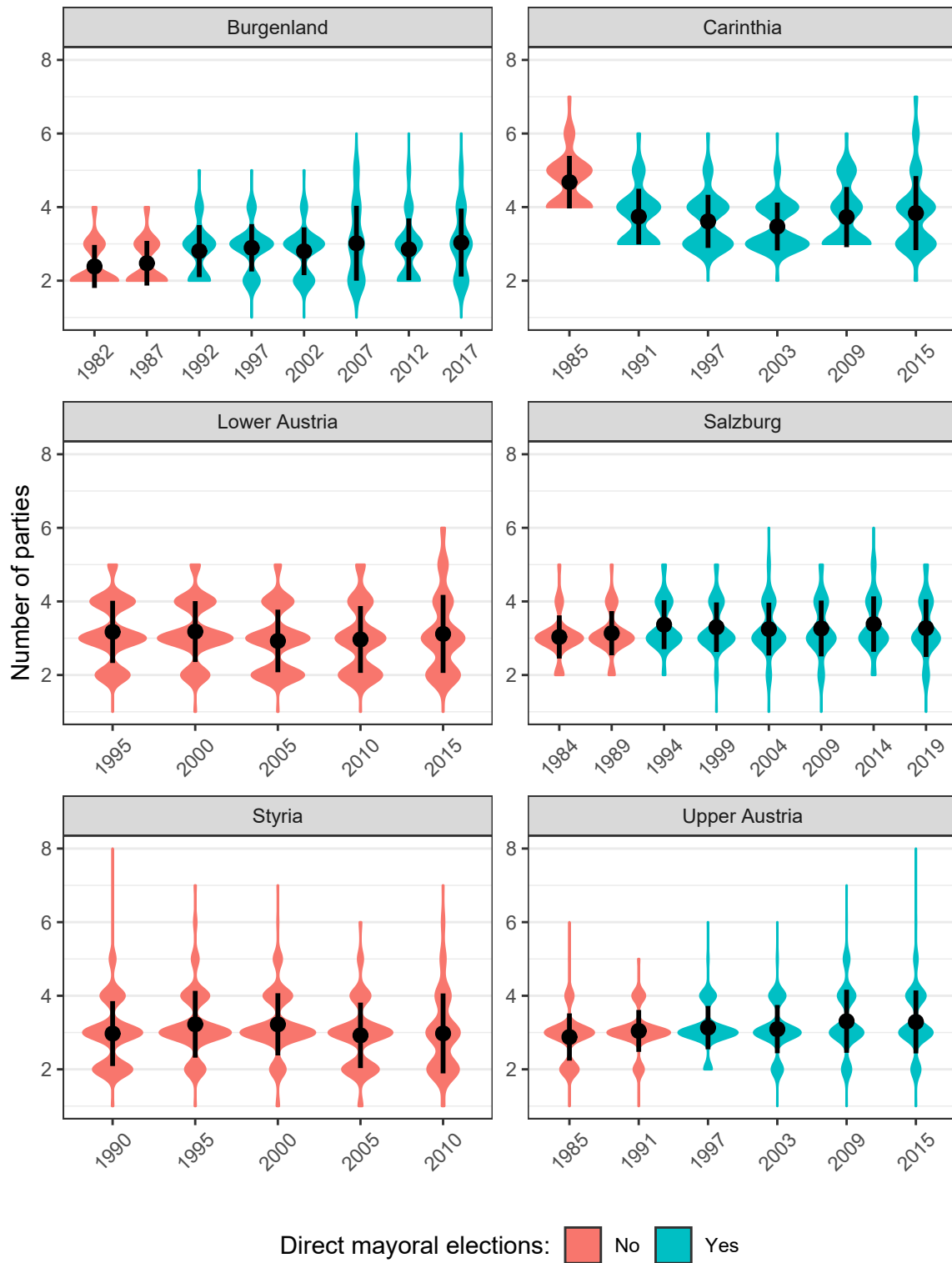
4.2 Results

4.2.1 Bivariate patterns

Before I turn towards a more rigorous multivariate analysis of the impact of having direct mayoral elections on various indicators for electoral competitiveness and participation, I first present the trends over time in the dependent variables as well as bivariate relationships between the dependent and the main independent variable in each state. This offers initial insights whether there is support of the overarching hypotheses of this master thesis, namely how having direct elections for may-

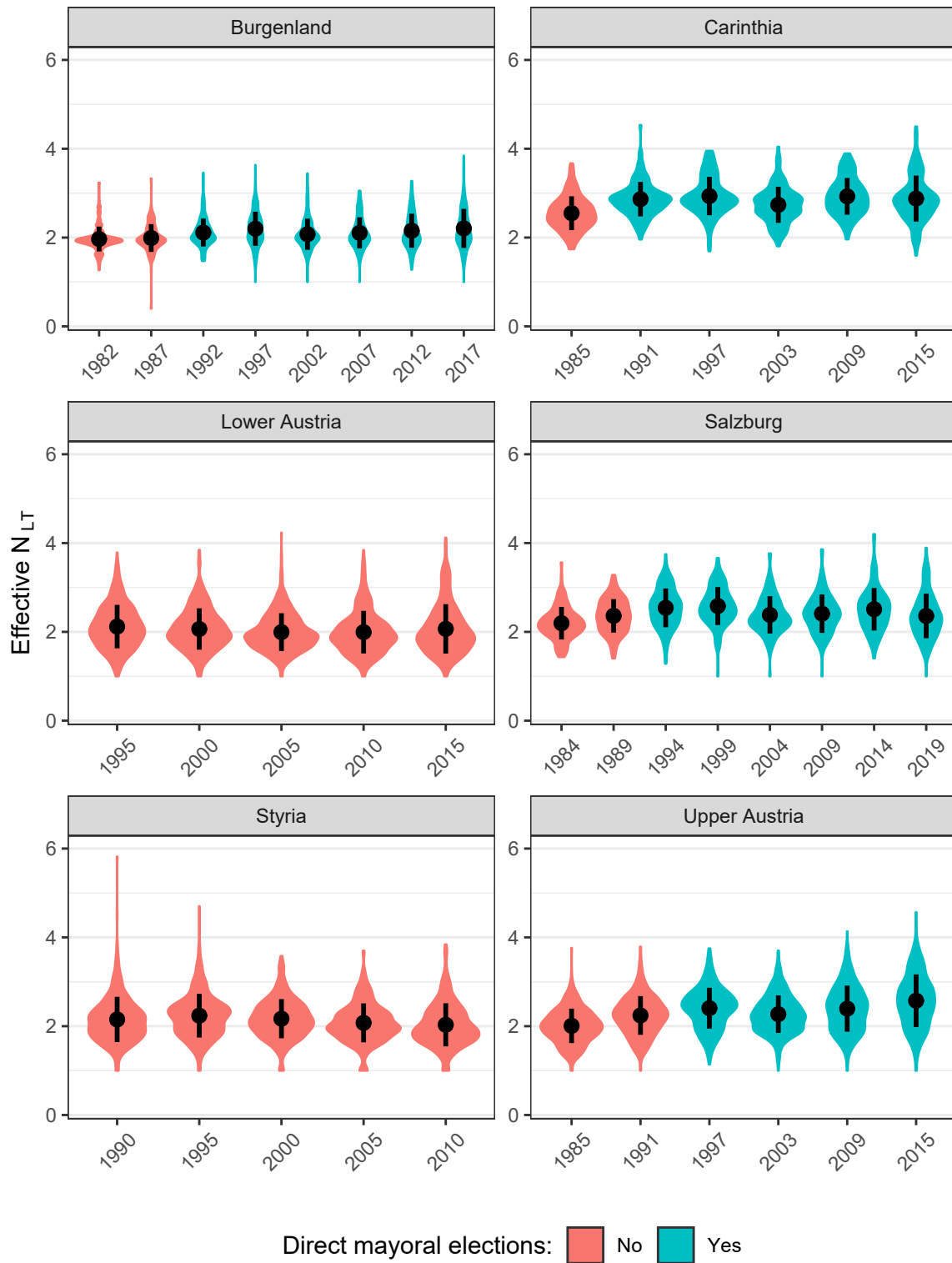
¹³Note that all **R** scripts as well as the data necessary for the replication of all results can be obtained on demand from the author.

Figure 4.1: Development of number of parties (Study 1)



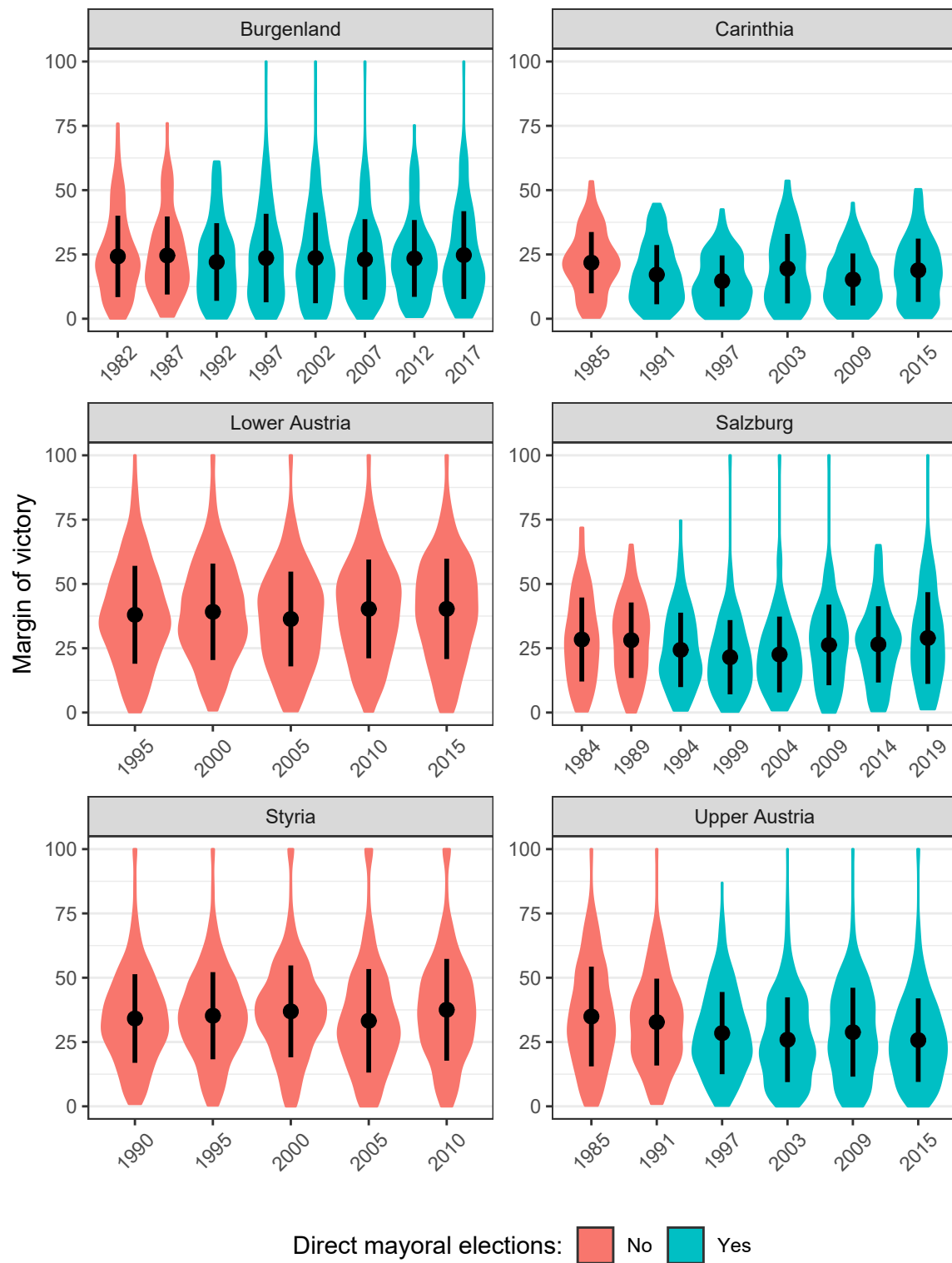
Note: Point is mean, lines show mean $\pm$ standard deviation.

Figure 4.2: Development of effective number of parties_{LT} (Study 1)



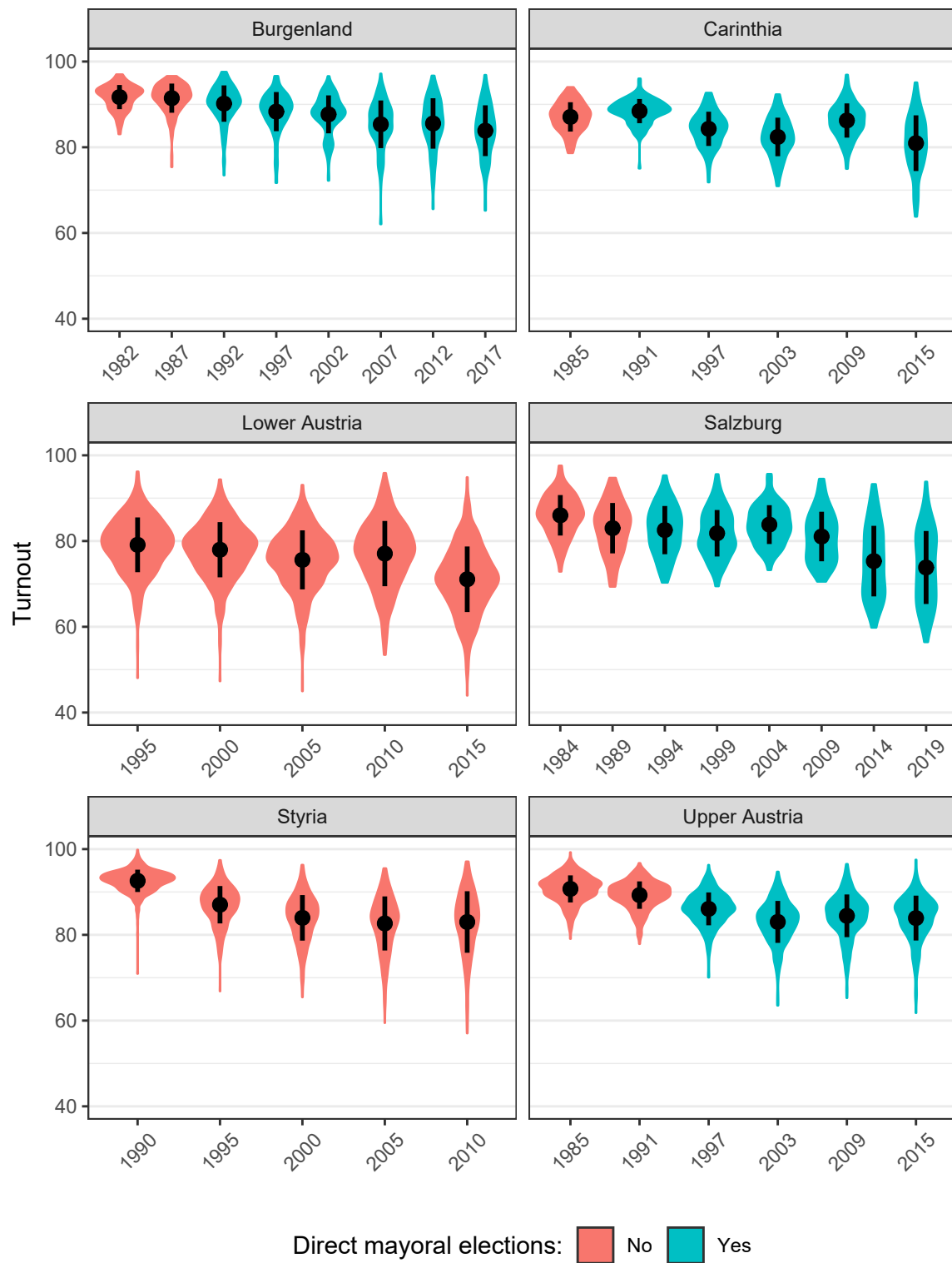
Note: Point is mean, lines show mean $\pm$ standard deviation.

Figure 4.3: Development of margin of victory (Study 1)



Note: Point is mean, lines show mean $\pm$ standard deviation.

Figure 4.4: Development of turnout (Study 1)



Note: Point is mean, lines show mean $\pm$ standard deviation.

ors impacts competitiveness and whether it increases participation in local elections. For electoral competitiveness, I consider several indicators: the number of parties on the ballot sheet, the effective number of parties, as well as the margin of victory between the first- and second-placed party. For the first dependent variable - the number of parties - a t-test shows that consistent with the hypothesis, the number of parties is significantly higher ($t(DF=9300.2)=-9.878$, $p<0.001$) in local elections with simultaneous direct election of the mayor ($M=3.22$, $SD=0.81$) in contrast to local elections without it ($M=3.06$, $SD=0.90$). However, as is apparent from 4.1, the number of parties at municipal council elections already varied between the states before the introduction of directly elected mayors in some of them, with especially Carinthia being an outlier in the period before the introduction. In the two states that did not introduce directly elected mayors - Lower Austria and Styria - the number of parties at local elections remained relatively stable over time. When comparing the differences within the states that have introduced direct mayoral elections, there are no clear patterns. In Burgenland, Salzburg and Upper Austria I find as expected a significantly higher number of parties at municipal council elections in the period after the introduction compared to the period before, while for Carinthia there is a significant decrease.¹⁴

Turning to the second indicator for electoral competitiveness - the effective number of parties - I find that the patterns contradict the initial hypothesis of decreasing electoral competitiveness in municipal council elections concerning this indicator due to the introduction of directly elected mayors. The average effective number of parties in municipal council elections is significantly lower ($t(8023.4)=-32.828$, $p<0.001$) if mayors are elected indirectly ($M=2.10$, $SD=0.47$) compared to if mayors are elected directly at the same time ($M=2.43$, $SD=0.51$). The within-state differences in Burgenland, Carinthia, Salzburg and Upper Austria before and after the introduction of directly elected mayors back up this pattern uniformly.¹⁵ In contrast to the number of parties, I therefore also find an increase in electoral competitiveness based on this indicator for Carinthia. But as Fig. 4.2 shows, the effective number of parties varied quite substantially after the introduction of direct mayoral elections. In Burgenland and Upper Austria, some later elections again show a distribution of the effective number of parties that is quite similar to some elections before the reform. The initial effective number of parties in Carinthia before the introduction of directly elected mayors is now much closer to the levels in the other states, although still slightly higher. This indicates that the

¹⁴T-tests on number of parties within states:

Burgenland: before ($M=2.43$, $SD=0.60$) vs. after ($M=2.90$, $SD=0.81$), $t(576.82)=-10.655$, $p<0.001$

Carinthia: before ($M=4.68$, $SD=0.71$) vs. after ($M=3.68$, $SD=0.81$), $t(176.26)=13.677$, $p<0.001$

Salzburg: before ($M=3.09$, $SD=0.59$) vs. after ($M=3.31$, $SD=0.73$), $t(482.55)=-4.645$, $p<0.001$

Upper Austria: before ($M=2.96$, $SD=0.61$) vs. after ($M=3.21$, $SD=0.75$), $t(2083.6)=-8.865$, $p<0.001$

¹⁵T-tests on effective number of parties_{LT} within states:

Burgenland: before ($M=1.98$, $SD=0.30$) vs. after ($M=2.14$, $SD=0.37$), $t(532.45)=-7.646$, $p<0.001$

Carinthia: before ($M=2.55$, $SD=0.38$) vs. after ($M=2.87$, $SD=0.44$), $t(178.66)=-8.18$, $p<0.001$

Salzburg: before ($M=2.29$, $SD=0.38$) vs. after ($M=2.46$, $SD=0.46$), $t(474.28)=-6.140$, $p<0.001$

Upper Austria: before ($M=2.12$, $SD=0.43$) vs. after ($M=2.41$, $SD=0.51$), $t(2035.7)=-15.026$, $p<0.001$

considerable difference the number of parties (see Fig 4.1) is due to an unusual amount of very small parties at the Carinthian local elections of 1985. Fig. 4.2 further shows that also the effective number of parties remained relatively stable over time in the two states without directly elected mayors.

The specific way of measuring the effective number of parties did not affect the patterns emerging from this simple descriptive analysis. While the paragraph above is based on the operationalization by Laakso and Taagepera (1979), using the one by Golosov (2010) again resulted in contradictions to the initial hypothesis of a lower effective number of parties due to direct mayoral elections. Fig. A.1 in the Appendix shows similar patterns over time in the different states compared to Fig. 4.2. Based on this way of measuring, municipal council elections result on average in 1.73 effective parties (SD=0.39) if mayors are not elected directly compared to an average of 2.03 (SD=0.46) if they are, with the difference being significant ($t(7546)=-34.315$, $p<0.001$). This contradicting result is again backed up by the differences within the states that introduced directly elected mayors, with all of Burgenland, Carinthia, Salzburg, and Upper Austria showing a significantly higher effective number of parties after the reform was implemented.¹⁶

For the margin in the vote share between the first and second party, the patterns are again mostly in line with what has been already observed for the first two indicators of electoral competitiveness. Again, in municipal council elections with a simultaneous election of the mayor the margin of victory was higher ($M=35.69$, $SD=18.77$) compared to local elections where the mayor was not directly elected ($M=24.31$, $SD=16.01$), with the difference being significant ($t(9673.1)=33.848$, $p<0.001$), and therefore local elections seem to be more competitive if the mayor gets elected in a separate election. However, it is evident from Fig. 4.3 that in the two states without directly elected mayors, the local elections were already less close between the first and second party when comparing them to most of the other states before the introduction of direct mayoral elections. Yet the within-state differences also show for most of the states that implemented the reform that the margin of victory was lower after the introduction of direct mayoral elections. For Burgenland, the difference is not significant.¹⁷ Note also that especially for Salzburg but to some degree also for the other states with direct mayoral elections, the margin of victory varies quite a lot between the different elections after the reform.

¹⁶T-tests on effective number of parties_G within states:

Burgenland: before ($M=1.71$, $SD=0.27$) vs. after ($M=1.84$, $SD=0.34$), $t(534.57)=-6.360$, $p<0.001$

Carinthia: before ($M=2.12$, $SD=0.38$) vs. after ($M=2.42$, $SD=0.44$), $t(183.64)=-7.703$, $p<0.001$

Salzburg: before ($M=1.89$, $SD=0.35$) vs. after ($M=2.04$, $SD=0.41$), $t(469.52)=-5.736$, $p<0.001$

Upper Austria: before ($M=1.76$, $SD=0.37$) vs. after ($M=2.00$, $SD=0.46$), $t(2111)=-14.402$, $p<0.001$

¹⁷T-tests on the margin of victory within states:

Burgenland: before ($M=24.41$, $SD=15.47$) vs. after ($M=23.43$, $SD=16.27$), $t(449.91)=0.919$, $p=0.36$

Carinthia: before ($M=21.08$, $SD=11.91$) vs. after ($M=17.08$, $SD=11.67$), $t(160.92)=3.975$, $p<0.001$

Salzburg: before ($M=28.25$, $SD=15.49$) vs. after ($M=25.03$, $SD=15.52$), $t(400.19)=2.756$, $p=0.006$

Upper Austria: before ($M=33.84$, $SD=18.20$) vs. after ($M=27.23$, $SD=16.54$), $t(1595.2)=9.000$, $p<0.001$

Finally, Fig. 4.4 shows the development of turnout over time. A decline in turnout at municipal council elections over time can be found in each state. A two-sided t-test ($t(10695)=-10.936$, $p<0.001$) indicates that turnout is lower in local elections where only the municipal council is elected ($M=82.66$, $SD=8.57$) than in those where there is an additional election of the mayor ($M=84.19$, $SD=6.07$). This is in line with the hypothesis on the relationship between turnout and having direct mayoral elections. However, as is apparent from the figure, Lower Austria - where no mayoral elections have been introduced - already had drastically lower turnout rates compared to the pre-reform elections in those states that have mayoral elections nowadays, which indicates that the differences in turnout between the different systems of mayoral elections are at least not solely due to the reform itself. Furthermore, the within-state patterns are in contrast to the hypothesis of higher turnout if the mayor gets elected directly. In all of the four states that introduced direct electoral elections, turnout is significantly lower post-reform.¹⁸ However, this pattern is also in line with the general decline in turnout at local elections in the recent years, and the negative relationship between direct elections of mayors and turnout at local elections may be due to other developments over time instead of the change in the electoral institutions.

To sum up, this short descriptive analysis does not provide any substantive support for most of the proposed hypotheses. On the contrary, for the impact of the introduction of direct mayoral elections on electoral competitiveness, the figures and t-tests mostly show higher electoral competitiveness for all three indicators whenever mayors are simultaneously elected, which while supporting H1 is at odds with H2 and H3. This relationship was also supported by most of the within-state developments. For electoral participation, the bivariate analysis did not offer any clear indications. While in general turnout was higher at municipal elections when a mayor was elected simultaneously, this might be an artifact of already higher turnout rates before the reforms in Burgenland, Carinthia, Salzburg, and Upper Austria due to some other underlying factors. Indeed, in these four states turnout decreased post-reform, although this is in line with a general decrease in electoral participation over time. To come up with more conclusive evidence on the hypotheses, multivariate models are needed to control for other covariates. Furthermore, I try to react to the fact of the higher-than-usual level of electoral competitiveness in Carinthia pre-reform by performing robustness checks on the subsample excluding this state. However, there the issue of differing levels in the dependent variables between the states

¹⁸T-tests on turnout within states:

Burgenland: before ($M=91.58$, $SD=3.12$) vs. after ($M=86.80$, $SD=5.55$), $t(785.2)=18.584$, $p<0.001$

Carinthia: before ($M=87.08$, $SD=3.42$) vs. after ($M=84.46$, $SD=5.24$), $t(231.34)=6.964$, $p<0.001$

Salzburg: before ($M=84.50$, $SD=5.53$) vs. after ($M=79.74$, $SD=7.51$), $t(540.22)=10.384$, $p<0.001$

Upper Austria: before ($M=89.99$, $SD=3.26$) vs. after ($M=84.36$, $SD=4.89$), $t(2398.5)=34.956$, $p<0.001$

with direct mayoral elections and those without even before the reform - especially for turnout - may not be solved just by considering several covariates. The results of the multivariate analysis therefore also have to be interpreted keeping the initial differences in mind.

4.2.2 Multivariate Analysis

To see whether there exists support for the hypotheses when controlling for covariates, I estimate a number of linear regression models. The results of the baseline models (i.e. those without any interaction terms) for electoral competitiveness are summarized in Table 4.5. Here I regress each of the three indicators for electoral competitiveness - the number of parties, the effective number of parties, and the margin of victory - on the dummy variable for direct mayoral elections as well as a set of socio-economic control variables. The quoted standard errors of the regression coefficients are based on two-way clustering.¹⁹ Before turning to the core interest of this thesis, the impact of direct mayoral elections, a short discussion of the effects of the covariates is merited. As is apparent from Table 4.5, both the actual and the effective number of parties at municipal elections increase with population size, *ceteris paribus*. The same is the case for the share of the municipality population that has a university degree. For the two other covariates - the share of population aged 65 and above and the communal tax/capita - no significant effects are found. Note also that none of the four covariates are significant for the model with the margin of victory as its dependent variable (Model 3).

The hypotheses on electoral competitiveness expected that the actual number of parties is higher (H1), the effective number of parties lower (H2), and the margin of victory higher (H3) if there are direct mayoral elections. The baseline regression models only support the first hypothesis. For all three indicators of electoral competitiveness the baseline models indicate more competitive elections if mayors are directly elected, with municipal council elections having on average a higher number of parties on the ballot sheet, a higher effective number of parties, and a smaller margin of victory between the first- and second-placed party, whenever the mayor is elected directly (*ceteris paribus*). This difference is significant for all three indicators at the 10% level. Whenever there are directly elected mayors, the actual number of parties is on average 0.213 higher, the effective number of parties on average 0.338 higher, and the margin of victory 11 percentage points lower, keeping all else equal. Thus, the baseline models support Hypothesis 1 but do not support the Hypotheses 2-3, which therefore have to be rejected. Furthermore, they indicate that the introduction of directly elected mayors might have increased electoral competitiveness overall and not just in terms of the actual number of parties.

¹⁹For a more detailed discussion of the method choice, see the Methods section in 4.1.2.

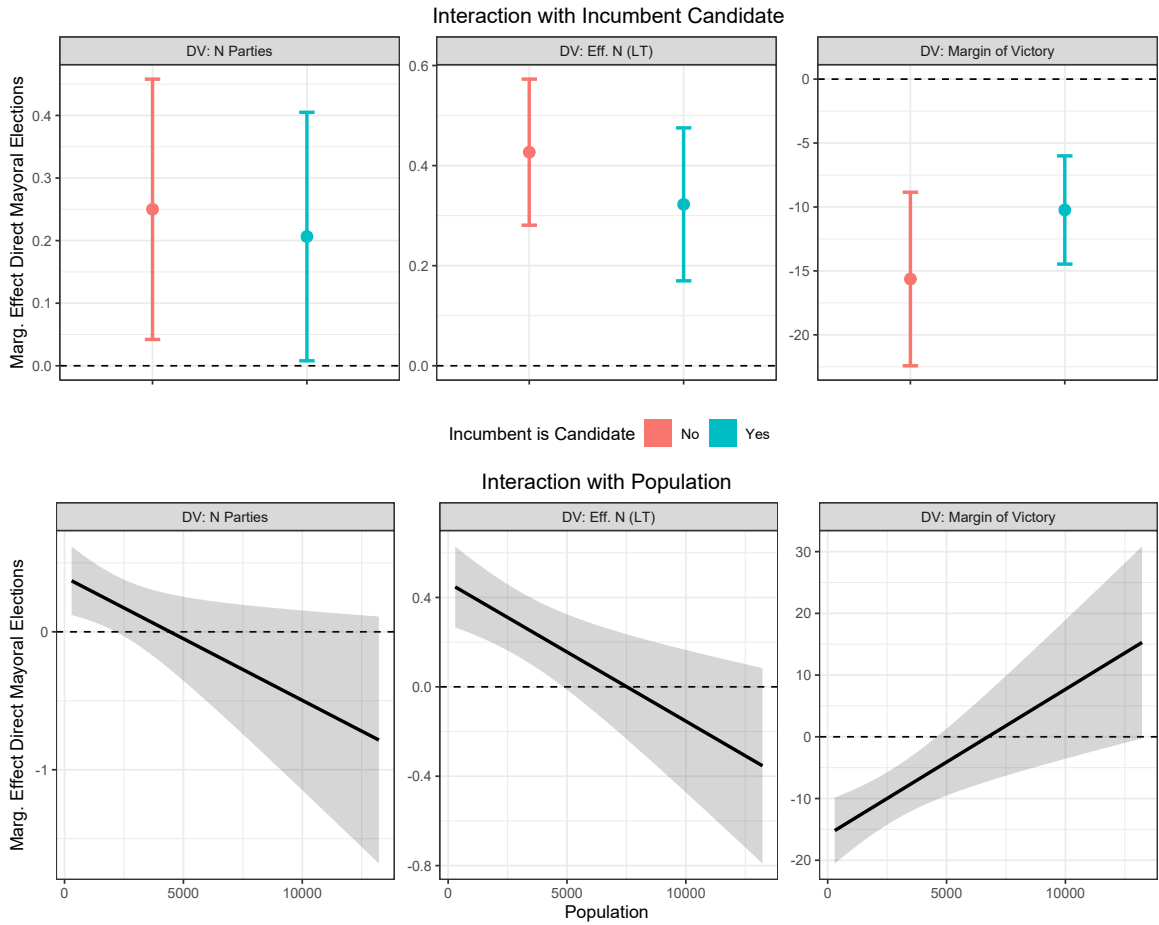
Table 4.5: Baseline regressions for electoral competition (Study 1)

	N Parties (1)	Eff. N _{LT} (2)	Margin of Victory (3)
Direct Mayoral Elections	0.213* (0.119)	0.338*** (0.089)	-11.044*** (2.538)
Population	0.0002*** (0.00002)	0.0001*** (0.00001)	-0.0005 (0.001)
Share of Pop. 65+	-0.016 (0.012)	-0.010 (0.008)	-0.308 (0.231)
Share of Pop. with Uni Degree	0.060*** (0.013)	0.034*** (0.009)	-0.181 (0.264)
Communal Tax/Capita	-0.0002 (0.0004)	-0.0003 (0.0003)	0.010 (0.010)
(Intercept)	2.611*** (0.251)	1.981*** (0.168)	40.375*** (4.961)
Observations	840	840	840
R ²	0.307	0.236	0.108
Adjusted R ²	0.303	0.231	0.102
Residual Std. Error	0.701	0.437	15.904
F Statistic	73.794***	51.437***	20.129***
<i>Note:</i>	2-way clustered SE; *p<0.1; **p<0.05; ***p<0.01		

I further assumed that the relationship between electoral competitiveness and direct mayoral elections depends on both the candidacy of the incumbent mayor and the population size of the municipality. The hypotheses were that electoral competitiveness measured by the effective number of parties and the margin of victory at municipal council elections would be even lower under direct mayoral elections if the incumbent is again a candidate for the mayor's office due to spillover effects of the incumbency bonus (H4b-c), and if the population size is higher due to stronger personalization effects (H5b-c). Further, the increase in actual number of parties due to direct mayoral elections is expected to be lower if the incumbent is again a candidate (H4a) and if the population is smaller (H5a). To test these hypotheses, I included interactions with incumbent mayor candidacy and population size respectively. Table 4.6 summarizes the results of Models 4-9. For the interaction with incumbent candidacy, I find no support for my hypotheses. Fig. 4.5 shows that electoral competitiveness in municipalities that have direct mayoral elections is on average lower if the incumbent mayor is again candidate, i.e. on average the actual and the effective number of parties is lower, and the margin of victory higher (*ceteris paribus*). However, even if we take interaction effects with the candidacy of the incumbent into consideration, the effect of direct mayoral elections on the effective number of parties and the margin of victory is against the expectations of H2-3 and thus also against those of H4b-c. While the pattern for the actual number of parties is as expected in H4a, the group differences are not significant in any of the models 4-6. The effect of direct mayoral elections on electoral competitiveness thus does not depend on whether the incumbent mayor is a candidate. Hypothesis 4 therefore has to be rejected. On a side note, the models also suggest that candidacy of the incumbent mayor does not affect electoral competitiveness. Including this variable together with the interaction term also did not improve the model fit, when comparing the adjusted R^2 for the Models 4-6 in Table 4.6 with those of the baseline models in Table 4.5.

For the second interaction with population size, Models 7-9 in Table 4.6 show a significant interaction coefficient for all three dependent variables. But as for interactions with a metric variable significance levels are dependent on the scaling of this variable, it is of more use to analyze the marginal effect of direct mayoral elections depending on the population size graphically. Fig. 4.5 shows that the marginal effect of having direct mayoral elections on both the actual and the effective number of parties at municipal council elections is only positive and significant for smaller municipalities, and becomes negative but insignificant for larger ones. For the margin of victory, the marginal effect is negative and significant for the smaller municipalities and positive but insignificant for larger ones. Thus the results suggest for all three indicators that electoral competitiveness is higher under direct mayoral elections for smaller municipalities whereas there are no differences for more populated

Figure 4.5: Marginal effects of direct mayoral elections on electoral competitiveness - with interactions (Study 1)



Note: Standard errors based on 2-way clustering.

Table 4.6: Regressions for electoral competition with interactions (Study 1)

	N Parties (4)	Eff. N _{LT} (5)	Margin of Victory (6)	N Parties (7)	Eff. N _{LT} (8)	Margin of Victory (9)
Direct Mayoral Elections	0.250** (0.126)	0.427*** (0.089)	-15.634*** (4.126)	0.396** (0.160)	0.465*** (0.114)	-15.888*** (3.413)
Direct:Incumbent	-0.044 (0.072)	-0.104 (0.073)	5.398 (3.765)			
Direct:Population				-0.0001* (0.00005)	-0.0001** (0.00002)	0.002*** (0.001)
Incumbent is candidate	0.040 (0.048)	0.049 (0.048)	-2.741 (3.263)			
Population	0.0002*** (0.00002)	0.0001*** (0.00001)	-0.0005 (0.001)	0.0002*** (0.00004)	0.0001*** (0.00002)	-0.002*** (0.001)
Share of Pop. 65+	-0.016 (0.012)	-0.010 (0.008)	-0.292 (0.233)	-0.016 (0.012)	-0.009 (0.008)	-0.320 (0.229)
Share of Pop. with Uni Degree	0.060*** (0.013)	0.034*** (0.009)	-0.175 (0.254)	0.060*** (0.013)	0.034*** (0.009)	-0.175 (0.265)
Communal Tax/Capita	-0.0002 (0.0004)	-0.0003 (0.0003)	0.010 (0.010)	-0.0003 (0.0004)	-0.0003 (0.0003)	0.011 (0.010)
(Intercept)	2.578*** (0.258)	1.945*** (0.170)	42.407*** (5.496)	2.469*** (0.266)	1.883*** (0.177)	44.109*** (5.253)
Observations	840	840	840	840	840	840
R ²	0.307	0.237	0.111	0.314	0.246	0.121
Adjusted R ²	0.301	0.231	0.103	0.309	0.241	0.114
Residual Std. Error	0.702	0.437	15.894	0.697	0.434	15.796
F Statistic	52.608***	36.948***	14.831***	63.626***	45.296***	19.080***

Note:

2-way clustered SE; *p<0.1; **p<0.05; ***p<0.01

ones (*ceteris paribus*). All of H5a-c are therefore not supported and have to be rejected. On the contrary, the results suggest that having directly elected mayors increases electoral competitiveness at municipal council elections in smaller municipalities.

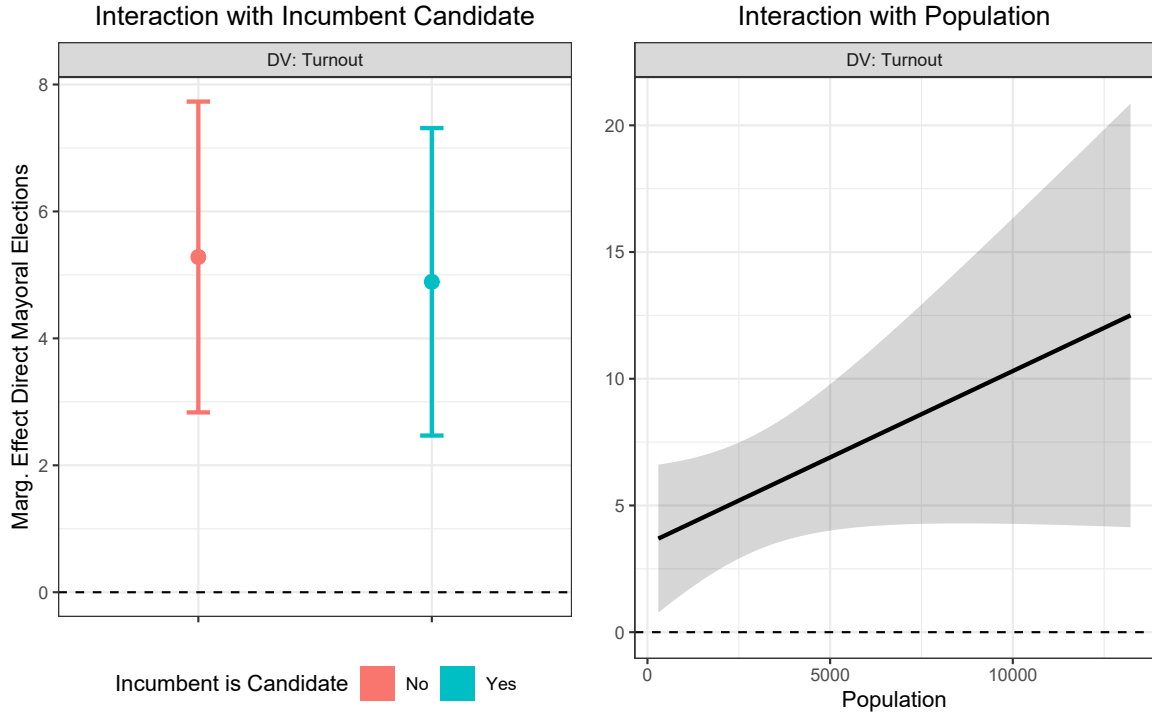
To sum up, the multivariate analysis did not support any of the hypotheses on electoral competitiveness, with the exception of H1 (increasing actual number of parties with direct mayoral elections). Instead it suggested that the reform may have increased electoral competitiveness in all three aspects that were included. This is in line with the descriptive analysis in the section before. Next, I consider the relationship between direct mayoral elections and electoral participation. The hypothesis is that the reform has increased turnout. Table 4.7 summarizes the regression results of the baseline model without interaction effects as well as the two models with interaction effects for incumbent candidacy and population size. Before considering the implications of the regression results for the hypotheses, I shortly discuss the effects of the control variables. Both population and time (year) have the expected negative effect on turnout (although the linear time trend is not significant), while the share of the population aged 65 and above has no significant effect in any of the three models. Counterintuitively, both the share of population with a university degree and communal tax/capita have a negative effect on turnout, although the effect of communal tax/capita is not significant in Model 12. This would mean that keeping everything else equal, municipalities have on average lower turnout at municipal council elections if their population is more educated or if the municipality is more affluent. How competitive an election is - measured by the effective number of parties - also has no significant effect on turnout.

The baseline model further indicates that municipalities have on average higher turnout at municipal council elections if the mayor is elected directly. Having direct mayoral elections increases turnout on average by almost five percentage points, keeping all else equal. Hypothesis 6 is therefore supported by the multivariate analysis, but keep in mind that the descriptive analysis showed that the states that introduced directly elected mayors had in many cases already higher turnout levels pre-reform. The positive and significant effect may therefore simply be an artifact of these pre-reform differences, and not due to the reform itself. Turning to the interaction effects, Model 11 suggests that the effect of direct mayoral elections does not depend on whether the incumbent mayor is again a candidate. Hypothesis 7, which expected a reduction in the turnout increase due to direct mayoral elections if the incumbent mayor is again a candidate, therefore has to be rejected. Furthermore, incumbent candidacy has no effect on the dependent variable. For the population size, I expected that the positive effect of direct mayoral elections on turnout in municipal council elections becomes stronger

Table 4.7: Regressions for turnout (Study 1)

	Baseline (10)	:Incumbent (11)	:Population (12)
Direct Mayoral Elections	4.947*** (1.456)	5.282*** (1.489)	3.489* (1.865)
Direct:Incumbent		-0.391 (0.663)	
Direct:Population			0.001 (0.0005)
Incumbent is candidate		-0.001 (0.413)	
Eff. N	0.275 (0.725)	0.266 (0.727)	0.425 (0.738)
Population	-0.001*** (0.0002)	-0.001*** (0.0002)	-0.002*** (0.0004)
Share of Pop. 65+	0.047 (0.129)	0.045 (0.128)	0.044 (0.129)
Share of Pop. with Uni Degree	-0.578*** (0.116)	-0.577*** (0.116)	-0.583*** (0.118)
Communal Tax/Capita	-0.005* (0.003)	-0.005* (0.003)	-0.005 (0.003)
Year	-0.183 (0.115)	-0.183 (0.116)	-0.181 (0.116)
(Intercept)	452.106* (230.791)	451.825* (231.552)	447.904* (231.255)
Observations	840	840	840
R ²	0.424	0.424	0.430
Adjusted R ²	0.419	0.418	0.424
Residual Std. Error	5.466	5.471	5.441
F Statistic	87.383***	67.872***	78.245***
<i>Note:</i>	2-way clustered SE; *p<0.1; **p<0.05; ***p<0.01		

Figure 4.6: Marginal effects of direct mayoral elections on turnout - with interactions (Study 1)



Note: Standard errors based on 2-way clustering.

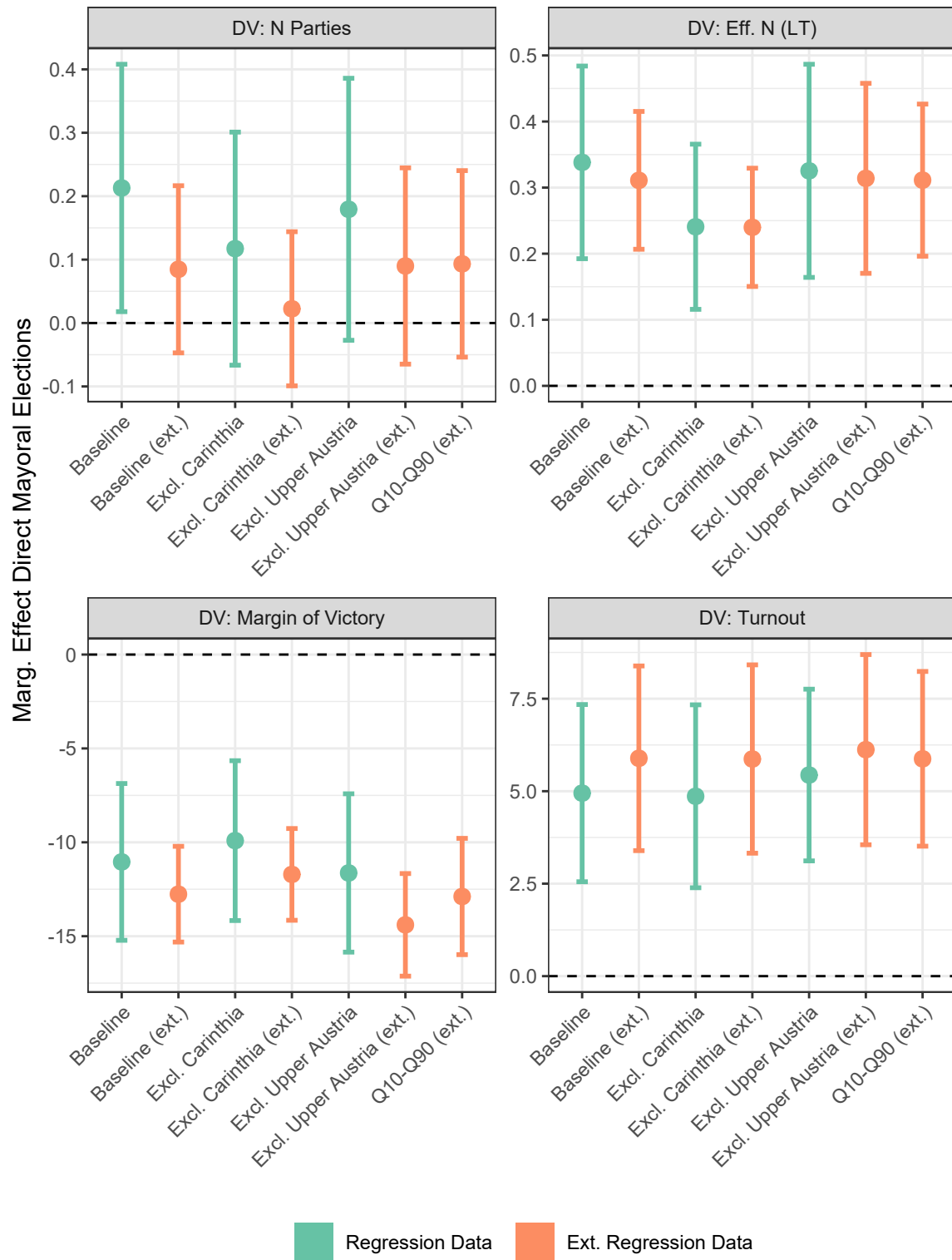
with increasing population size. This hypothesis is supported by the multivariate analysis. As Fig. 4.6 shows, the marginal effect of direct mayoral elections on turnout indeed increases with the population size of a municipality.

To check how much the multivariate results depend on choices on sample selection and operationalization, I perform several robustness checks.²⁰ To account for the unusual high level of electoral competitiveness in Carinthia before the reform, I run all the models again using a subsample excluding all Carinthian municipalities. Further, since Upper Austria has its state elections on the same date as the local elections, the same procedure is applied to the subsample of all municipalities excluding those in Upper Austria. I also check whether the random sample that was drawn to collect data on incumbent candidacy was not representative and therefore led to a bias in the results. Therefore, I also run all the models, excluding those including the interaction with the incumbent candidate due to unavailable data, using data on all municipalities from the six selected states between 2000 and 2019.²¹ For this extended data set, I further perform subsample analysis excluding all Carinthian and Upper Austrian municipalities respectively, as well as only considering the subsample excluding municipalities in the first and last decile of population size, to check whether results are driven

²⁰The regression results of these robustness checks are summarized in Tables A.11-A.26 in Appendix section A.2.4.

²¹This is the "Extended regression data set", see subsection 4.1.1 for more information.

Figure 4.7: Marginal effects of direct mayoral elections - Robustness checks (Study 1)



Note: Standard errors based on 2-way clustering.

by either very small or very big municipalities. Finally, I measure the effective number of parties with the operationalization proposed by Golosov (2010) as opposed to Laakso and Taagepera (1979), which addresses the fact that effective number of parties following the classical measurement can misrepresent the competitiveness in systems with one dominant party.

Fig. 4.7 shows the marginal effects of direct mayoral elections on different dependent variables based on the models without interaction effects for each robustness check as well as the initial regression models (*Baseline*). Although the effect level varies between the different models, the effect direction is robust to different sample selections for each dependent variable. Note that for the actual number of parties, the effect of direct mayoral elections is only significant in the baseline specification. Therefore H1 is not supported by any of the robustness checks. In all of the models without interaction effects, having direct mayoral elections is associated with an on average higher effective number of parties and a smaller margin of victory at municipal council elections. This is further evidence that contrary to the hypotheses, electoral competitiveness is higher if there are direct mayoral elections even when considering the effective number of parties and the margin of victory. Therefore Hypotheses 2-3 have to be rejected. H2 also needs to be rejected using a different measurement of the effective number of parties following Golosov (2010), as also for this operationalization the models indicate a higher effective number of parties both using the original regression and the extended regression data in case of simultaneous direct mayoral elections (see Tables A.11 and A.20 as well as Figure A.7 in the Appendix). For electoral participation, all robustness checks show that on average turnout at municipal council elections is higher if the mayor is elected directly, keeping all else equal. Hypothesis 6 is thus supported by all robustness checks.

For the interaction effects, the evidence by the robustness checks is not as clear cut. Fig. A.2 in the Appendix shows the marginal effects of having direct mayoral elections on the four dependent variables depending on whether the incumbent mayor is a candidate again. Robustness checks for the hypotheses on this interaction could only be based on the sampled data, hence there are only two subsample analyzes, one excluding all Carinthian municipalities and one excluding Upper Austria. For the number of parties, the margin of victory and turnout, none of the robustness check models show significant interactions. The marginal effect of having direct mayoral elections on these variables does therefore not depend on whether the incumbent mayor is again a candidate. For the effective number of parties however, both subsample analyzes show significant group differences. The increase in the effective number of parties if there are direct mayoral elections is significantly lower when the mayor is again a candidate. As Fig. A.7 in the Appendix shows, this pattern can also be found when using the effective number of parties measure by Golosov (2010). This is in contrast to the

initial model, which showed no significant differences. As the results from these robustness checks still indicate an increase in electoral competitiveness instead of a decrease whenever the mayor is elected directly, they are still in contradiction to H4b. All robustness checks hence reject the hypotheses on the interaction between the method of mayor election and incumbent mayor candidacy (H4 and H7).

For the interaction between the dummy for the electoral system and the population size, robustness checks lead to inconclusive results. While in the negative relationship between the marginal effect of direct mayoral elections on the number of parties and the population size of a municipality is found in all models (see Fig. A.3 in the Appendix), only some of them are in line with the initial model insofar as the marginal effect is significant for smaller municipalities and insignificant for larger ones. Depending on the data selection, the marginal effect is sometimes insignificant throughout the distribution of the population size (e.g. for the models with extended regression data that excluded Upper Austrian municipalities or that excluded the first and last decile of the population distribution).

For the effective number of parties, the robustness checks lead to even more contradicting results concerning the interaction with population size. Fig. A.4 shows that while the negative relationship between the marginal effect of direct mayoral elections on the effective number of parties and population size is replicated by the subsample analysis on the restricted regression data, it is not replicated when using the extended data set. Here, for some models even a positive relationship is observed, i.e. that the effective number of parties is on average increased more by having directly elected mayors the higher the population of a municipality. The same is the case when comparing the results between the original regression and the extended regression data, using a different measurement for the effective number of parties (see Fig. A.7 in the Appendix). This is not only at odds with the initial multivariate results but also with Hypothesis 5b which expected that the negative impact of having direct mayoral elections on the effective number of parties at municipal council elections becomes stronger the more populated a municipality is.

For the last indicator of electoral competitiveness, the margin of victory, the pattern from the initial model - a negative marginal effect for smaller municipalities which becomes positive but insignificant the bigger the municipality is - is replicated by most of the robustness checks. As Fig. A.5 in the Appendix shows, only some of the models lead to results that differ from this. For the model with the extended regression data, the marginal effect remains negative along the whole range of the population size, but it becomes insignificant for larger municipalities. The same is the case for the model that uses the extended regression data but excludes all Carinthian municipalities. Further, for the model with extended regression data that excluded the first and last decile of the population distribution, the effect stays negative and significant, although the negative marginal effect becomes smaller in

magnitude with increasing population size. However, note that in the range of population size that is included in this subsample, the marginal effects in all the other models are also predominantly negative and significant. Summarizing the results on the marginal effect of direct mayoral elections on electoral competitiveness depending on population size, none of the robustness checks for any of the three competitiveness indicators supported the hypotheses. Therefore, Hypotheses 5a-c have to be rejected.

Finally, the baseline turnout model finding for the interaction of direct mayoral elections and population size - namely that the positive effect of having direct mayoral elections increases with population size - is robust throughout most robustness checks. The sole exception is the model with the extended data excluding Upper Austria, where the effect of direct mayoral elections on turnout remained roughly constant for different population sizes. Beside this model, all other robustness checks provide support for Hypothesis 8.

4.3 Discussion

To sum up, the only hypothesis that is consistently supported by the results from Study 1 is H6, which postulated that turnout at municipal council elections increases if the mayor is directly elected. This indicates that the reform may have achieved one of its aims, namely the rejuvenation of public interest in local politics (Magre & Bertrana, 2007; Novak, 1995). But as was pointed out throughout Section 4.2, the positive effect could simply be an artifact of these pre-reform differences, and not due to the reform itself, as Figure 4.4 shows that for one of the two states without direct mayoral elections turnout was already notably lower before the reform.

Also supported by the initial baseline model was H1, which expected that the actual number of parties is higher at municipal council elections with simultaneous direct mayoral elections. However, this finding could not be replicated by any of the robustness checks, which all suggested that direct mayoral elections have no effect on the number of parties competing for seats in the municipal council. In contrast to H2, the baseline model suggested that municipal council elections also became more competitive when considering the effective number of parties. This positive effect is robust throughout all robustness checks. Further, the results of Study 1 suggest that the unexpected increase in the effective number of parties is not simply due to the entry of new parties outweighing the gains of the major party. Instead, contrary to H3, both the baseline model and all robustness checks showed that the margin of victory is lower in municipal council elections whenever the mayor is directly elected as well. The results from Study 1 therefore indicate that elections if anything became more competitive due to the reform of the local electoral system.

Moving to the interaction hypotheses, models that tested whether the effects of direct mayoral elections depend on the candidacy of the incumbent mayor mostly showed insignificant interaction effects. Direct mayoral elections seem to impact both competitiveness and turnout at municipal council elections the same way irrespective of incumbent mayor candidacy. The sole exception are the robustness checks for the effective number of parties, where both the models the subsample analysis models excluding Upper Austria and Carinthia respectively, as well as the different operationalization of the dependent variable following Golosov (2010), showed significantly smaller effects of direct mayoral elections whenever the incumbent is again a candidate. However, in all cases the marginal effects are positive, which is in contrast to the initial hypothesis. Both H4 and H7 therefore need to be rejected based on the results of Study 1.

Concerning the interaction with population size, the pattern proposed by H8 - namely that the positive difference in turnout between municipal council elections with and without direct mayoral elections increases with the population of the municipality - is supported by all the models with the exception of one robustness check. This could be an indication that effect of direct mayoral elections on the mobilization of voters due to more personalized campaigns is indeed stronger in larger municipalities. For the interaction between direct mayoral elections and the population concerning the competitiveness of municipal council elections, none of the Hypotheses H5a-c find conclusive support by the models in Study 1. Furthermore, for the effective number of parties the interaction changes direction when using the extended data compared to the sampled data. One reason for this could be that with the extended data states with more municipalities are given more weight in the regression models opposed to the sampled data, where every state had the same weight.

In general, all the results from Study 1 come with a major caveat. Due to data availability restrictions, none of the models included observations before 2000. This in turn implies that there is no within-state variation in the electoral system, as all the states with direct mayoral elections in this study (Burgenland, Salzburg, Styria, Upper Austria) introduced them already in the 1990s. This made the inclusion of state or municipality fixed effects into the models impossible, which would have controlled for unobserved time-invariant differences between the states. Thus the effects could simply be driven by pre-reform differences in the dependent variables. This is especially problematic when considering the potential endogeneity of the reform itself. To see whether my results are robust when considering pre-reform differences, I consider the case of Vorarlberg in the following Study 2, where both the institutional design and the data availability allow me to test my hypotheses with within-state and even within-municipality variation.

5. Study 2 - The Effects of Direct Mayoral Elections: The Case of Vorarlberg

To analyze the impact of direct mayoral elections on competitiveness and turnout at municipal council elections, I now go beyond the cross-state variation in electoral rules in Study 1 and focus on within-state variation. In Austria, this is only the case in Vorarlberg, where since the local elections in 2000 municipalities can decide to elect their mayors directly. Using a difference-in-differences design, I try to exploit this variation at the municipality level to allow for a causal interpretation of the effect of direct mayoral elections. However, as will be discussed throughout this chapter, the assignment of municipalities to direct mayoral elections is not random, but depends on the one hand on municipality characteristics and on the other hand may suffer from potential endogeneity. Even after correcting for this with introducing weights based on propensity-score-matching, it is doubtful whether the crucial parallel-trends-assumption holds for electoral competitiveness. The results of this second study therefore have to be interpreted with care. This chapter is structured as follows: First, the data and methods are introduced. Next, in the results section I show bivariate patterns and compare them to those from Study 1, before summarizing the results from the propensity score matching and the various difference-in-difference models. A short discussion of the findings concludes this chapter.

5.1 Data and Methods

5.1.1 Data

To apply the difference-in-differences framework to the case of local elections in Vorarlberg, the 96 municipalities need to be separated into a treatment and control group.²² From now on, I will refer to a municipality being treated, if it introduced direct elections of mayors, while it is untreated and part of the control group if not. This partition is complicated by the fact the municipalities decide

²²In Vorarlberg, no municipality reforms happened in the relevant time period between 1985 and 2015. Therefore unlike in Study 1, all municipalities are fully covered by the data in this period.

Table 5.1: Choice of Electoral Systems in Vorarlberg Post-Reform

	Direct	Indirect	Mehrheitswahl	Switched
Overall (96 Municipalities)				
2000	63	21	12	-
2005	61	21	14	12
2010	60	22	14	10
2015	58	22	16	10
Main Analysis (65 Municipalities)				
Post-Reform	51	14	-	-
Small Municipalities Analysis (39 Municipalities)				
Post-Reform	25	14	-	-

on their electoral rules on an election-by-election basis, i.e. there exists the possibility to switch. Further, since 2000 municipalities in Vorarlberg can also opt for having their elections under the special "*Mehrheitswahl*" system, which is basically an open election.²³ Under this rule, measuring electoral competitiveness based on the actual and the effective number of parties as well as the margin of victory between first- and second-placed party is no longer viable.

To address these two problems, I reduce the sample of all 96 municipalities in Vorarlberg by excluding those municipalities that switched their electoral rules in the post-treatment phase from 2000 onwards (N=22)²⁴ and/or had elections under the "*Mehrheitswahl*" system at least once (N=21).²⁵ This results in a final sample of N=65 municipalities, with 51 in the treatment and 14 in the control group. Table 5.1 summarizes how many municipalities chose which system in the post-treatment period (before 2000, all municipalities had semi-open list municipal council elections with indirect election of the mayor, i.e. they followed the same electoral rules as the control group). Since none of the larger municipalities chose to remain in the old system without direct mayoral elections, I further consider a subsample in my analysis that consists of only municipalities that had at most 2,000 eligible voters in the local elections of 2000. While the size of the control group remains the same, the treatment group is reduced to only 25 municipalities.

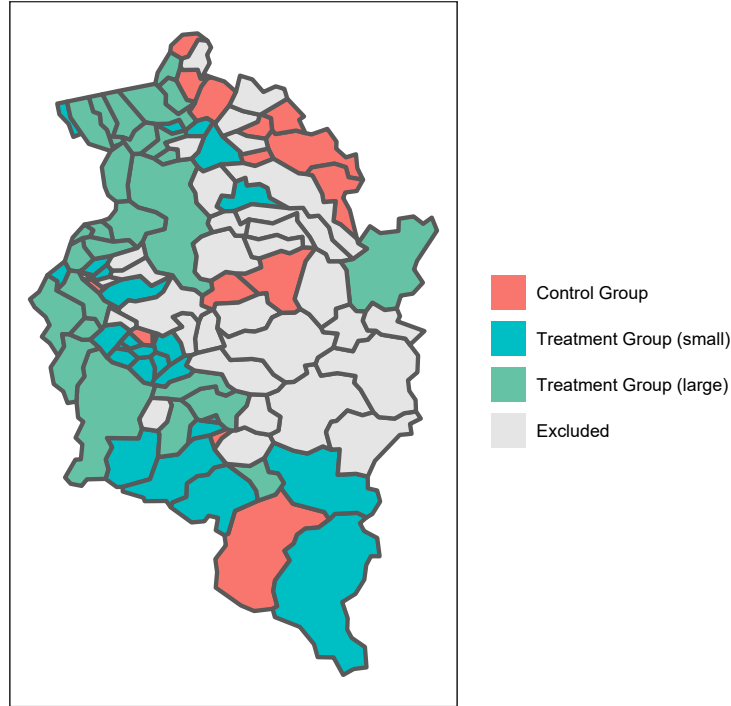
Figure 5.1 shows the geographical locations of the municipalities in the sample. The excluded municipalities are mainly from the sparsely populated regions in the North and the East of Vorarlberg (*Arlberg*, *Bregenzerwald*, *Großes Walsertal*, *Klostertal*, *Montafon*) in the political districts of Bludenz and Bregenz, while almost all the municipalities in the South and West along the borders of Switzerland and Liechtenstein are included. In the initial sample, both small (at most 2,000 eligible voters)

²³See Chapter 2 for a more detailed explanation of the local election rules in Vorarlberg.

²⁴The following municipalities changed their electoral rules multiple times: Bartholomäberg, Bezau, Bildstein, Dalaas, Doren, Egg, Fontanella, Fraxern, Innerbraz, Laterns, Lech, Mellau, Möggers, Reuthe, Röthis, Schoppernau, Schröcken, Schwarzenberg, Sonntag, Sulzberg, Übersaxen, and Warth.

²⁵The following municipalities at least once applied the "*Mehrheitswahl*" system: Bizau, Blons, Bürserberg, Dalaas, Innerbraz, Klösterle, Langenegg, Laterns, Lech, Mellau, Möggers, Raggal, Reuthe, Sankt Gerold, Schnepfau, Schoppernau, Schröcken, Sonntag, Übersaxen, Viktorsberg, and Warth.

Figure 5.1: Map of Municipalities in Sample (Study 2)



and large municipalities (more than 2,000) are included in the treatment group. Table A.30 in the appendix section A.3.2 lists all the municipalities included in the main analysis sample and provides information on which are excluded from the small municipality sample. Finally, from a longitudinal perspective, the data covers all local elections between 1985 and 2015 to allow for several pre- and post-reform periods.²⁶ This means that there are five observations from each sampled municipality. Therefore the main analysis is based on $N=672$ elections in 65 municipalities, while the small municipalities analysis covers $N=195$ elections in 39 municipalities.

Similar to Study 1, the data used in Study 2 can be summarized in three categories: Election results, socio-economic covariates, and candidacy of incumbent mayors. The dependent variables on electoral competitiveness and turnout are all part of the first category and have been obtained via the online portal for elections of the state of Vorarlberg (Land Vorarlberg, n.d.). This data source covers all local elections - both for the municipal council as well as for the mayor's office - from 1985 onwards. For assessing the effect of direct mayoral elections on the competitiveness of municipal council elections, I consider three indicators: The absolute and the effective number of parties as well the margin of victory. The first indicator is measured by the number of parties on the ballot sheet for the elections of the municipal council. The second one is again measured in two ways, both via the operationalization

²⁶Consistent with Study 1, the elections in 2020 are excluded from the analysis to avoid shocks to the variables of interest due to the COVID19 pandemic.

Table 5.2: Distribution of DVs, Study 2

	Mean	SD	Min	Max
Control Group (N=98)				
N Parties	1.316	0.698	1.000	4.000
Eff. N _{LT}	1.182	0.436	1.000	2.831
Eff. N _G	1.135	0.334	1.000	2.396
Margin of Victory	87.707	28.496	0.917	100.000
Turnout	82.753	13.527	51.766	96.774
Treatment Group (N=375)				
N Parties	3.190	1.310	1.000	8.000
Eff. N _{LT}	2.200	0.698	1.000	4.626
Eff. N _G	1.815	0.531	1.000	3.837
Margin of Victory	41.407	28.101	0.000	100.000
Turnout	81.168	13.943	49.716	98.684
Small Municipalities Treatment Group (N=175)				
N Parties	2.446	1.168	1.000	6.000
Eff. N _{LT}	1.843	0.695	1.000	3.746
Eff. N _G	1.574	0.525	1.000	3.421
Margin of Victory	53.049	33.554	0.000	100.000
Turnout	83.970	12.070	50.245	98.684
Overall (N=455)				
N Parties	2.787	1.430	1.000	8.000
Eff. N _{LT}	1.981	0.773	1.000	4.626
Eff. N _G	1.668	0.568	1.000	3.837
Margin of Victory	51.379	33.997	0.000	100.000
Turnout	81.509	13.855	49.716	98.684

of Laakso and Taagepera (1979) as well as the newer one by Golosov (2010). Finally, the margin of victory is calculated by the percentage point difference in the vote shares of the two largest parties. For a more detailed description of the measurement of these indicators, see the Data section of Study 1 in 4.1.1.

Next to electoral competitiveness, I also assess the effect of direct mayoral elections on participation. Specifically, I focus on changes in turnout due to the electoral system reform. Turnout is also taken from the elections data, and is measured as the percentage share of cast votes of all eligible voters. Table 5.2 provides selected summary statistics for the dependent variables, separated by treatment and control group. Note that since the control group is the same in both the main analysis and the small municipalities sample, only separate statistics for the treatment group in the small municipalities sample are provided. What is apparent from the table is that while turnout is quite similarly distributed between the groups, this is not the case for the indicators of electoral competitiveness. In the control group, the average absolute and effective number of parties is lower than in the treatment group, while the margin of victory is higher. Although these differences become smaller when comparing the control group to only the small treated municipalities, they still exist. As Table A.27 in the Appendix shows, these level differences already existed in the pre-reform period (1985-1995).

The main independent variable of interest - whether mayors are elected directly or not - is also based on the elections data. It is measured as a dummy variable that takes on the value 0 if there is no direct mayoral election and 1 if there is. For the control group, this variable is always 0, while for the treatment group it is 0 for all elections pre-reform (1985, 1990, 1995) and 1 for all elections after the reform (2000, 2005, 2010, 2015).

Next to this treatment indicator, a set of socio-economic covariates similar to Study 1 are also included in Study 2, although there are some slight differences. Since yearly population data at the municipality level was not available on *STATcube*, the database of *Statistik Austria* (Statistik Austria, n.d.-c), before 2000, I use the amount of eligible voters at a given election as a proxy for population. In the period with available population data, population and eligible voters are strongly correlated ($r(356)=0.998$, $p<0.001$), and thus eligible voters serve as a good proxy. Same as for population, yearly data on communal tax is only available on *STATcube* from 2000 onwards. I combine this with additional communal data provided by Monika Köppl-Turyna, who used it in analyzing the impact of direct mayoral elections on fiscal spending in Vorarlberg (Köppl-Turyna, 2016), to cover the whole period between 1985 to 2015. To allow for comparison between municipalities of different sizes, I take per capita values, where the denominator is the number of eligible voters.

For the other two socio-economic covariates - the shares of the population of a municipality aged 65 and over and the share with a university degree - I use census data from *STATcube*. Like in Study 1, time series data is only available on a yearly basis from 2011 onwards, while before that I only have data for 1991 and 2001. To impute the missing information, I again fit linear regression models for each municipality where I regress the natural logarithm of the dependent variable - the amount of people aged 65 and over and the amount of people with a university degree - on a linear time trend. The log is taken to avoid non-positive imputations based on the fitted values. The models fit the data quite well, with an average R^2 of 0.915 (SD=0.132) for the models with the population aged 65 and over as a dependent variable, and an average R^2 of 0.940 (SD=0.101) for the models with the population share with a university degree as the dependent variable. Again, the absolute numbers are normalized by stating them as share of the population, proxied by the amount of eligible voters.

Tables A.28 and A.29 in the appendix section A.3.1 show the distribution statistics for these four socio-economic covariates, both overall and only for the pre-reform period. Similar to the dependent variables, there are again differences between the municipalities in the control and the treatment group. In the control group, municipalities have on average less eligible voters and the communal tax revenues per capita are lower compared to the treatment group. For the share of the population aged 65 and over and the share of the population with a university degree, differences are less stark,

Table 5.3: Incumbent mayor is candidate, Study 2

	No	Yes	N
Complete Time Period			
Control Group	23.5 %	76.5 %	98
Treatment Group	10.9 %	89.1 %	357
Small Municipalities Treatment Group	12 %	88 %	175
Overall	13.6 %	86.4 %	455
Pre-Treatment			
Control Group	16.7 %	83.3 %	42
Treatment Group	14.4 %	85.6 %	153
Small Municipalities Treatment Group	14.7 %	85.3 %	75
Overall	14.9 %	85.1 %	195

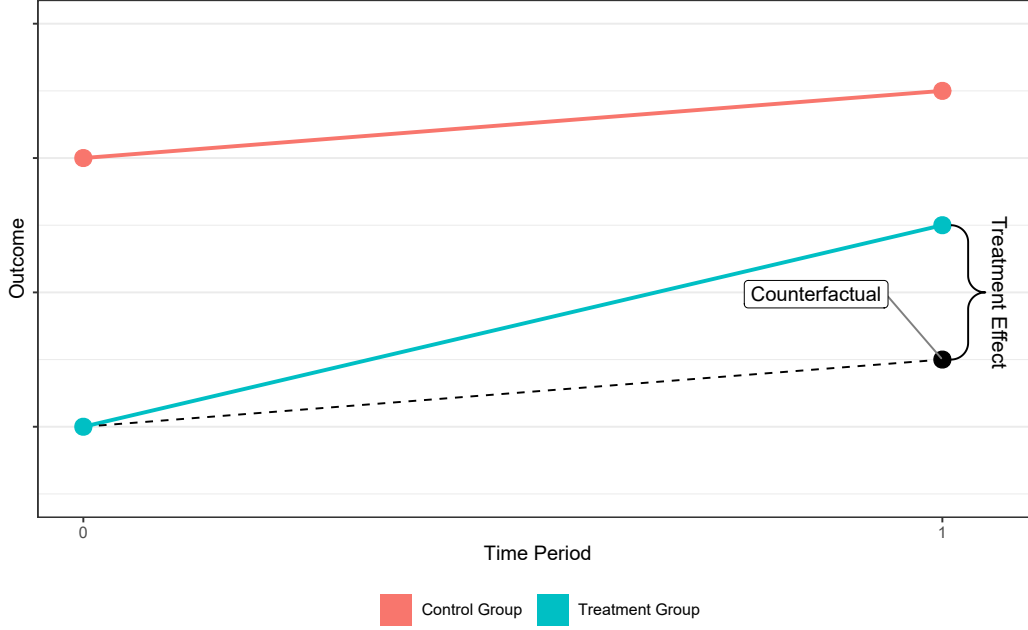
but still municipalities in the control group have a slightly older population and a lower share of inhabitants with a university degree. Again, differences are less pronounced when comparing the control group only to the small treated municipalities, but they also exist prior to the reform in 2000.

Finally, the last variable of interest - information on the candidacy of incumbent mayors - had to be collected once more. Unlike to Study 1, this data was not only coded for a subset of municipalities, but for all 65 municipalities that are part of the control and treatment group. These municipalities were contacted via email and asked to fill out an Excel sheet with Yes/No on whether the incumbent mayor was again a candidate for mayoral elections in case of direct mayoral elections, or was a leader of a list at the municipal council elections in case of indirect mayoral elections. After repeated contact via phone, 39 of the 65 municipalities responded (response rate of 60%). For the remaining 26 municipalities, I collected the data myself. Like in Study 1, I again used various sources to obtain the necessary information. Table A.30 in the Appendix summarizes for which municipalities data provided by the municipalities themselves, and which sources were used for the others. Table 5.3 shows the share of elections in which the incumbent was again a candidate. Overall, it was more common in the treatment group that the incumbent ran again. However, before the reform in 2000, there are no drastic differences between control and treatment group.

5.1.2 Methods

The data introduced above are then used to estimate difference-in-differences (DiD) models. DiD has become one of the most used strategies for identifying causal effects in social sciences (Cunningham, 2021). In its essence, this method tries to isolate the causal effect of some treatment or policy by comparing outcomes between treatment group and an adequate control group over time, both before and after the treatment (Angrist & Pischke, 2009; Donald & Lang, 2007). In its simplest case, DiD compares observations of two groups - a treatment group ($D = 1$) and a control group ($D = 0$) - at

Figure 5.2: Theoretical Difference-in-Differences Setup



two time points $t = 0$ (before treatment) and $t = 1$ (after Treatment). Let $Y_i^T(t)$ be the outcome of observation i at time t when treated and $Y_i^U(t)$ when untreated. Then the average treatment effect on the treated (ATET) is identified by:

$$ATET = E[Y_i^T(1) - Y_i^U(1) | D_i = 1] \quad (5.1)$$

However, for observations in the treatment group, i.e. where $D_i = 1$, $Y_i^U(1)$ - the outcome in period $t = 1$ if untreated - cannot be observed. To still be able to estimate the ATET, the parallel trend assumption comes in, which assumes that without treatment, the potential outcomes would have developed in parallel between control and treatment group. Fig. 5.2 visualizes this assumption. Under this assumption, the ATET can be identified by:

$$ATET = \{E[Y(1)|D = 1] - E[Y(1)|D = 0]\} - \{E[Y(0)|D = 1] - E[Y(0)|D = 0]\} \quad (5.2)$$

where the first part is the difference in the average outcome between the treatment and control group post-treatment and the second part the pre-treatment difference (Angrist & Pischke, 2009; Cunningham, 2021).

In the case of this study, the basic DiD framework needs to be extended since the data not only covers one pre- and one post-treatment period, but instead several elections before and after the electoral reform in Vorarlberg in 2000. But the DiD set-up can be applied to this case by estimating a two-way fixed effect regression, which can further be extended with additional covariates:

$$y_{it} = \alpha_i + \lambda_t + \beta \times Direct_{it} + \Gamma \times \mathbf{X}_{it} + \epsilon_{it} \quad (5.3)$$

where y_{it} is the outcome of interest - the actual and effective number of parties, the margin of victory and turnout - of municipality i at time t , α_i are municipality fixed effects, λ_t time (election) fixed effects, $\mathbf{X}_{it}$ are a vector of time-variant controls, and ϵ_{it} is the error term. Municipality fixed effects are included instead of a single treatment group fixed effect to account for varying average levels in the dependent variable across municipalities within the treatment and control group. Including time-variant covariates can be problematic if these covariates also react to the reform. However, since the set of covariates includes population (proxied by the amount of eligible voters), the share of population aged 65 and over, the share of population with high education, and communal tax revenue per capita, which are all unlikely to be influenced by the choice of a specific electoral system at local elections, it should not be an issue in this case.

$Direct_{it}$ then is a dummy variable that is 1 whenever the mayor is directly elected and 0 otherwise. Hence this dummy is always 0 for municipalities in the control group and for municipalities in the treatment group it is 1 in elections from 2000 onwards (i.e., after the reform) and 0 before. The effect of direct mayoral elections is then identified in this regression model as β . This can be interpreted as the causal effect of direct mayoral elections on the outcome of interest if the assumptions of the DiD framework hold. However, the central assumption of parallel trends in absence of the treatment cannot be tested as the counterfactual is by definition not observed (Angrist & Pischke, 2009; Cunningham, 2021). A common practice to assess the plausibility of parallel trends is to look at pre-trends and check whether there exist significant pre-treatment placebo effects. Figures 5.3 and 5.4 in the next section show the time trends in the dependent variables separated into control and treatment group municipalities for the complete sample and the small municipalities subsample. While for turnout, this figures provide some initial support for the parallel trend assumption as pre-treatment turnout developed quite similarly across treatment and control group, this is not the case for the three indicators of electoral competitiveness. Not only do treatment and control group differ

in the respective levels of electoral competitiveness - which would not be an issue for the parallel trends assumption - but also the time trends are strikingly different before the introduction of direct mayoral elections in 2000.

These differences most likely arise from the fact that treatment does not happen randomly, but municipalities themselves choose their own electoral system. On the one hand, the introduction of direct mayoral elections could depend on municipality characteristics such as the size of the municipality. For example, if larger municipalities have more personnel then the administrative duties of executing an additional election might be covered easier. Such differences exist between municipalities in the treatment and control group which can be seen in Tables A.28 and A.29 in the appendix. On the other hand, electoral rules may be endogenous to previous levels in the dependent variables. For example, if the effective number of parties was lower before the policy change, it could be easier to change electoral rules as the municipal council was less divided.

To address this concern, I follow the approach by Köppl-Turyna (2016), who also dealt with these issues when assessing the impact of direct mayoral elections on public spending in Vorarlberg, and combine propensity-score matching with the DiD design. Therefore, as a first step I model the probability of introducing direct mayoral elections explicitly by estimating the following logistic regression model:

$$T_{it} = \alpha + B_1 \times \mathbf{Comp}_{it} + \beta_2 \times Turnout_{it} + \Gamma \times \mathbf{X}_{it} + \epsilon_{it} \quad (5.4)$$

where T_{it} is a dummy that is 1 if a municipality introduced direct mayoral elections from 2000 onwards and 0 otherwise (the treatment group dummy), $\mathbf{Comp}_{it}$ is a vector of indicators for electoral competitiveness²⁷ and $Turnout_{it}$ is the turnout at municipal council elections. The set of socio-economic covariates $\mathbf{X}_{it}$ is identical to those in model 5.3. Since covariates need to be exogenous of the dependent variable, i.e. the treatment group dummy, the sample for this propensity score model is restricted to observations before the reform in 2000, and therefore only includes observations from 1985, 1990, and 1995. Following Villa (2016), I then use the resulting propensity scores for year-by-year kernel propensity score matching to calculate observation specific weights for the model in 5.3.²⁸ The basic idea behind this procedure is to give more weight to observations in the control group that are more similar to those in the treatment group. Observations in the treatment group all get assigned a weight equal to one, and observations from both the treatment and control group are

²⁷These include both the actual and the effective number of parties as well as the margin of victory

²⁸The kernel propensity score matching was performed in STATA using the module PSMATCH2 (Leuven & Sianesi, 2003), while all other analysis was carried out in R.

excluded if they are off the common support (Villa, 2016). This procedure is done separately for both the complete sample and the small municipalities subsample, i.e. an observation that is both in the complete sample and the subsample may have different weights in the two sample specifications. Note that unobserved covariates that are uncorrelated with the observed ones but still affect the decision to introduce direct mayoral elections can not be controlled for in model 5.4 (Köppel-Turyna, 2016).

To assess whether this combination of propensity score matching and difference-in-differences has addressed the problematic differences in pre-treatment trends shown in Figures 5.3 and 5.4, I estimate the following event-studies:

$$y_{it} = \alpha_i + \lambda_t + \sum_{q \neq 1995} \beta_q \times D_{iq} + \sum_p \beta_p \times D_{ip} + \Gamma \times \mathbf{X}_{it} + \epsilon_{it} \quad (5.5)$$

where the first summation captures the pre-treatment placebo leads of the treatment effect, and the second summation the post-treatment lags. D_{iq} and D_{ip} are dummy variables that are 1 if municipality i is part of the treatment group and t equals q or p respectively, and 0 otherwise. q and p are indicators for the specific pre- and post-treatment elections, i.e. $q = \{1998, 1990, 1995\}$ and $p = \{2000, 2005, 2010, 2015\}$, where $q = 1995$ acts as the reference category. Again, the regression models are weighted with the weights obtained in the year-by-year kernel propensity score matching procedure described above.

If balancing the sample with the year-by-year propensity score matching weights resulted in parallel pre-treatment trends, then the pre-treatment placebo leads β_q should not be significantly different from zero. Specifying an event-study not only allows for assessing parallel pre-treatment trends, but show how dynamic the post-treatment effects are (Cunningham, 2021). It could theoretically happen that a significant treatment effect in model 5.3 is solely driven by an initial response of the dependent variable in $t = 0$, and treatment and control group become similar again in $t > 0$. In this case, the event-study models would give an indication for time-varying treatment effects, while the simple model in 5.3 assumes the treatment effect to be constant over time.

In both models 5.3 and 5.5, I cluster standard errors at the municipality level (i.e., the treatment level), to adjust for potential serial correlation over time (Bertrand et al., 2004; Cunningham, 2021). To test the hypotheses on differences in the effect of direct mayoral elections conditional on the incumbent mayor being candidate, I interact the incumbent candidacy dummy with the regressor of interest - $Direct_{it}$ in model 5.3, D_{iq} and D_{ip} in model 5.5. Assessing different treatment effects conditional on population size is an issue, as all of the larger municipalities opted for direct mayoral elections, i.e.

there is no natural control group for them when splitting the sample along the population distribution. Therefore I cannot really assess these potential differences in Study 2. However, potential differences in the outcomes of models based on the complete sample and the small municipality sample separately would offer some evidence as to whether results in the complete sample are driven mainly by the larger municipalities. In this case, there would be suggestive support for Hypotheses 5 and 8.

5.2 Results

5.2.1 Bivariate patterns

Before I turn to the results of the difference-in-differences and event-study models, I shortly discuss some bivariate patterns in the relationship between indicators of electoral competitiveness and participation with the choice of electoral rules. Similar to Study 1, I present both t-tests and the trends over time to see if there is some initial support for my hypotheses. T-tests are mainly based on the complete sample described in Section 5.1.1 (N=455), while those that compare differences over time in municipalities that had direct mayoral elections from 2000 onwards is identical to the elections in the treatment group in the complete sample (N=357). For electoral competitiveness, I consider three indicators: both the actual and the effective number of parties, as well as the margin of victory between first and second placed party at municipal council elections. First, the actual number of parties is significantly higher in local elections with simultaneous direct mayoral elections (M=3.20, SD=1.37) compared to local elections without it (M=2.45, SD=1.39), with a t-test showing that this difference is significant ($t(437.32)=-5.702$, $p<0.001$).²⁹ Like in Study 1, this is consistent with the initial hypothesis, which stated that direct mayoral elections lead to a higher amount of parties (H1). But again, this result is mainly driven by level differences in the number of actual parties between municipalities that chose to introduce direct mayoral elections and those that did not, as Figure 5.3 shows. When comparing differences before (M=3.18, SD=1.23) and after the reform (M=3.20, SD=1.37) only in municipalities that have introduced direct mayoral elections, no significant differences are found ($t(343.29)=-0.095$, $p=0.92$).

For the effective number of parties, the results are similar. While it is higher in local elections with simultaneous direct mayoral elections (M=2.22, SD=0.72) than without (M=1.79, SD=0.76), and this difference is significant ($t(441.69)=-6.185$, $p<0.001$)³⁰, these results are again due to pre-

²⁹Comparing all the local elections in Vorarlberg (N=616), not just those in the complete sample (i.e., also including municipalities that switched multiple times between election systems, but still excluding those using *Mehrheitswahl*), results are similar: Direct mayoral elections (M=2.96, SD=1.40) vs. no direct mayoral elections (M=2.15, SD=1.29), $t(482.54)=-7.208$, $p<0.001$

³⁰Again, this is replicated when extending the complete sample to all local elections: Direct mayoral elections (M=2.08, SD=0.76) vs. no direct mayoral elections (M=1.63, SD=0.72), $t(491.33)=-7.284$, $p<0.001$

reform differences between states that introduced direct mayoral elections and those that did not. A pre- (M=2.17, SD=0.66) and post-reform (M=2.22, SD=0.72) comparison among only municipalities shows no significant differences ($t(343.29)=-0.594$, $p=0.55$). These results are also robust to a different specification of the effective number of parties, using the measurement proposed by Golosov (2010) instead of the classical one by Laakso and Taagepera (1979).³¹

Turning to the last indicator of political competitiveness, the margin of victory between the first and second party at municipal council elections, the patterns established by the actual and the effective number of parties are confirmed. The margin of victory is smaller in municipal council elections with simultaneous direct mayoral election (M=41.23, SD=28.83) compared to those without (M=59.63, SD=35.66), with the difference being significant ($t(452.99)=6.086$, $p<0.001$), indicating again more competitive elections with direct mayoral elections than without. While this pattern is robust to extending the complete sample with all elections,³² restricting the sample to only municipalities in the treatment group again shows that this relationship is mainly driven by initial differing levels in the margin of victory between municipalities in the treatment and control group.³³ To summarise, all three indicators of political competitiveness show that although municipal council elections with simultaneous direct mayoral elections were more competitive, supporting Hypothesis 1 but going against Hypotheses 2-3, these results are driven by already differing initial levels (i.e., pre-reform) between treatment and control group. In this, the results in Study 2 slightly differ from the bivariate findings in Study 1 on electoral competitiveness (see Section 4.2.1), where the increase in competitiveness was also found in most within-state comparisons.

Additional to the t-tests discussed above, Figures 5.3 and 5.4 show the development in the indicators for political competitiveness over time separated by control and treatment group municipalities, both for the complete sample and the small municipalities subsample. For the complete sample (Figure 5.3), the number of parties in the treatment group remained relatively stable over time, varying between 3 and 3.5, while for municipalities in the control group a decrease in the number between 1985 and 1995 (i.e., already before the reform) can be seen, from slightly below two parties to just above one party on average. Throughout the whole time period from 1985 to 2015, the number of parties has been markedly lower in the control group. When restricting only to small municipalities

³¹T-tests for differences in effective number of parties, using operationalization by Golosov (2010):

Complete Sample: Direct mayoral elections (M=1.83, SD=0.55) vs. no direct mayoral elections (M=1.53, SD=0.55), $t(435.37)=-5.785$, $p<0.001$

Extension to all local elections: Direct mayoral elections (M=1.74, SD=0.57) vs. no direct mayoral elections (M=1.43, SD=0.51), $t(477.20)=-6.901$, $p<0.001$

Only treatment group municipalities: Pre-reform (M=1.79, SD=0.51) vs. post-reform (M=1.83, SD=0.55), $t(338.88)=-0.774$, $p=0.44$

³²Direct mayoral elections (M=46.68, SD=31.76) vs. no direct mayoral elections (M=65.58, SD=35.18), $t(551.15)=6.910$, $p<0.001$

³³Pre-reform (M=41.64, SD=27.20) vs. post-reform (M=41.23, SD=28.83), $t(336.95)=0.139$, $p=0.89$

Figure 5.3: Time Trends of Main Dependent Variables (Study 2)

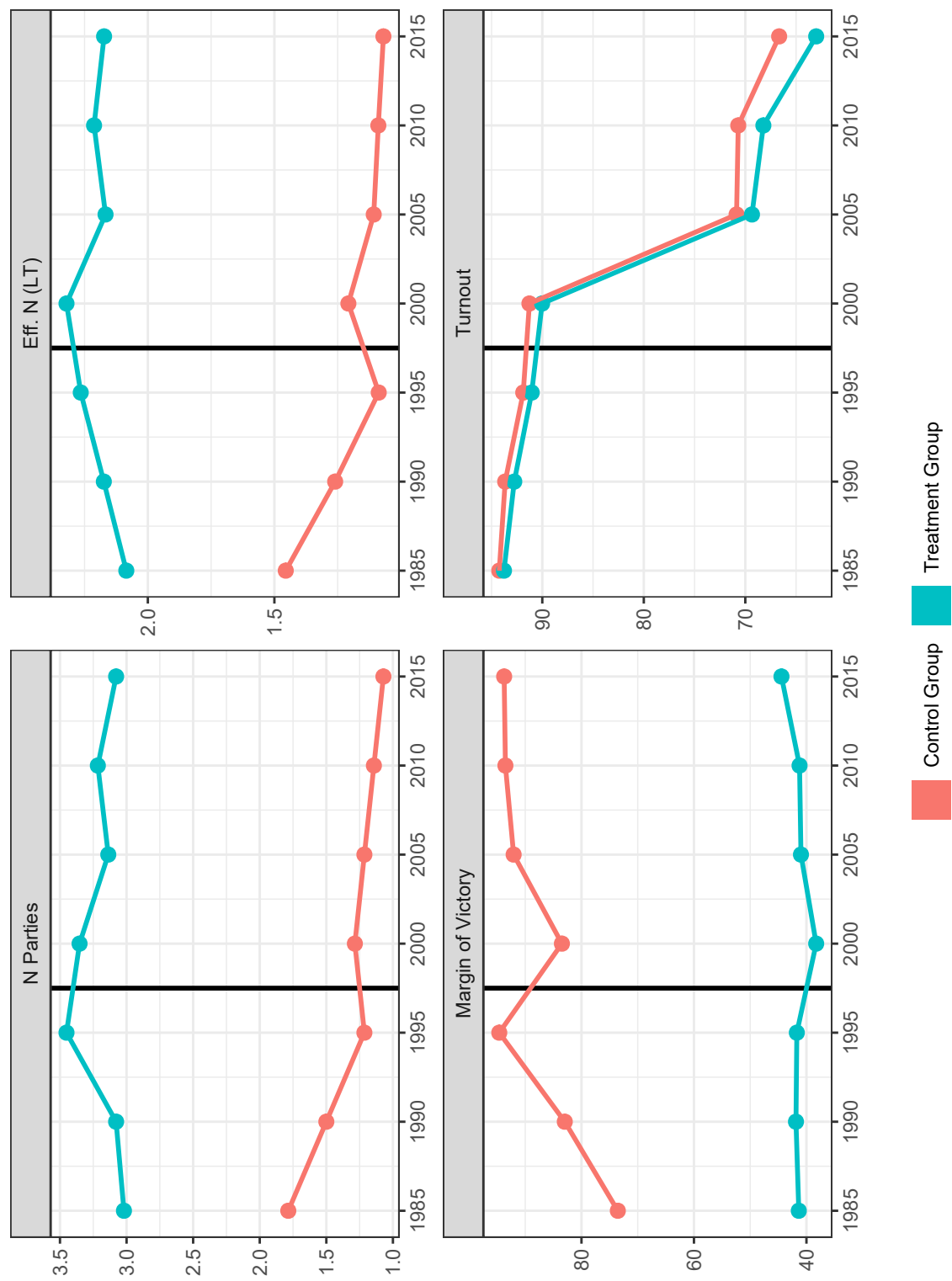
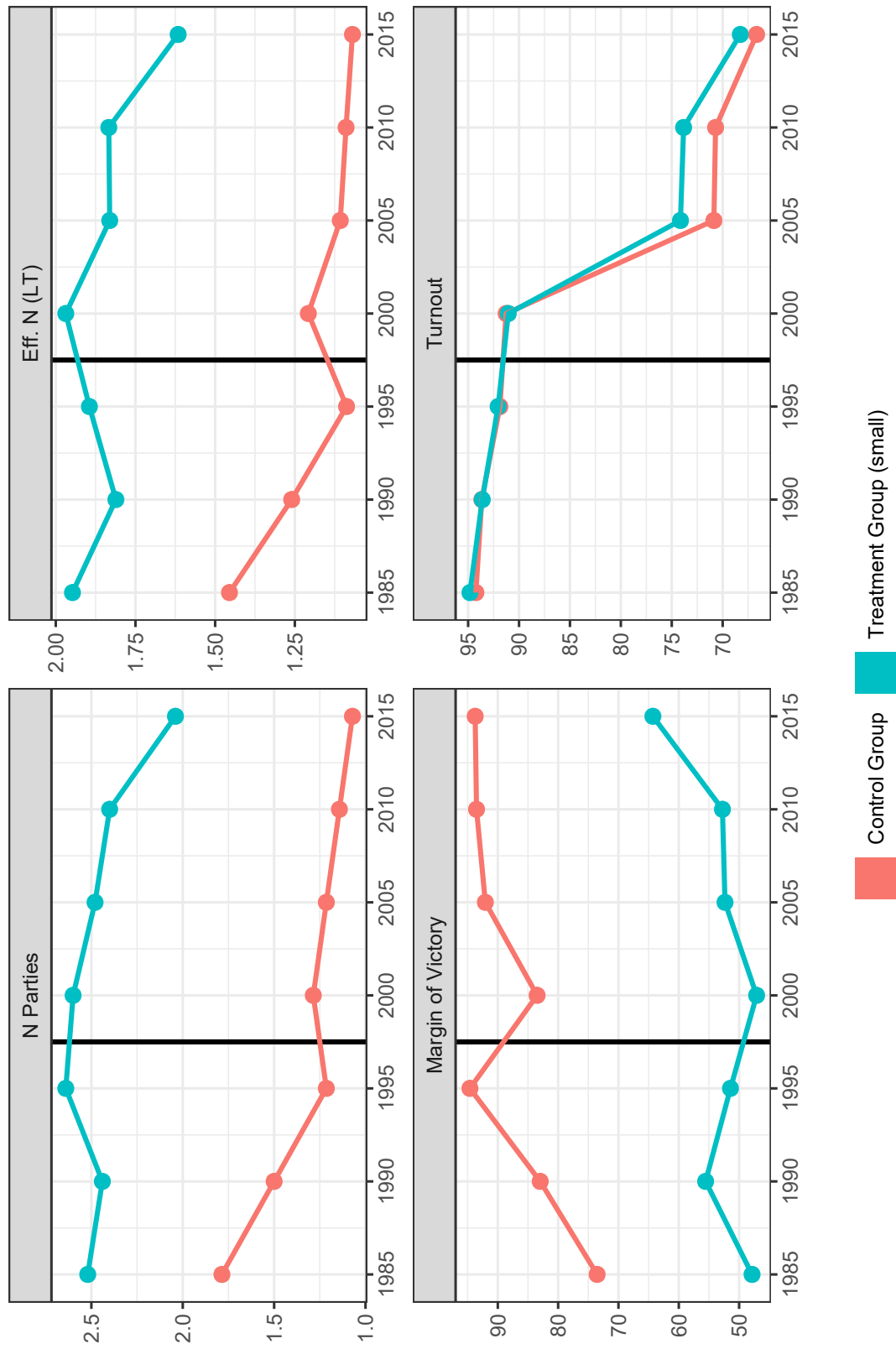


Figure 5.4: Time Trends of Main Dependent Variables - Small Municipalities Subsample (Study 2)



(Figure 5.4), this difference becomes smaller but is still noticeable while patterns over time are roughly the same. For the effective number of parties, level differences and time trends are similar.³⁴ The margin of victory also remained relatively stable across time for the complete sample treatment group, while it rose significantly in the control group between 1985 and 1995, coinciding with the decrease in the actual and effective number of parties. Again differences are less pronounced in the small municipalities subsample.

For electoral participation, I consider turnout as the sole indicator. Using the complete sample of the difference-in-differences analysis, a t-test ($t(372.99)=14.637$, $p<0.001$) shows that turnout was higher if there were no direct mayoral elections ($M=88.71$, $SD=9.86$) than if there were ($M=72.65$, $SD=12.91$). The same pattern emerges when extending the sample to all local elections between 1985 and 2015 that were not held under the *Mehrheitswahl* system.³⁵ In contrast to the bivariate patterns for electoral competitiveness, this is not driven by already existing differences pre-reform between municipalities in the treatment and control group. Instead, when only looking at municipalities in the treatment group, turnout was also higher before the introduction of directly elected mayors ($M=92.53$, $SD=2.35$) than afterwards ($M=72.65$, $SD=12.91$), with the difference being significant ($t(220.73)=21.523$, $p<0.001$). This is contrary to H6, which postulated that direct mayoral elections increased turnout at local elections.

However, looking at Figures 5.3 and 5.4 it is clear that this pattern arises from the dramatic drop in turnout throughout the whole sample in 2005. This was due to the abolition of compulsory voting in 2004. Since almost all local elections with simultaneous direct mayoral elections were held after the abolition, average turnout is much lower. From the figures it can also be seen that while in the complete sample turnout was on average slightly higher in the control group compared to the treatment group from 2005 onwards, restricting the sample to small municipalities switches this around. One possible explanation for this could be that eligible voters in larger municipalities are simply less likely to vote at local elections, and while Figure 5.3 is driven by the reaction of those voters to the abolition of compulsory voting, there should be no differences between treatment and control group in the reaction to the abolition when only considering small municipalities. Here in turn, the positive effects of having direct mayoral elections dominate which would support H6.

³⁴This is also the case when measuring the effective number of parties with the operationalization by Golosov (2010), see Figure A.8 in the Appendix.

³⁵Direct mayoral elections ($M=73.62$, $SD=13.03$) vs. no direct mayoral elections ($M=89.06$, $SD=9.71$), $t(410.93)=15.818$, $p<0.001$

5.2.2 Treatment Propensity Score Model and Weights

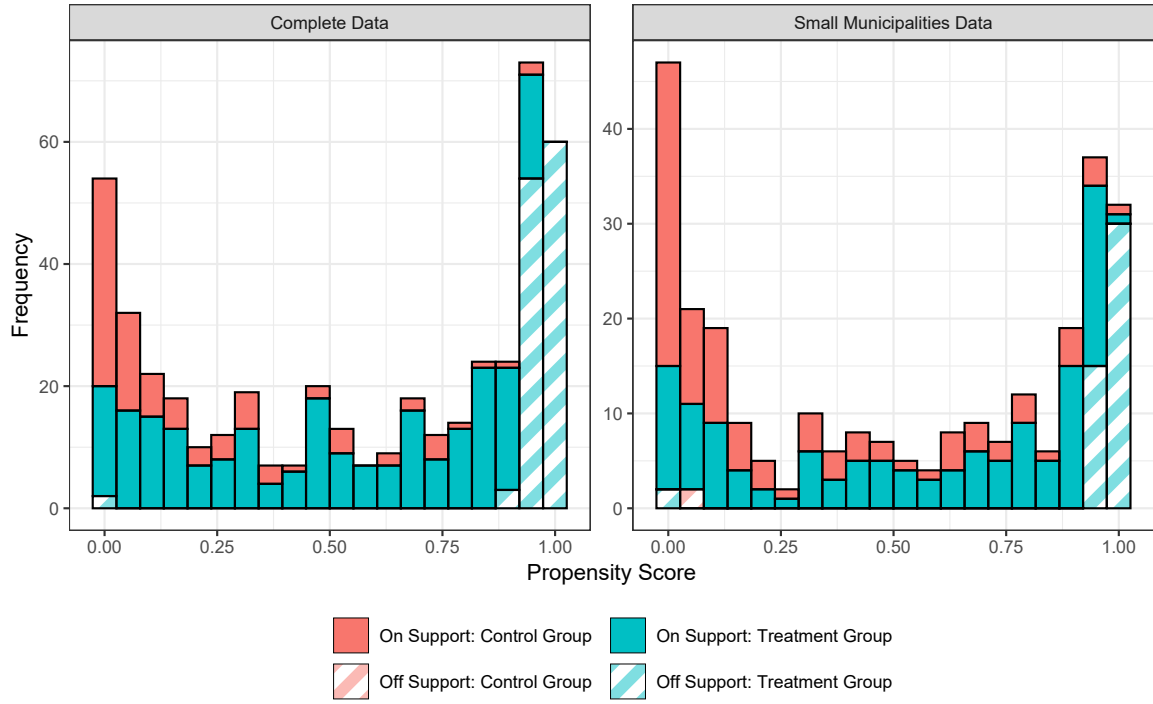
To systematically test the hypotheses in a multivariate setting and potentially establish causal claims, I estimate difference-in-differences and event-study models. But as discussed in Section 5.1.2, selection into the treatment group did not happen randomly and may potentially be endogenous. I try to address this by combining the DiD framework with propensity score matching. Following the procedure proposed by Villa (2016), I first estimate a model to assign different propensities to be treated to the observations. Table 5.4 shows the results of the separate logistic regression models, both for the complete sample and the small municipalities subsample. Only observations between 1985 and 1995 are used to ensure that the predictor variables are exogenous of the treatment group assignment. Only the shares of population aged 65 and over and with a university are significant in both models. The probability to be in the treatment group decreases the higher the share of the old population, and increases the higher the share of the population with university degree. Both the number of eligible voters (as proxy for population size) and communal tax/capita are not significant in both models, and the coefficient for eligible voters switches sign. The three indicators for electoral competitiveness and turnout that control for differences in the initial levels of these variables influencing treatment group assignment, are with the exception of the number of parties in the small municipalities model insignificant. The model fit is slightly higher when using the complete sample.

These regression results are then used to calculate the propensity score to be in the treatment group for each observation. Figure 5.5 shows the distribution of these scores by treatment and control group for both the complete sample and the small municipalities subsample. These scores were then used for year-by-year kernel propensity score matching, which are then used to calculate weights for the DiD and event-study models. Control group observations that are more similar to the observations in the treatment group in terms of the propensity score are given more weight. All observations in the treatment group are given weight equal to 1. Only observations that are on the common support of this matching procedure are included in the analysis. Most observations that drop out from the sample are from the treatment group and have a very high propensity score, as can be seen in Figure 5.5. In the complete sample, 119 observations from the treatment group are excluded due to being off the common support. In the small municipalities subsample, 2 observations from the control and 47 from the treatment group are excluded.

Table 5.4: Propensity score prediction model (Study 2)

	Complete Data (74)	Small Municipalities Data (75)
Eligible Voters (in 1000s)	0.473 (0.437)	-0.658 (0.705)
Share of Pop. 65+	-0.366*** (0.105)	-0.390*** (0.112)
Share of Pop. with Uni Degree	0.620*** (0.186)	0.592*** (0.193)
Communal Tax/Capita	0.004 (0.003)	0.005 (0.003)
N Parties	0.854 (0.793)	1.649* (0.930)
Eff. N _{LT}	-0.369 (1.777)	-1.927 (1.925)
Margin of Victory	-0.017 (0.023)	-0.025 (0.023)
Turnout	0.196 (0.133)	0.230 (0.145)
(Intercept)	-14.640 (13.408)	-15.250 (14.036)
Observations	195	117
Pseudo-R ² (Cragg-Uhler)	0.631	0.539
Log-Likelihood	-54.132	-49.658
F-Statistic	102.319***	58.439***
RMSE	0.284	0.361
<i>Note:</i>		*p<0.1; **p<0.05; ***p<0.01

Figure 5.5: Propensity Scores and Common Support



5.2.3 Difference-in-Difference Results

To systematically assess the effects of direct mayoral elections on competitiveness and participation in local elections, I estimate difference-in-differences models. Table 5.5 shows the results of the baseline specification in model 5.3 for the three indicators of electoral competitiveness. The hypotheses expected that introducing direct mayoral elections led to an increase in the actual number of parties (H1), a decrease in the effective number (H2), and an increase in the margin of victory (H3). These hypotheses are only partially supported by the baseline DiD models. While direct mayoral elections had no significant effect on the margin of victory between the first and second-placed party, it had a positive effect on the actual and the effective number of parties. Only H1 is thus supported, while Hypotheses 2-3 need to be rejected based on these models. Under the condition that the key assumptions of the difference-in-differences framework hold, the results indicate that having direct mayoral elections increases the actual number of parties on average by 0.711, and the effective number of parties by 0.423. However, as next subsection shows, the assumption of parallel trends is questionable for electoral competitiveness, and a causal interpretation of the estimates is therefore not appropriate. Note that the significance of the effect on the effective number of parties is not robust to measurement specification. Table A.33 in the Appendix shows that when measuring the effective number with the operationalization by Golosov (2010), the effect is no longer significant. This still contradicts H2, which expected a significant negative effect.

Table 5.5: Baseline DiD for electoral competition (Study 2)

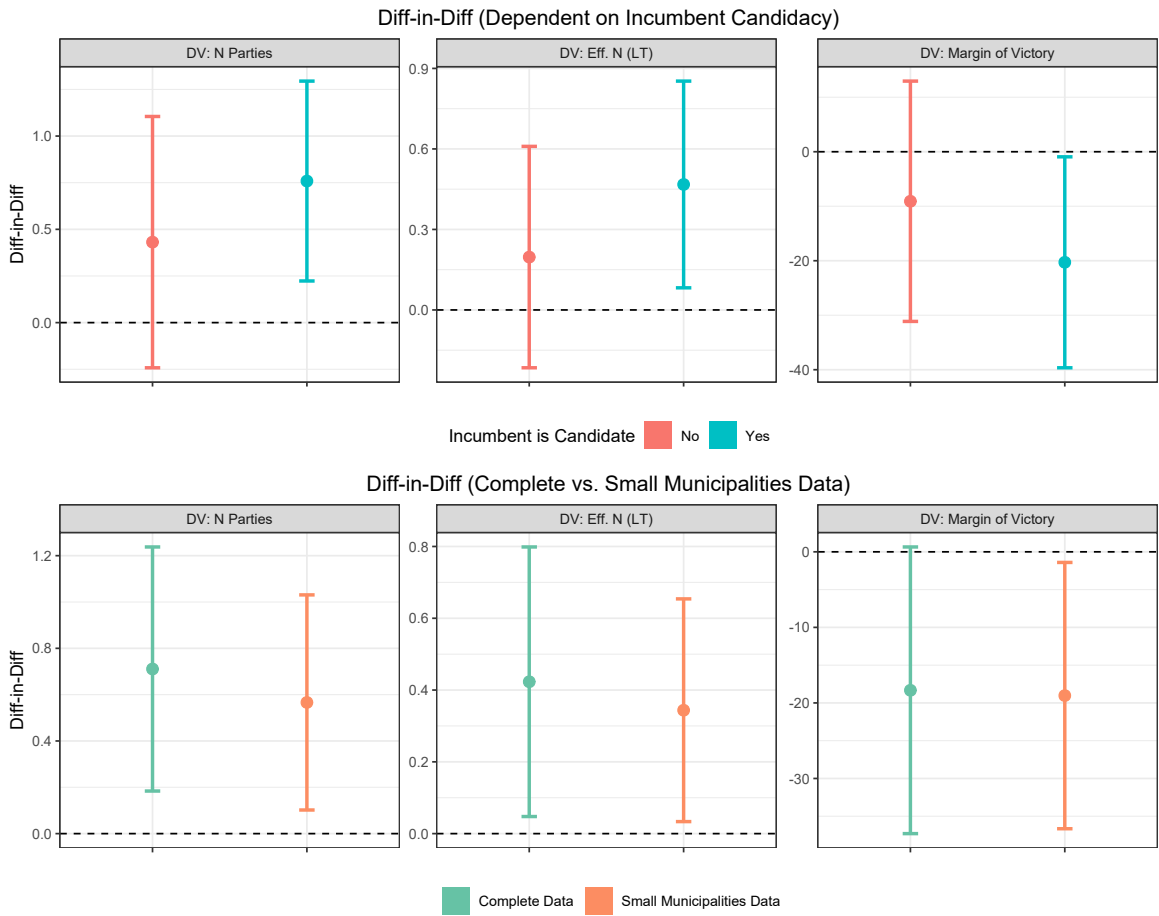
	N Parties (76)	Eff. N _{LT} (77)	Margin of Victory (78)
Diff-in-Diff	0.711** (0.320)	0.423* (0.228)	-18.327 (11.534)
Eligible Voters (in 1000s)	0.304** (0.120)	0.205*** (0.066)	-4.903** (2.354)
Share of Pop. 65+	-0.037 (0.033)	-0.028 (0.021)	-0.185 (1.142)
Share of Pop. with Uni Degree	-0.037 (0.073)	-0.069 (0.059)	3.922 (3.250)
Communal Tax/Capita	-0.0003 (0.0005)	-0.0002 (0.0004)	0.023 (0.026)
Observations	336	336	336
Municipality FE	X	X	X
Year FE	X	X	X
R ²	0.834	0.801	0.751
Adjusted R ²	0.786	0.744	0.680
RMSE	0.520	0.325	17.837
<i>Note:</i> Clustered SE; *p<0.1; **p<0.05; ***p<0.01			

Hypothesis 4 expected that the effect of direct mayoral elections on the different indicators of electoral competitiveness depends on whether the incumbent mayor is again a candidate. To test this, I introduce an interaction between the DiD estimator and the incumbent dummy into Model 5.3. The first row in Figure 5.6 shows the average treatment effects conditional on incumbent candidacy. It suggests that having a direct mayoral election has no effect on electoral competitiveness if the incumbent is not a candidate, but has a positive effect on electoral competitiveness if he or she is. However, as is apparent from Table A.31, the differences in the treatment effects conditional on incumbent candidacy are not significant. Still, H4a-c are not supported by these models and need to be rejected, as H4a expected the (positive) effect on the actual number of parties to be smaller, the (negative) effect on the effective number of parties to be stronger, and the (positive) effect on the margin of victory to be more pronounced whenever the incumbent mayor is again a candidate.³⁶

Concerning the size of the municipality, I expected that the (positive) effect on the (actual) number of parties (H5a) and the (negative) effects on the effective number of parties (H5b) as well as the margin of victory (H5c) to be of larger magnitude with increasing population size. While I cannot test these hypotheses explicitly, comparing the DiD outcomes when using the complete sample to

³⁶Using the operationalization by Golosov (2010) for the effective number of parties leads to results similar to when using the classical one by Laakso and Taagepera (1979), see Table A.33 and Figure A.9 in the Appendix.

Figure 5.6: Differences in treatment effects on electoral competition - conditional on incumbency and sample



Note: Clustered Standard Errors.

Table 5.6: DiD for turnout (Study 2)

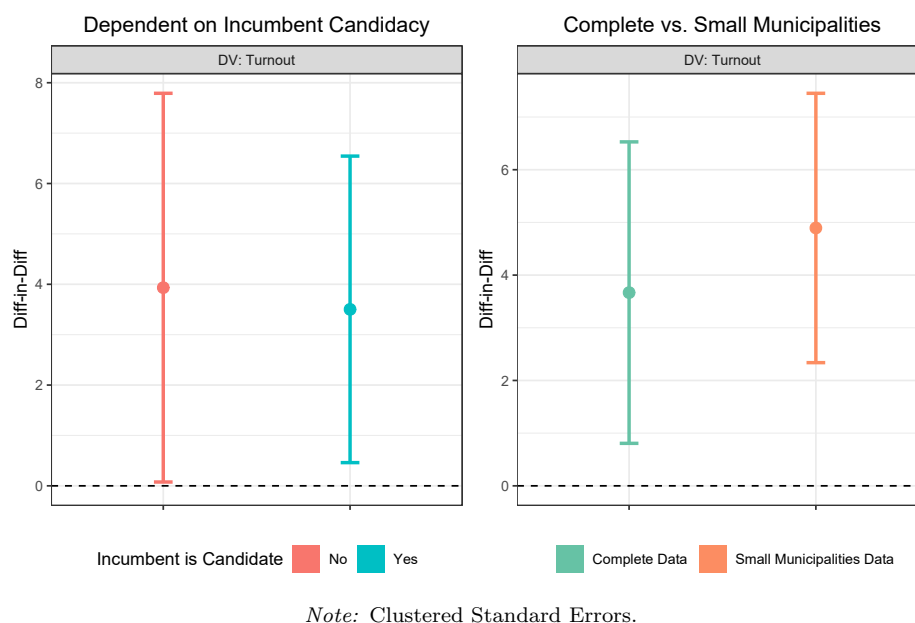
	Baseline (88)	:Incumbent (89)	Small Municipalities (90)
Diff-in-Diff	3.667** (1.739)	3.933* (2.345)	4.894*** (1.554)
Diff-in-Diff:Incumbent		-0.431 (2.043)	
Incumbent is Candidate		0.618 (0.864)	
Eligible Voters (in 1000s)	-2.546** (1.212)	-2.559** (1.220)	-22.382*** (4.384)
Share of Pop. 65+	0.513 (0.329)	0.502 (0.334)	0.259 (0.304)
Share of Pop. with Uni Degree	-2.749*** (0.597)	-2.748*** (0.599)	-1.920** (0.717)
Communal Tax/Capita	0.005 (0.006)	0.005 (0.006)	0.009 (0.006)
Observations	336	336	224
Municipality FE	X	X	X
Year FE	X	X	X
R ²	0.935	0.935	0.925
Adjusted R ²	0.917	0.916	0.904
RMSE	4.020	4.016	3.747
<i>Note:</i> Clustered SE; *p<0.1; **p<0.05; ***p<0.01			

using only data from small municipalities offers some insight as to whether results are driven by larger municipalities. As can be seen in Table A.32 in the Appendix, having direct mayoral elections has increased electoral competitiveness even when excluding all larger municipalities, and in contrast to the model with the complete sample in Table 5.5 the effect is also significant for the margin of victory as an indicator for electoral competitiveness. But as the second row in Figure 5.6 shows, there are practically no differences in effect sizes between the complete sample and the small municipalities subsample. This suggests that results are not driven by larger municipalities.³⁷

Moving on to electoral participation, the baseline DiD for turnout - Model 88 in Table 5.6 - shows that having direct mayoral elections increases turnout in local elections by 3.67 percentage points on average. Hypothesis 6 is therefore supported by the baseline DiD model. As in the first local election after the reform in 2000 voting was still compulsory and differences between treatment and control

³⁷Again, when using the Golosov (2010) operationalization for the effective number of parties, results do not differ between using the complete sample or the small municipalities subsample, see Table A.33 and Figure A.9 in the Appendix.

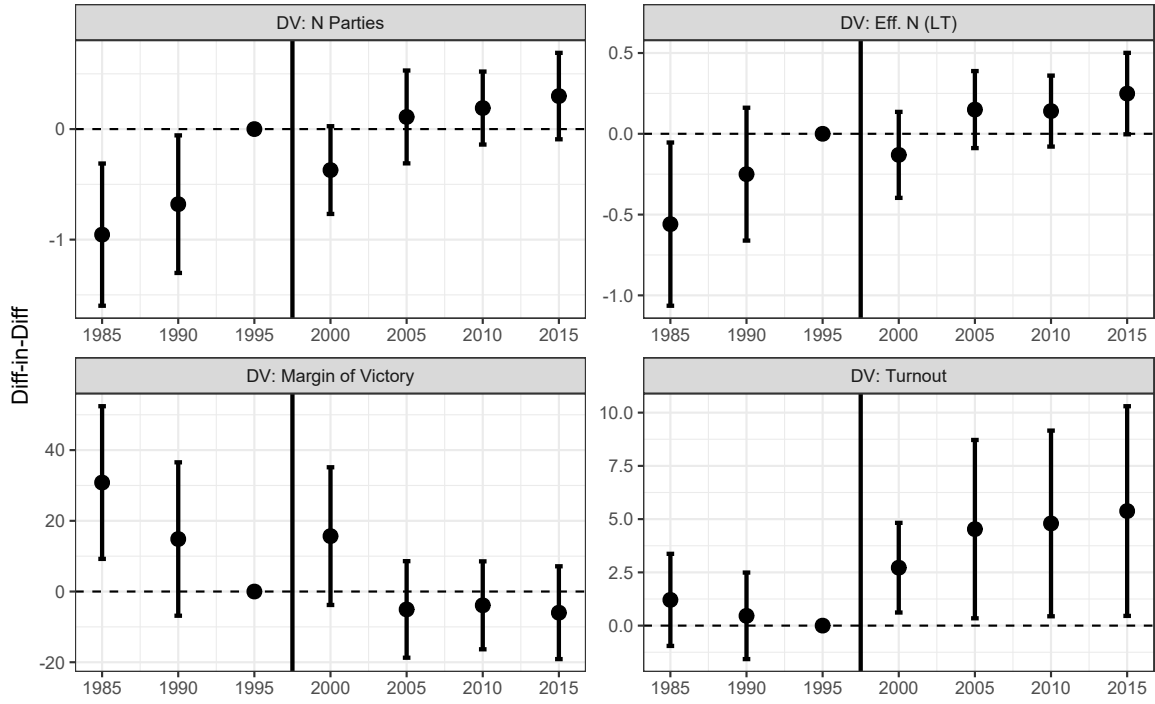
Figure 5.7: Differences in treatment effects on turnout - conditional on incumbency and sample



group were still small (see Figure 5.3), it is possible that the effect of direct mayoral elections was even stronger once compulsory voting was abolished. In the next subsection, the results from the event-study models will offer insights into time-variant treatment effects. Already with the complete sample, the effect of direct mayoral elections on turnout is positive, which is in contrast to the time trends shown in Figure 5.3, that showed that turnout was slightly lower in treatment group municipalities from 2005 onwards. One reason for this difference is that several of the larger municipalities are already not included in the baseline DiD models, since they were off the common support following the propensity score matching procedure.

Figure 5.7 shows on the left side the effect of direct mayoral elections on turnout conditional on whether the incumbent was candidate again or not. For both cases, treatment effects are positive, and Model 89 in Table 5.6 shows that the differences in effect size are not significant. Hypothesis 7 therefore has to be rejected. For the role of municipality size in determining the effect of directly elected mayors on participation at local elections, Figure 5.7 shows on the right side that the effect is similar when excluding all larger municipalities from the sample. If anything, the effect of direct mayoral elections on turnout was even larger in smaller municipalities. This is in contrast to Hypothesis 8 which therefore needs to be rejected.

Figure 5.8: Baseline event-studies (Study 2)



Note: Clustered Standard Errors.

5.2.4 Event-Study Results

The results from the DiD models above showed that direct mayoral elections had in most cases a positive effect on both electoral competitiveness and participation. Further, the effects did not depend on neither incumbent mayor candidacy nor population size. In this subsection, I now turn to the results from the event-study models, resulting from estimating Model 5.5. These models have two benefits: First, they account for the possibility of time-variant treatment effects. This may be especially relevant in the case of turnout, where for the first election after the reform voting was still compulsory and therefore having direct mayoral elections should only have a small effect if anything at all on turnout. Second, the plausibility of the parallel trends assumption that is central to establishing causality in DiD models can be assessed with event-study models by looking at the placebo effects of the treatment in the pre-reform period. As Figures 5.3 and 5.4 implied, this assumption is questionable for the indicators of electoral competitiveness. The event-study models then provide evidence whether using weights based on propensity scores helped in accounting for that.

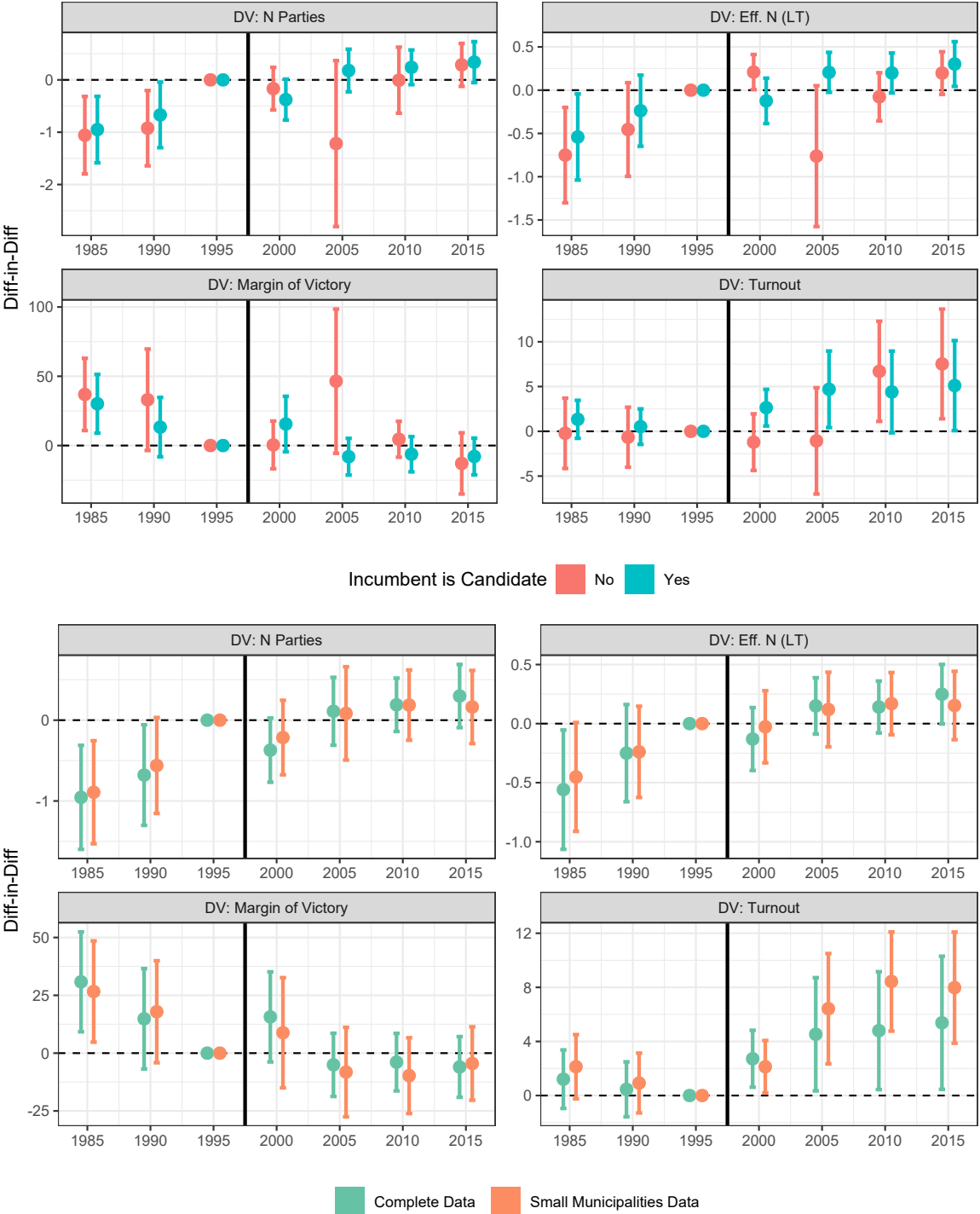
Figure 5.8 shows the resulting pre- and post-reform treatment effects from the baseline event-study models with 1995 as reference year. The models are also reported in Table A.34 in the Appendix. For all three indicators of electoral competitiveness at least one of the pre-reform placebo treatments is significant. This is evidence for non-parallel pre-treatment trends, which questions the assumptions of parallel trends post-reform in absence of the treatment between control and treatment group. Further, none of the post-reform treatment effects are significant, which suggests that the positive effect of direct mayoral elections on electoral competitiveness in the basic DiD models presented in the subsection above are driven by pre-treatment differences. Taken together, the relationship between electoral institutions and competitiveness found in the DiD models cannot be interpreted as a causal effect. Still, Hypotheses 1-3 also need to be rejected based on the results of the event-study models, as none of them show significant differences between the post-reform elections and the 1995 reference election. For turnout, however, the baseline event-study model does not have any significant pre-reform placebo treatment effects, while post-reform treatment effects are all positive and significant (see Figure 5.8 and Table A.34). Therefore the event-study model supports H6, which claimed that direct mayoral elections increase turnout at local elections. Note that the effect size is smallest in 2000, when voting was still compulsory.

To assess the possibility of different treatment effects conditional on whether the incumbent mayor is again a candidate, I extend the event-study model in 5.5 with interactions between the pre- and post-reform treatment effects with the incumbent candidacy dummy. The results of these models are presented in Table A.35 and visualized in Figure 5.9. Similar to the DiD results, I find no significant differences in treatment effects conditional on incumbent candidacy for all three indicators of electoral competitiveness. Again, several pre-reform placebo effects are significant, while almost none of the post-reform effects are. Taken together, Hypothesis 4 also needs to be rejected based on the event-study models.³⁸

For turnout, none of the placebo effects are significant. At the same time there are some significant differences in the post-reform treatment effects conditional on incumbent candidacy. Both in 2000 and in 2005, the treatment effect was significantly higher whenever the incumbent was again a mayoral candidate, while for those two elections no significant effect is found when the incumbent was not. For the latter two post-reform elections in 2010 and 2015, no significant differences in treatment effects are found. The evidence from the event-study model on turnout is in contrast to H7, which

³⁸Note that for all event-study specifications, the implications for the hypotheses are identical when using the operationalization by Golosov (2010) for the effective number of parties, instead of the classical one by Laakso and Taagepera (1979), see Table A.37 and Figure A.10 in the Appendix.

Figure 5.9: Event-studies - conditional on incumbent candidacy and sample (Study 2)



Note: Clustered Standard Errors.

expected that the effect of direct mayoral elections on turnout is smaller if the incumbent is again a candidate. This hypothesis thus needs to be rejected, as whenever there are differences in treatment effects conditional on incumbent candidacy, they are in the opposite direction.

Finally, I also estimate the baseline event-study models in Table A.34 with data from only small municipalities. On the one hand, restricting the sample to only small municipalities adds to the robustness of the initial findings, as well as makes the parallel trend assumption more plausible, since all of the municipalities in the control group are small in population size. On the other hand, this also provides some suggestive evidence to assess Hypotheses 5 and 8 that postulate different treatment effects conditional on population size. The results from the event-study models with the small municipalities subsample are summarized in Table A.36 in the Appendix. Figure 5.9 compares the treatment effect estimates for the two different sample specifications.

Even with the restriction to small municipalities only, several pre-reform placebo effects are significant for the indicators for electoral competitiveness, while at the same time there are no significant post-reform effects. Again, this suggests that the effects found above in the DiD models are mainly driven by pre-reform differences and cannot be interpreted causally. For turnout, none of the pre-reform placebo effects are significant, while all post-reform effects are significant and positive. Similar to the event-study model with the complete sample, the effect is smallest in 2000 under compulsory voting. The treatment effects later on are notably larger when only using data from small municipalities, with direct mayoral elections increasing turnout by 6.4-8.4 percentage points on average from 2005 onwards, compared to 4.5-5.4 percentage points with the complete sample. While the small municipalities data therefore also supports H6 (direct mayoral elections increases turnout), effects are even stronger when excluding larger municipalities, which contradicts H8. However, this could also be due to different reactions to the 2005 abolition of compulsory voting in larger municipalities compared to smaller ones.

5.3 Discussion

To sum up, the only hypothesis that is consistently supported by the results from Study 2 is H6, which expected that turnout at municipal council elections increases due to the introduction of direct mayoral elections. The simple difference-in-differences models showed that having a simultaneous election of the mayor led to a significantly higher turnout by 3.7 percentage points. Event-studies show that pre-reform trends in turnout did not significantly differ between the treatment and control group, suggesting that the parallel-trends-assumption may indeed be valid and the Diff-in-Diff estimate for the effect of direct mayoral elections on turnout can be interpreted causally.

One caveat to this interpretation is that during the treatment period, there was another reform in Vorarlberg that could have impacted turnout differently in treatment and control group, namely the abolition of compulsory voting from the elections of 2005 onwards. However, as the treatment group in contrast to the control group includes large municipalities, and the reduction in turnout due to voting no longer being compulsory can be expected to be more pronounced in larger municipalities, the Diff-in-Diff estimate for the baseline sample can be interpreted as a lower bound of the effect of direct mayoral elections on turnout. This interpretation is supported by two additional results: First, when restricting the sample to only small municipalities, the simple Diff-in-Diff is of larger magnitude than with the baseline sample (+4.9 p.p. in turnout due to direct mayoral elections). This is also consistent with the results from the event-studies, where the effects of direct mayoral elections on turnout when restricting the sample to small municipalities are larger in magnitude for all post-reform elections with the exception of the first post-reform election in 2000, where compulsory voting was still in effect. Second, the event-studies further showed that there is already a significant positive effect of direct mayoral elections on turnout in the municipal council elections of 2000, which indicates that the reform also had an effect in absence of the abolition of compulsory voting.

The results of Study 2 are however less favorable for the hypotheses on electoral competitiveness. While the baseline difference-in-differences model indicated that the actual number of parties at municipal council elections increased by 0.7 due to introducing simultaneous direct mayoral elections, which is in line with H1, the results from the event-study show that this effect is mainly driven by different pre-reform trends. For the effective number of parties and the margin of victory at municipal council elections as measures for electoral competitiveness, the baseline Diff-in-Diffs suggest that competitiveness increased, although the effect for the margin of victory is not significant at the 10% level, which is in contradiction to H2-3. But again, event-studies show significant pre-treatment trends which indicates that the parallel-trends-assumption that is crucial to difference-in-differences models is invalid. This is even the case when restricting the sample to only small municipalities which are arguably more comparable.

I further expected that the effect of having direct mayoral elections on electoral competitiveness and participation depended on the candidacy of the incumbent mayor (H4 and H7). For electoral competitiveness, I find no significant differences in the effects on all three indicators of competitiveness conditional on the incumbent mayor being again a candidate or not. For turnout, the difference-in-differences model also showed no significant differences in the treatment effect conditional on whether the incumbent mayor was again a candidate. The event-studies on the other hand includes significant differences in the treatment effects on turnout in the post-reform period. However, as these indicate

that in several elections there was no treatment effect if the incumbent was not a candidate, it contradicts the assumption of H7. Therefore, both H4 and H7 need to be rejected based on the results of Study 2.

Additional to the candidacy of the incumbent mayor, I also expected the effect of the reform on competitiveness and turnout to be dependent on the population size of the municipality (H5 and H8). As argued in Section 5.1.2, the absence of large municipalities in the control group renders it impossible to test these hypotheses more rigorously in Study 2. However, restricting the sample to only small municipalities offers some insight as to whether results with the complete sample were mainly driven by larger municipalities. The results of both the difference-in-differences models as well as the baseline models suggest that this is not the case. If anything, the direct mayoral elections led to a significantly stronger increase in turnout in small municipalities, which contradicts H8.

Besides the additional reform of the electoral rules in the post-treatment period (i.e., the abolition of compulsory voting), the major limitation of Study 2 is that the validity of the crucial parallel-trends-assumption is questionable. As discussed in Section 5.1.2, selection into the treatment group did not happen randomly and may even be endogenous. This is supported by the time trends in the main dependent variables in Figure 5.3, which showed for all the three indicators of electoral competitiveness major differences in both levels and trends in the pre-reform period, with the latter being especially problematic for causal identification using a difference-in-differences design. While I tried to address this by including weights based on a municipality's propensity to be treated (i.e., to opt for direct mayoral elections), the results from the event-studies still show significant pre-reform treatment effects concerning electoral competitiveness, which casts doubt over the validity of the parallel-trends-assumption. The results of Study 2 concerning the electoral competitiveness are mainly driven by pre-treatment trends and therefore might not be meaningful when evaluating the hypotheses.

6. Conclusion

In this master thesis, I set out to evaluate possible spillover effects from an additional election under a majoritarian system to an election at the same level under proportional representation (PR). To assess this empirically, I conducted two different studies that both make use of the reform of local elections in Austria which introduced a direct election of mayors. As the implementation of this reform was not uniform across all Austrian states, I exploit both the cross-state variation in the electoral set-up across six Austrian states (Study 1) as well as the within-state variation in the state of Vorarlberg (Study 2) to evaluate the impact of a concurrent direct mayoral elections (majoritarian) on electoral competitiveness and participation at the municipal council elections (PR).

Concerning the competitiveness of municipal council elections, I considered three different indicators. For the actual number of parties contesting the elections, I expected an increase due to direct mayoral elections (H1), as I argue that the potential negative effects of the reform, resulting from a dropout of existing parties due to a spillover of the marginalization of minor parties in majoritarian elections, are outweighed by the potential positive effects, resulting from additional incentives for former outsiders to enter the race. This hypothesis is supported by the cross-state comparison (Study 1). However, since there is no variation within the states due to unavailable data before 2000 (i.e., before the reform), these results could simply be due to already existing pre-reform differences. For the case study of Vorarlberg (Study 2) where there is within-unit variation of the electoral set-up, I indeed find support for H1 again with the initial baseline difference-in-differences model, but further event-study models indicate that this is mainly driven by different pre-treatment trends. Therefore, support for H1 is limited and questionable.

For the effective number of parties, I expected a decrease due to direct mayoral elections (H2), on account of the negative effect due to greater gains for the major party or parties outweighing the positive effects due to new party entry. This hypothesis has to be rejected by both Study 1 and Study 2. To the contrary, elections for the municipal council also seem to become more competitive measured by the effective number of parties as a result of a concurrent direct mayoral elections. Again, results from the event-studies in Study 2 suggest that the effect may be an artifact of different pre-treatment trends. For Study 1 on the other hand, a descriptive analysis of the levels in the

effective number of parties before the reforms did not show notable pre-reform differences between the states. Even after excluding the state with a slightly higher general level in the effective number of parties, the effect of direct mayoral elections on the effective number of parties at municipal council elections remained positive and significant. Overall, the results suggest that if anything, the effective number of parties increased due to the direct mayoral elections.

For the final indicator of electoral competitiveness, the margin of victory, I expected an increase due to direct mayoral elections because of a spillover of strong incumbency effects at direct mayoral elections (H3). Again, neither Study 1 nor Study 2 supported this hypothesis. Results from Study 1 suggest that the margin of victory at municipal council elections is lower if the mayor is elected directly at the same time. However, due to a notable difference in pre-reform levels between the states, the finding could simply be an artifact of this pattern, as observations before the introduction were not included in the multivariate analysis. In Study 2, the direction of the treatment effect in the difference-in-differences models also contradicts the expectation, although it is not always significant. Furthermore, event-studies again show that this finding is mainly driven by different pre-reform trends in the margin of victory between municipalities that implemented the reform and those that did not.

Summarizing the findings on electoral competitiveness, the main take-away from this thesis is that if anything introducing a new (concurrent) majoritarian election resulted in more competitive PR elections at the same level. While I expected this to be the case for one of the three indicators (the actual number of parties), this contradicts my assumptions for the other ones. Two reasons can be put forward for this: First, it is feasible that former political outsiders enter because the more personalized campaign benefits them in contrast to the established parties. These candidates therefore should be more successful at mayoral elections. If there is spillover from the mayoral to the municipal council elections, this could usher in a more fragmented party system there, resulting in a higher effective number of parties and a lower margin of victory. Second, the introduction of direct mayoral elections also gives voters the opportunity to support the incumbent mayor while still voting for a different party at municipal council elections. If split-ticket voting is dominant at local elections, it also could lead to more competitive municipal council elections as the incumbency bonus for being the mayor's party would be reduced when the mayor is elected separately.

Concerning electoral participation, I expected the turnout at municipal council elections to be higher if there are concurrent mayoral elections (H6). This is the only hypothesis which has robust support by all the models in both Study 1 and 2. Study 1 indicates that turnout is 4.9 percentage points higher if the mayor is elected directly at the same time. As Study 1 does not include any within-state variation in the electoral set-up, this could simply be an artifact of different levels in turnout between

states that implemented the reform and those that did not already before the reform. However, this finding is backed up by Study 2, which includes not only within-state variation but also within-municipality variation. The effect size is slightly smaller in magnitude when considering the complete baseline sample (+3.7 p.p.), but essentially identical when restricting it to only small municipalities (+4.9 p.p.). Furthermore, the results from the event-studies on turnout in Study 2 also suggest that the parallel-trends-assumption may indeed be valid, which allows for a causal interpretation of the findings in Study 2.

Additionally, I assessed whether the effect of direct mayoral elections on electoral competitiveness and participation depend on incumbent mayor candidacy (H4 and H7) and the size of the municipality (H5 and H8). Concerning the incumbent candidacy, I expected that the increase in the actual number of parties is weaker (H4a), and the decrease in the effective number of parties as well as the increase in the margin of victory to be of greater magnitude (H4b-c) in case the incumbent mayor runs again. For turnout, I expected the positive effect of direct mayoral elections on turnout to be weaker if the incumbent is again a candidate (H7). The theoretical argument behind this conditionality stems from the assumption that incumbency effects are strong in local elections and that therefore elections are more in favor of the incumbent in case of candidacy. This in turn implies less incentives for parties to enter the competition, less competitive elections in general, and also less incentive for voters to participate since elections could be seen as forgone conclusions. However, I find no significant differences in the effect conditional on whether the incumbent mayor was again a candidate or not in almost all models. Thus, H4a-c and H7 all have to be rejected based on the results of Study 1 and 2. Additionally, none of the models reported a significant direct effect of incumbent candidacy on both electoral competitiveness and participation.

This seems to be at odds with existing research that showed that the incumbency bonus is strong at the local level (e.g., Freier, 2015; Gulino, 2021; Kukołowicz & Górecki, 2018; Taylor & McEleney, 2019). There are two possible explanations for this result: First, it could be the case that voters only follow their preference for the incumbent for the mayoral elections, but opt for split-ticket voting and support other parties at the municipal council elections. This would lead to a significantly lower incumbency bonus for the mayor's party at local elections, whenever the mayor is elected directly. Second, the operationalization treats all incumbent mayors the same, i.e. I implicitly assume that the incumbency bonus does not depend on how long the incumbent is already in office. As was apparent from the data collection on incumbent mayor candidacy, mayors often resign from office during their

term and not at the end of it. This leads to incumbent mayors as candidates that have sometimes been in offices only for a couple of weeks before the elections. If there is no incumbency bonus for these candidates, this would bias the estimates downwards.

Concerning the population size of the municipality, I argued that all of the expected effects of direct mayoral elections on competitiveness are of larger magnitude with increasing population size (H5a-c), and that the effect on turnout is stronger in larger municipalities as well (H8). In both Study 1 and 2, the interaction hypotheses on electoral competitiveness do not find consistent support. For the interaction concerning turnout as dependent variable, H8 is supported by the cross-state comparison in Study 1, where the effect of direct mayoral elections on turnout gets stronger the larger a municipality is. However, this is not backed up by the case study on Vorarlberg in Study 2, where the results suggest that if anything, the effect on turnout is stronger in small municipalities. One explanation for this contradiction could be the fact that Vorarlberg abolished compulsory voting only after the reform. If this affected larger municipalities, which were all part of the treatment group more, this could lead to a downward bias in the effect when considering all municipalities.

There are of course several limitations to the findings of this master thesis. For Study 1, the major drawback is that no pre-reform elections are included in the multivariate analysis. This meant that municipality or state fixed effects which would account for unobserved time-invariant differences in the dependent variables could not be introduced into the models. As a result, the findings in Study 1 could simply be an artifact of already differing levels before the introduction of direct mayoral elections in four of the six states considered in the cross-state comparison. Furthermore, the main results are based only on a subset of municipalities, to reduce the expense of the incumbent candidacy data collection. The summary statistics suggested that the random draw indeed resulted in a comparable sample, which is further supported by the fact that the effects of having direct mayoral elections on the dependent variables were comparable when using all the municipalities in the regression models. However, this was not always the case when considering the interactions between the effect of the electoral set-up and the population size. For the effective number of parties, the direction of this interaction changed when extending the data to all municipalities. One reason for this could be that states with more municipalities are by construction given more weight in these regressions, which was not the case for the models with the sample data, as the number of municipalities drawn was the same for each state.

The research design for Study 2 on the other hand heavily builds on the parallel-trends-assumption for the identification of causal effects. However, even after weighting the observations based on their propensity to introduce direct mayoral elections, event-studies for electoral competitiveness still

showed significant pre-reform effects. This suggests that for competitiveness, the crucial assumption of parallel trends in treatment and control group in absence of the reform is likely invalid. Additionally, as already discussed above the state of Vorarlberg also implemented another reform, namely the abolishing of compulsory voting, during the post-reform period. If this impacted turnout differently in treatment and control group, this would bias the estimates. But as the abolition is expected to have a stronger negative on turnout in larger municipalities where turnout rates in absence of compulsory voting are usually lower, the effect of the reform on turnout can be interpreted as a lower limit, since all large municipalities were part of the treatment group. This is supported by both the fact that the treatment effect is already positive and significant in 2000 where compulsory voting was still in place, and by the finding that when only comparing small municipalities, the treatment effect on turnout is larger in magnitude.

For both studies, a major caveat is the potential endogeneity of the reform. As research in comparative political science that studies electoral systems as political outcomes and not as cause for political outcomes frequently points out, how electoral institutions affect for example competitiveness and turnout cannot be independently assessed, as the causal direction could be both bidirectional or reverted (e.g., Benoit, 2007; Colomer, 2004; Nunez & Jacobs, 2016). The descriptive patterns in Study 1 and 2 both indicated that for several of the dependent variables there are different levels and trends already in the pre-reform period between states or municipalities that implemented direct mayoral elections and those that did not. This suggests that endogeneity of electoral rules is likely to be a problem.

Irrespective of these limitations, this master thesis adds to a growing literature on the effects of mixed electoral systems on political outcomes. For both electoral competitiveness and turnout the results suggest that the effect of having a mixed system is not simply a weighted combination of the effects of the two 'pure' systems. If that was the case, both competitiveness and turnout at the PR elections for the municipal council would have decreased following the introduction of a majoritarian mayoral election, as majoritarian elections are typically associated with lower levels of both competitiveness and turnout (e.g., Cancela & Geys, 2016; Dickson & Scheve, 2010; Eggers, 2015; Fiva & Hix, 2021). However, the turnout at municipal council elections increased due to having concurrent mayoral elections. While the impact on competitiveness is less robust, the results suggest that if anything the reform has made elections more competitive as well.

On the other hand, both Study 1 and 2 indicate that electoral competitiveness and participation at municipal council elections is not independent from introducing a majoritarian election, as in this case there should have been no effects of the reform. Taken together, the results indicate that the

effects of a mixed system depend on the specific set-up of electoral rules and that the effects of the elements from both PR and majoritarian elections interact with each other. This is in line with existing research on the effects of mixed electoral systems, which find spillover or contamination effects from one election to another if held under different rules (e.g., Herron, Kuniaki, et al., 2018; Jastramskis, 2019; Lago & Martínez, 2007; Rich, 2015).

In relation to the general literature in comparative political science on the effects of electoral systems on political processes and outcomes, this thesis again provides support for the crucial role of institutions in determining electoral competitiveness and participation. More importantly however, the findings point out the major potential for endogeneity problems when it comes to studying the effects of electoral rules. Since electoral systems are also a consequence of the political surrounding (Benoit, 2007) causality is hard to establish. Most studies on this issue further build on cross-national comparisons, where there is often no variation in electoral rules within countries due to the relative consistency of these rules. This in turn leads to the possibility of unobserved country-specific factors determining political outcomes and not so much the electoral institutions themselves. Even in this thesis, which was restricted to states within the same country (Study 1) and even municipalities in the same state (Study 2), and where general time-invariant factors could be expected to be less of an issue, the findings suggested multiple times that differences in the dependent variables have already existed before the reform.

For a causal assessment of the effects of electoral intuitions, researchers should thus focus on actual (quasi-)random assignment of electoral rules (e.g., Eggers, 2015; Fujiwara, 2011; Gulino, 2021), to come up with more credible results. An additional short-coming in this thesis is that it was not possible to assess where spillover effects from direct mayoral elections to municipal council elections stem from. Future research could consider the role of different mechanisms. These include the mechanical effect of electoral rules in how offices are allocated, changes on demand side of politics - e.g., changing voter preferences for parties or candidates or voter perceptions about the importance of local elections - as well as changes on the supply side - e.g., changes in campaign behavior to a more personalized campaign or new incentives for political outsiders to enter the competition. Finally, the causal identification in Study 2 suffered from the fact the assignment of electoral rules was not random. Other causal methods such as synthetic control may offer new avenues of addressing this problem in a better way than combining difference-in-differences models with propensity score weights.

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A. Appendix

The Appendix of this master thesis is structured into three sections: Section A.1 includes the thesis abstracts, in both English and German. Section A.2 then provides additional distribution statistics, figures and regression models for Study 1, which were all referenced in Chapter 4. For Study 2, these are included in Section A.3. Again, all the models, figures, and tables included in this Appendix section were already discussed in Chapter 5.

A.1 Abstracts

Abstract (English)

How the institutional set-up of elections influences the political process and outcomes has been an ongoing debate in political science literature. A number of political entities nowadays employ a mixed electoral system, i.e. a system combining both elements from proportional representation and majoritarian elections. In this thesis, I consider the case of local elections in Austria, where reforms in the 1990s introduced majoritarian direct mayoral elections, which are held simultaneously as elections for the municipal council following proportional representation in some Austrian states.

Building on existing research in comparative political science, I study how this new method of elections affects electoral competitiveness and participation at municipal council elections. Two studies are conducted to test the hypotheses put forward in this master thesis. Study 1 uses cross-state variation in the introduction of direct mayoral elections, estimating multivariate regression models based on municipal council elections in six Austrian states since 2000. I show that municipal council elections are on average more competitive, in terms of both the actual and the effective number of parties as well as the margin of victory, in case the mayor is elected directly. Concerning the effective number of parties and the margin of victory, this is in contrast to my hypotheses. Furthermore, turnout at municipal council elections is higher whenever there is a concurrent direct mayoral election.

Study 2 tests the hypotheses using local elections in Vorarlberg between 1985 and 2015, where there is both variation within and across municipalities. This variation in electoral systems is exploited to estimate causal effects of the electoral reform using difference-in-differences models. To address the issues of potential endogeneity of treatment assignment, I apply propensity score matching. I perform event-study analyses to both control for time-variant treatment effects and to assess the plausibility of the parallel-trends-assumption. Results from the difference-in-differences models are in line with the main findings of Study 1. Municipal council elections are more competitive and have higher turnout levels in case of concurrent direct mayoral elections. Event-study analyses suggest that the parallel-trends-assumption does not hold for electoral competitiveness. Concerning electoral participation at municipal council elections, Study 2 suggests that direct mayoral elections lead to an increase in turnout of 3.7 percentage points.

keywords: electoral rules, mixed electoral systems, electoral competitiveness, turnout, local politics, municipal council elections, direct mayoral elections, Austria

Abstract (Deutsch)

Die Frage, wie der institutionelle Aufbau von Wahlen den politischen Prozess und das Ergebnis beeinflusst, ist eine fortdauernde Debatte in der Politikwissenschaft. Ein gemischtes Wahlsystem, welches sowohl Elemente des Verhältnis- als auch des Mehrheitswahlrechts kombiniert, wird in den letzten Jahrzehnten immer häufiger eingesetzt. In dieser Masterarbeit betrachte ich den Fall der Kommunalwahlen in Österreich, wo durch Reformen in einigen österreichischen Bundesländern in den 1990er Jahren Bürgermeister*innen-Direktwahlen basierend auf dem Mehrheitswahlrecht eingeführt wurden, die gleichzeitig mit den Gemeinderatswahlen nach dem Verhältniswahlrecht abgehalten werden.

Aufbauend auf bestehender Forschung in der vergleichenden Politikwissenschaft untersuche ich, wie sich diese neue Wahlmethode auf den Wettbewerb und die Wahlbeteiligung bei Gemeinderatswahlen auswirkt. Zwei Studien werden durchgeführt, um die in dieser Masterarbeit aufgestellten Hypothesen zu testen. Studie 1 verwendet länderübergreifende Variation bei der Einführung von direkt gewählten Bürgermeister*innen und schätzt multivariate Regressionsmodelle auf Basis von Gemeinderatswahlen in sechs österreichischen Bundesländern seit 2000. Diese zeigen, dass Gemeinderatswahlen im Durchschnitt kompetitiver sind, sowohl was die tatsächliche als auch die effektive Anzahl der Parteien und den Vorsprung der stärksten Partei betrifft, wenn der*die Bürgermeister*in direkt gewählt wird. Hinsichtlich der effektiven Zahl der Parteien und der Gewinnspanne steht dies im Gegensatz zu meinen Hypothesen. Zudem ist die Wahlbeteiligung bei Gemeinderatswahlen höher, wenn gleichzeitig eine Bürgermeister*innen-Direktwahl stattfindet.

Studie 2 testet die Hypothesen anhand von Kommunalwahlen in Vorarlberg zwischen 1985 und 2015, bei denen es sowohl innerhalb als auch zwischen den Gemeinden Variation im Wahlsystem gibt. Diese Variation wird genutzt, um kausale Effekte der Wahlreform mit Hilfe von Difference-in-Differences (DiD) Modellen zu schätzen. Um das Problem einer potenziell endogenen Zuordnung zur Treatment-Gruppe zu adressieren, verwende ich Propensity Score Matching. Ich führe Event-Study-Analysen durch, um sowohl für heterogene Treatment-Effekte über die Zeit zu kontrollieren als auch die Plausibilität der Annahme paralleler Trends zu bewerten. Die Resultate der DiD-Modelle stimmen mit den wichtigsten Ergebnissen von Studie 1 überein. Die Gemeinderatswahlen sind kompetitiver und weisen eine höhere Wahlbeteiligung auf, wenn gleichzeitig direkte Bürgermeister*innen-Wahlen stattfinden. Event-Study-Analysen deuten darauf hin, dass die Annahme paralleler Trends für den Wettbewerb bei Wahlen nicht zutrifft. Was die Partizipation bei Gemeinderatswahlen angeht, so zeigt die zweite Studie, dass Bürgermeister*innen-Direktwahlen zu einem Anstieg der Wahlbeteiligung von 3,7 Prozentpunkten führen.

Schlüsselwörter: Wahlregeln, Gemischtes Wahlsystem, Wahlwettbewerb, Wahlbeteiligung, Kommunalpolitik, Gemeinderatswahlen, Bürgermeister-Direktwahlen, Österreich

A.2 Study 1: Appendix

A.2.1 Distribution statistics (Study 1)

Table A.1: Distribution of DVs (Regression data), Study 1

	Mean	SD	Min	Max
Burgenland (N=160)				
N Parties	2.956	0.893	2.000	6.000
Eff. N _{LT}	2.170	0.376	1.487	3.443
Eff. N _G	1.861	0.343	1.260	3.285
Margin of Victory	22.213	13.652	0.558	62.214
Turnout	85.645	5.196	71.707	96.828
Carinthia (N=120)				
N Parties	3.658	0.772	2.000	6.000
Eff. N _{LT}	2.769	0.439	1.852	4.043
Eff. N _G	2.324	0.463	1.554	3.556
Margin of Victory	19.703	13.274	0.134	53.632
Turnout	83.296	5.816	65.821	96.881
Lower Austria (N=160)				
N Parties	2.856	0.823	1.000	5.000
Eff. N _{LT}	1.989	0.428	1.000	3.844
Eff. N _G	1.663	0.362	1.000	3.336
Margin of Victory	36.396	19.417	1.290	100.000
Turnout	76.806	7.068	53.200	94.160
Salzburg (N=160)				
N Parties	3.231	0.675	1.000	5.000
Eff. N _{LT}	2.394	0.424	1.000	3.527
Eff. N _G	1.995	0.394	1.000	3.184
Margin of Victory	25.888	17.063	0.000	100.000
Turnout	78.272	7.951	59.848	94.272
Styria (N=120)				
N Parties	3.025	0.804	2.000	5.000
Eff. N _{LT}	2.140	0.416	1.406	3.355
Eff. N _G	1.770	0.358	1.212	3.104
Margin of Victory	32.042	15.423	0.397	65.021
Turnout	83.188	5.456	70.998	94.757
Upper Austria (N=120)				
N Parties	3.425	0.785	2.000	7.000
Eff. N _{LT}	2.514	0.500	1.722	4.279
Eff. N _G	2.071	0.466	1.415	3.851
Margin of Victory	25.855	14.110	0.120	56.970
Turnout	82.752	6.091	61.790	94.760
Overall (N=840)				
N Parties	3.167	0.839	1.000	7.000
Eff. N _{LT}	2.309	0.498	1.000	4.279
Eff. N _G	1.932	0.447	1.000	3.851
Margin of Victory	27.180	16.786	0.000	100.000
Turnout	81.457	7.169	53.200	96.881

Table A.2: Distribution of DVs (Ext. Regression data), Study 1

	Mean	SD	Min	Max
Burgenland (N=677)				
N Parties	2.934	0.867	1.000	6.000
Eff. N _{LT}	2.139	0.381	1.000	3.842
Eff. N _G	1.838	0.348	1.000	3.306
Margin of Victory	23.510	15.814	0.081	100.000
Turnout	85.609	5.629	62.073	97.150
Carinthia (N=387)				
N Parties	3.680	0.849	2.000	7.000
Eff. N _{LT}	2.848	0.455	1.596	4.500
Eff. N _G	2.399	0.458	1.331	4.066
Margin of Victory	17.855	12.170	0.000	53.632
Turnout	83.198	5.564	63.844	96.881
Lower Austria (N=2242)				
N Parties	3.048	0.922	1.000	6.000
Eff. N _{LT}	2.029	0.485	1.000	4.232
Eff. N _G	1.677	0.399	1.000	3.829
Margin of Victory	39.067	19.023	0.240	100.000
Turnout	75.438	7.613	43.980	95.830
Salzburg (N=466)				
N Parties	3.292	0.754	1.000	6.000
Eff. N _{LT}	2.415	0.462	1.000	4.199
Eff. N _G	2.003	0.414	1.000	3.557
Margin of Victory	26.087	15.954	0.000	100.000
Turnout	78.511	8.075	56.455	95.619
Styria (N=1591)				
N Parties	3.047	0.949	1.000	7.000
Eff. N _{LT}	2.095	0.454	1.000	3.840
Eff. N _G	1.732	0.377	1.000	3.429
Margin of Victory	35.723	19.051	0.000	100.000
Turnout	83.181	6.333	57.055	97.078
Upper Austria (N=1291)				
N Parties	3.231	0.799	1.000	8.000
Eff. N _{LT}	2.417	0.529	1.000	4.566
Eff. N _G	2.011	0.475	1.000	4.157
Margin of Victory	26.650	16.644	0.000	100.000
Turnout	83.775	5.062	61.790	97.500
Overall (N=6654)				
N Parties	3.125	0.901	1.000	8.000
Eff. N _{LT}	2.206	0.523	1.000	4.566
Eff. N _G	1.836	0.453	1.000	4.157
Margin of Victory	32.133	19.006	0.000	100.000
Turnout	80.608	7.709	43.980	97.500

Table A.3: Distribution of Socio-Economic Covariates (Regression data), Study 1

	Mean	SD	Min	Max
Burgenland (N=160)				
Population	1774	1481	351	7391
Communal Tax/Capita	121.30	141.81	5.53	845.37
Share of Pop. 65+	19.60	2.75	13.47	28.35
Share of Pop. with University Degree	5.38	2.55	1.69	14.41
Carinthia (N=120)				
Population	3149	2802	612	12894
Communal Tax/Capita	126.65	111.94	8.34	750.11
Share of Pop. 65+	18.09	2.69	12.68	25.58
Share of Pop. with University Degree	5.53	3.33	1.24	25.03
Lower Austria (N=160)				
Population	2101	1868	397	10381
Communal Tax/Capita	121.41	120.43	0.48	599.50
Share of Pop. 65+	17.73	3.50	11.39	29.37
Share of Pop. with University Degree	5.32	3.28	0.95	19.29
Salzburg (N=160)				
Population	3088	2395	510	10917
Communal Tax/Capita	256.58	177.82	8.68	982.84
Share of Pop. 65+	16.21	3.10	10.30	26.04
Share of Pop. with University Degree	6.18	3.15	1.32	16.77
Styria (N=120)				
Population	1645	1030	297	6638
Communal Tax/Capita	134.15	121.04	1.83	676.44
Share of Pop. 65+	16.86	3.01	12.41	32.28
Share of Pop. with University Degree	4.71	2.98	0.30	17.10
Upper Austria (N=120)				
Population	2599	2224	540	13224
Communal Tax/Capita	188.88	165.99	21.17	964.44
Share of Pop. 65+	15.82	2.46	10.64	24.52
Share of Pop. with University Degree	5.37	2.88	1.37	16.28
Overall (N=840)				
Population	2382	2116	297	13224
Communal Tax/Capita	159.34	151.78	0.48	982.84
Share of Pop. 65+	17.45	3.23	10.30	32.28
Share of Pop. with University Degree	5.45	3.06	0.30	25.03

Table A.4: Distribution of Socio-Economic Covariates (Ext. Regression data), Study 1

	Mean	SD	Min	Max
Burgenland (N=677)				
Population	1595	1125	66	7816
Communal Tax/Capita	117.92	133.05	0.23	946.78
Share of Pop. 65+	20.27	3.31	10.17	33.89
Share of Pop. with University Degree	5.32	2.46	0.76	16.61
Carinthia (N=387)				
Population	2955	2629	612	16045
Communal Tax/Capita	132.84	127.10	8.34	1471.44
Share of Pop. 65+	18.82	2.90	12.36	27.28
Share of Pop. with University Degree	5.45	3.02	1.24	25.03
Lower Austria (N=2242)				
Population	2354	2260	71	17856
Communal Tax/Capita	141.18	166.21	0.28	1533.42
Share of Pop. 65+	18.12	3.19	9.03	32.14
Share of Pop. with University Degree	5.39	3.27	0.94	27.78
Salzburg (N=466)				
Population	3101	2616	260	16704
Communal Tax/Capita	267.54	264.54	8.68	2290.04
Share of Pop. 65+	16.13	2.92	9.24	26.04
Share of Pop. with University Degree	6.31	3.31	1.32	20.98
Styria (N=1591)				
Population	1717	1881	138	23380
Communal Tax/Capita	121.57	142.07	0.14	1807.31
Share of Pop. 65+	17.14	3.57	7.77	36.48
Share of Pop. with University Degree	4.45	3.63	0.23	79.66
Upper Austria (N=1291)				
Population	2445	2214	234	16370
Communal Tax/Capita	168.87	170.21	0.44	1456.15
Share of Pop. 65+	15.74	2.60	7.72	28.22
Share of Pop. with University Degree	5.32	2.60	0.23	22.99
Overall (N=6654)				
Population	2229	2174	66	23380
Communal Tax/Capita	147.86	169.55	0.14	2290.04
Share of Pop. 65+	17.55	3.43	7.72	36.48
Share of Pop. with University Degree	5.21	3.20	0.23	79.66

A.2.2 Sample for incumbency data (Study 1)

Table A.5: Incumbency data: Sample, response, and sources (Study 1) - Burgenland

Municipality	Response	Source
Burgenland		
Pinkafeld	-	Wikipedia ^a , Elections data ^b
Purbach am Neusiedler See	-	Wikipedia, Elections data
Tobaj	-	BM-Index ^c , Wikipedia, Elections data
Lackenbach	-	Wikipedia, Elections data
Ollersdorf im Burgenland	Yes	-
Wiesfleck	Yes	-
Unterwart	-	Wikipedia, Elections data
Markt Neuhodis	-	BM-Index, Wikipedia, Elections data
Gattendorf	-	BM-Index, Wikipedia, Elections data
Gols	-	Wikipedia, Elections data
Riedlingsdorf	-	Wikipedia, Elections data
Halbturn	Yes	-
Weingraben	Yes	-
Nickelsdorf	Yes	-
Loipersbach im Burgenland	Yes	-
Bocksdorf	Yes	-
Leithaprodersdorf	-	BM-Index, Wikipedia, Elections data
Oberwart	Yes	-
Rohrbach bei Mattersburg	Yes	-
Sigleß	Yes	-
Unterkohlstätten	-	BM-Index, Wikipedia, Elections data
Podersdorf am See	Yes	-
Kobersdorf	-	BM-Index, Wikipedia, Elections data
Pöttelsdorf	-	Wikipedia, Elections data
Grafenschachen	Yes	-
Güttenbach	-	Wikipedia, Elections data
Winden am See	Yes	-
Mischendorf	-	Wikipedia, Elections data
Schachendorf	Yes	-
Mattersburg	Yes	-
Zagersdorf	Yes	-
Deutsch Kaltenbrunn	Yes	-
Unterfrauenhaid	-	Wikipedia, Elections data
Bad Tatzmannsdorf	Yes	-
Heiligenbrunn	Yes	-
Forchtenstein	Yes	-
Oberdorf im Burgenland	-	BM-Index, Wikipedia, Elections data
Kemetten	Yes	-
Sankt Martin an der Raab	Yes	-
Neudorf	-	Wikipedia, Elections data

^a Wikipedia: Wikipedia pages of municipalities and local politicians.

^b Elections data: Data on mayoral elections (results, candidates).

^c BM-Index: Index on Austrian mayors (Hoffer, 1994).

Table A.6: Incumbency data: Sample, response, and sources (Study 1) - Carinthia

Municipality	Response	Source
Carinthia		
Krumpendorf am Wörthersee	-	Wikipedia ^a , Elections data ^b
Rangersdorf	-	Wikipedia, Elections data
St. Georgen am Längsee	-	BM-Index ^c , Elections data
Dellach im Drautal	Yes	-
St. Georgen im Lavanttal	Yes	-
St. Veit an der Glan	Yes	-
Eberndorf	Yes	-
Reichenfels	Yes	-
Steuerberg	-	Wikipedia, Elections data
Ossiach	Yes	-
Zell	-	BM-Index, APA ^d , Elections data
Nötsch im Gailtal	-	BM-Index, APA, Elections data
Paternion	Yes	-
Sachsenburg	Yes	-
Preitenegg	-	Wikipedia, Elections data
St. Andrä	Yes	-
Kleblach-Lind	-	BM-Index, Wikipedia, Elections data
Rosegg	Yes	-
Feistritz im Rosental	-	BM-Index, Elections data
St. Jakob im Rosental	Yes	-
Bleiburg	-	BM-Index, Elections data
Stall	-	BM-Index, Elections data
Magdalensberg	Yes	-
Lesachtal	Yes	-
St. Urban	-	BM-Index, Wikipedia, Elections data
Völkermarkt	Yes	-
Bad Bleiberg	Yes	-
Kappel am Krappfeld	Yes	-
Lurnfeld	Yes	-
Arnoldstein	Yes	-
Himmelberg	-	Wikipedia, Elections data
Winklern	-	BM-Index, APA, Elections data
Ludmannsdorf	Yes	-
Glödnitz	Yes	-
Griffen	Yes	-
Gallizien	Yes	-
Mölbling	-	BM-Index, APA, Elections data
Trebesing	Yes	-
Schiefling am Wörthersee	Yes	-
Althofen	Yes	-

^a Wikipedia: Wikipedia pages of municipalities and local politicians.

^b Elections data: Data on mayoral elections (results, candidates).

^c BM-Index: Index on Austrian mayors (Hoffer, 1994).

^d APA: Newspaper reports from the *APA Online Manager*.

Table A.7: Incumbency data: Sample, response, and sources (Study 1) - Lower Austria

Municipality	Response	Source
Lower Austria		
Hafnerbach	-	Wikipedia ^a , BM-Index ^b , APA ^c
St. Georgen an der Leys	-	BM-Index, Wikipedia
Seefeld-Kadolz	-	BM-Index, Wikipedia, APA
Muggendorf	-	Wikipedia
Meiseldorf	-	BM-Index, Wikipedia
Mannsdorf an der Donau	Yes	-
St. Oswald	-	BM-Index, Wikipedia
Furth bei Göttweig	-	BM-Index, Wikipedia, APA
Rossatz-Arnsdorf	-	BM-Index, Wikipedia
Kematen an der Ybbs	-	BM-Index, Wikipedia
Grimmenstein	Yes	-
Moosbrunn	-	BM-Index, APA
Gaaden	-	BM-Index
Laab im Walde	-	BM-Index, Municipality ^d
Strengberg	Yes	-
Krumbach	-	Wikipedia
Markersdorf-Haindorf	Yes	-
Hausleiten	-	BM-Index, Wikipedia
Grafenbach-St. Valentin	-	BM-Index, Wikipedia, APA
Gmünd	-	Wikipedia
Echsenbach	-	BM-Index, Wikipedia, Municipality
Muckendorf-Wipfing	-	Wikipedia
St. Valentin	Yes	-
Asparn an der Zaya	-	BM-Index, Wikipedia
Velm-Götzendorf	Yes	-
Aggsbach	-	Wikipedia
Haugsdorf	-	BM-Index, Wikipedia
Sierndorf	-	BM-Index, Wikipedia
Nöchling	-	Municipality
Höflein	Yes	-
Eggern	-	BM-Index, Wikipedia
Litschau	-	Wikipedia, APA
Pöggstall	-	Wikipedia, APA
Hürm	Yes	-
Waldhausen	-	BM-Index, Wikipedia, APA
Günselsdorf	-	BM-Index, Wikipedia
Nußdorf ob der Traisen	-	BM-Index, Wikipedia
Maria-Lanzendorf	-	BM-Index, Wikipedia
Gaweinstal	Yes	-
Gerasdorf bei Wien	-	BM-Index, Wikipedia

^a Wikipedia: Wikipedia pages of municipalities and local politicians.

^b BM-Index: Index on Austrian mayors (Hoffer, 1994).

^c APA: Newspaper reports from the *APA Online Manager*.

^d Municipality: Municipality homepages, 'community books', information from municipality staff.

Table A.8: Incumbency data: Sample, response, and sources (Study 1) - Salzburg

Municipality	Response	Source
Salzburg		
Hof bei Salzburg	-	Wikipedia ^a , Elections data ^b
Muhr	-	BM-Index ^c , Wikipedia, Elections data
Bad Hofgastein	Yes	-
Anthering	Yes	-
St. Johann im Pongau	-	Wikipedia, Elections data
St. Gilgen	-	Wikipedia, Elections data
Altenmarkt im Pongau	-	Wikipedia, Elections data
Schleedorf	-	BM-Index, Wikipedia, Elections data
Maria Alm am Steinernen Meer	Yes	-
Viehhofen	Yes	-
Göming	Yes	-
Bramberg am Wildkogel	Yes	-
Bruck an der Großglocknerstraße	Yes	-
St. Veit im Pongau	-	Wikipedia, Elections data
Piesendorf	-	Wikipedia, Elections data
Flachau	-	BM-Index, Wikipedia, Elections data
Dienten am Hochkönig	Yes	-
Rußbach am Paß Gschütt	-	Wikipedia, APA ^d , Elections data
Fusch an der Großglocknerstraße	Yes	-
Wagrain	Yes	-
Grödig	Yes	-
Oberalm	-	Wikipedia, APA, Elections data
Unken	Yes	-
Maishofen	-	Wikipedia, APA, Elections data
St. Michael im Lungau	-	Wikipedia, APA, Elections data
Neumarkt am Wallersee	-	Wikipedia, APA, Elections data
Mauterndorf	-	Wikipedia, Elections data
St. Andrä im Lungau	Yes	-
Stuhlfelden	Yes	-
Lessach	Yes	-
Bergheim	Yes	-
Köstendorf	Yes	-
Krimml	Yes	-
Hollersbach im Pinzgau	-	Wikipedia, APA, Elections data
St. Georgen bei Salzburg	Yes	-
Werfenweng	-	Wikipedia, Elections data
Faistenau	-	Wikipedia, Elections data
Großgmain	-	Wikipedia, APA, Elections data
Großarl	Yes	-
Bischofshofen	Yes	-

^a Wikipedia: Wikipedia pages of municipalities and local politicians.^b Elections data: Data on mayoral elections (results, candidates).^c BM-Index: Index on Austrian mayors (Hoffer, 1994).^d APA: Newspaper reports from the *APA Online Manager*.

Table A.9: Incumbency data: Sample, response, and sources (Study 1) - Styria

Municipality	Response	Source
Styria		
Sankt Katharein an der Laming	-	Wikipedia ^a , BM-Index ^b
Eibiswald	-	BM-Index, APA ^c
Bad Gams	Yes	-
Bad Gleichenberg	Yes	-
Eichkögl	-	BM-Index, APA
Fladnitz im Raabtal	-	BM-Index, APA
Gnas	Yes	-
Lödersdorf	-	BM-Index, Wikipedia
Burgau	-	BM-Index, Wikipedia
Eggersdorf bei Graz	-	BM-Index, Wikipedia, Municipality ^d
Grambach	-	BM-Index, Wikipedia, Municipality
Gratwein	Yes	-
Rohrbach-Steinberg	Yes	-
Übelbach	Yes	-
Hartberg	Yes	-
Rabenwald	-	BM-Index, Municipality
Riegersberg	-	BM-Index, Municipality
Sankt Johann in der Haide	Yes	-
Siegersdorf bei Herberstein	Yes	-
Vorau	-	BM-Index, Wikipedia
Obdach	Yes	-
Kaindorf an der Sulm	-	BM-Index, APA
Ragnitz	Yes	-
Schloßberg	-	BM-Index, Wikipedia
Gröbming	Yes	-
Irdning	-	BM-Index, APA
Kleinsölk	-	BM-Index, Wikipedia, Elections data
Sankt Gallen	-	BM-Index, Wikipedia
Sankt Martin am Grimming	-	BM-Index, Wikipedia
Mühlen	-	BM-Index, Wikipedia
Oberwölz Stadt	Yes	-
Sankt Peter am Kammersberg	Yes	-
Klöch	Yes	-
Kainach bei Voitsberg	Yes	-
Söding	-	-
Floing	-	BM-Index, APA
Mortantsch	Yes	-
Naintsch	Yes	-
Puch bei Weiz	-	BM-Index, Wikipedia, Municipality
Sankt Ruprecht an der Raab	-	BM-Index, Wikipedia, Municipality

^a Wikipedia: Wikipedia pages of municipalities and local politicians.

^b BM-Index: Index on Austrian mayors (Hoffer, 1994).

^c APA: Newspaper reports from the *APA Online Manager*.

^d Municipality: Municipality homepages, 'community books', information from municipality staff.

Table A.10: Incumbency data: Sample, response, and sources (Study 1) - Upper Austria

Municipality	Response	Source
Upper Austria		
Eberstalzell	-	Wikipedia ^a , Elections data ^b
Piberbach	-	Wikipedia, Elections data
Hochburg-Ach	Yes	-
Münzbach	Yes	-
Pichl bei Wels	Yes	-
Sigharting	-	Wikipedia, Elections data
Kematen am Innbach	Yes	-
St.Aegidi	Yes	-
Pattigham	-	BM-Index ^c , Wikipedia, Elections data
Wippenham	Yes	-
Steinhaus	-	Wikipedia, Elections data
Neukirchen an der Vöckla	Yes	-
Rosenau am Hengstpaß	-	Wikipedia, Elections data
Gmunden	Yes	-
Gosau	-	BM-Index, Wikipedia, APA ^d , Elections data
Kirchberg ob der Donau	Yes	-
Pabneukirchen	-	Wikipedia, Elections data
Krenglbach	Yes	-
Ottensheim	Yes	-
Wallern an der Trattnach	Yes	-
Steyregg	-	Wikipedia, Elections data
Sierning	-	BM-Index, Wikipedia, Elections data
Munderfing	Yes	-
Feldkirchen bei Mattighofen	-	Wikipedia, APA, Elections data
Weißkirchen an der Traun	Yes	-
Hofkirchen im Mühlkreis	Yes	-
Aurolzmünster	-	Wikipedia, Elections data
Tragwein	-	Municipality
Waldburg	-	BM-Index, Wikipedia, Elections data
Tarsdorf	Yes	-
Ampflwang im Hausruckwald	-	Municipality ^e
Mondsee	-	BM-Index, Wikipedia, Elections data
Alberndorf in der Riedmark	Yes	-
Inzersdorf im Kremstal	Yes	-
Pischelsdorf am Engelbach	Yes	-
Eschenau im Hausruckkreis	Yes	-
Neufelden	Yes	-
St.Lorenz	Yes	-
Waldneukirchen	Yes	-
Mining	-	BM-Index, Wikipedia, Elections data

^a Wikipedia: Wikipedia pages of municipalities and local politicians.

^b Elections data: Data on mayoral elections (results, candidates).

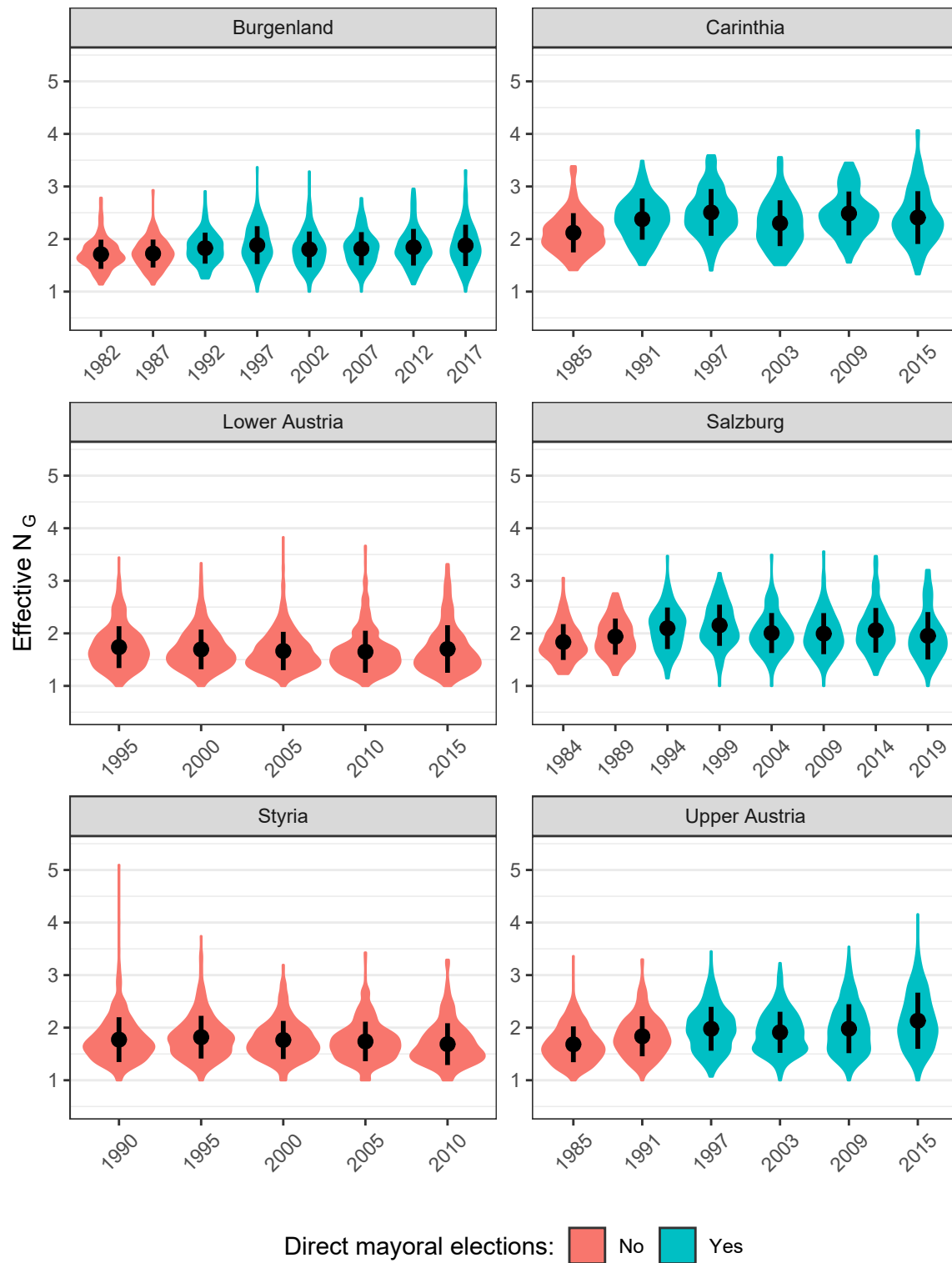
^c BM-Index: Index on Austrian mayors (Hoffer, 1994).

^d APA: Newspaper reports from the *APA Online Manager*.

^e Municipality: Municipality homepages, 'community books', information from municipality staff.

A.2.3 Descriptive analysis (Study 1)

Figure A.1: Development of effective number of parties_G (Study 1)



Note: Point is mean, lines show mean $\pm$ standard deviation.

A.2.4 Multivariate analysis (Study 1)

Table A.11: Regressions for effective number of parties (Golosov) (Study 1)

	Baseline (13)	:Incumbent (14)	:Population (15)
Direct Mayoral Elections	0.306*** (0.072)	0.416*** (0.076)	0.411*** (0.096)
Direct:Incumbent		-0.129* (0.071)	
Direct:Population			-0.0001** (0.00002)
Incumbent is candidate		0.050 (0.047)	
Population	0.00004*** (0.00001)	0.00004*** (0.00001)	0.0001*** (0.00002)
Share of Pop. 65+	-0.007 (0.007)	-0.007 (0.007)	-0.006 (0.007)
Share of Pop. with Uni Degree	0.026*** (0.008)	0.026*** (0.008)	0.026*** (0.008)
Communal Tax/Capita	-0.0002 (0.0002)	-0.0002 (0.0002)	-0.0002 (0.0002)
(Intercept)	1.650*** (0.136)	1.616*** (0.136)	1.569*** (0.144)
Observations	840	840	840
R ²	0.187	0.191	0.196
Adjusted R ²	0.183	0.184	0.190
Residual Std. Error	0.404	0.404	0.402
F Statistic	38.479***	27.994***	33.898***
<i>Note:</i>	2-way clustered SE; *p<0.1; **p<0.05; ***p<0.01		

Table A.12: Regressions for electoral competition - Excl. Upper Austria (Study 1)

	N Parties (16)	Eff. N _{LT} (17)	Margin of Victory (18)
Direct Mayoral Elections	0.179 (0.126)	0.325*** (0.098)	-11.632*** (2.563)
Population	0.0002*** (0.00003)	0.0001*** (0.00002)	-0.001 (0.001)
Share of Pop. 65+	-0.014 (0.013)	-0.010 (0.009)	-0.254 (0.267)
Share of Pop. with Uni Degree	0.059*** (0.015)	0.029*** (0.009)	-0.110 (0.275)
Communal Tax/Capita	-0.001 (0.0003)	-0.0005* (0.0003)	0.014 (0.012)
(Intercept)	2.589*** (0.271)	2.022*** (0.193)	38.886*** (5.670)
Observations	720	720	720
R ²	0.302	0.231	0.123
Adjusted R ²	0.297	0.226	0.117
Residual Std. Error	0.705	0.431	16.154
F Statistic)	61.644***	43.002***	20.030***
<i>Note:</i>	2-way clustered SE; *p<0.1; **p<0.05; ***p<0.01		

Table A.13: Regressions for electoral competition with interactions - Excl. Upper Austria (Study 1)

	N Parties (19)	Eff. N _{LT} (20)	Margin of Victory (21)	N Parties (22)	Eff. N _{LT} (23)	Margin of Victory (24)
Direct Mayoral Elections	0.200 (0.124)	0.432*** (0.094)	-16.698*** (4.095)	0.370** (0.173)	0.470*** (0.130)	-16.888*** (3.495)
Direct:Incumbent	-0.024 (0.074)	-0.127* (0.072)	6.040 (3.759)			
Direct:Population				-0.0001* (0.0001)	-0.0001*** (0.00003)	0.003*** (0.001)
Incumbent is candidate	0.038 (0.049)	0.051 (0.050)	-2.777 (3.312)			
Population	0.0002*** (0.00003)	0.0001*** (0.00002)	-0.001 (0.001)	0.0003*** (0.00004)	0.0001*** (0.00002)	-0.003*** (0.001)
Share of Pop. 65+	-0.014 (0.013)	-0.010 (0.009)	-0.242 (0.268)	-0.014 (0.013)	-0.010 (0.009)	-0.244 (0.263)
Share of Pop. with Uni Degree	0.059*** (0.015)	0.029*** (0.008)	-0.109 (0.260)	0.058*** (0.014)	0.029*** (0.009)	-0.091 (0.274)
Communal Tax/Capita	-0.001 (0.0003)	-0.0005* (0.0003)	0.013 (0.012)	-0.001* (0.0003)	-0.001** (0.0003)	0.015 (0.012)
(Intercept)	2.557*** (0.276)	1.983*** (0.196)	41.056*** (6.089)	2.466*** (0.278)	1.929*** (0.193)	42.273*** (5.717)
Observations	720	720	720	720	720	720
R ²	0.302	0.234	0.127	0.310	0.246	0.139
Adjusted R ²	0.295	0.227	0.119	0.305	0.240	0.132
Residual Std. Error	0.706	0.431	16.136	0.701	0.427	16.018
F Statistic	43.934***	31.085***	14.853***	53.468***	38.851***	19.183***
Note: 2-way clustered SE; *p<0.1; **p<0.05; ***p<0.01						

Table A.14: Regressions for turnout - Excl. Upper Austria (Study 1)

	Baseline (25)	:Incumbent (26)	:Population (27)
Direct Mayoral Elections	5.437*** (1.411)	6.082*** (1.470)	4.507** (1.815)
Direct:Incumbent		-0.763 (0.479)	
Direct:Population			0.0004 (0.0005)
Incumbent is candidate		0.115 (0.388)	
Eff. N	-0.194 (0.801)	-0.220 (0.806)	-0.074 (0.821)
Population	-0.001*** (0.0002)	-0.001*** (0.0002)	-0.002*** (0.0004)
Share of Pop. 65+	0.019 (0.133)	0.017 (0.133)	0.021 (0.133)
Share of Pop. with Uni Degree	-0.596*** (0.115)	-0.594*** (0.114)	-0.597*** (0.117)
Communal Tax/Capita	-0.007** (0.003)	-0.007** (0.003)	-0.006** (0.003)
Year	-0.237** (0.114)	-0.238** (0.114)	-0.237** (0.114)
(Intercept)	562.271** (227.378)	564.723** (227.230)	562.277** (226.836)
Observations	720	720	720
R ²	0.494	0.494	0.496
Adjusted R ²	0.489	0.488	0.490
Residual Std. Error	5.231	5.235	5.222
F Statistic	99.151***	77.112***	87.501***
<i>Note:</i>	2-way clustered SE; *p<0.1; **p<0.05; ***p<0.01		

Table A.15: Regressions for electoral competition - Excl. Carinthia (Study 1)

	N Parties (28)	Eff. N _{LT} (29)	Margin of Victory (30)
Direct Mayoral Elections	0.117 (0.112)	0.241*** (0.076)	-9.910*** (2.588)
Population	0.0002*** (0.00003)	0.0001*** (0.00001)	-0.001* (0.001)
Share of Pop. 65+	-0.018 (0.011)	-0.009 (0.006)	-0.381 (0.250)
Share of Pop. with Uni Degree	0.049*** (0.013)	0.030*** (0.009)	-0.082 (0.307)
Communal Tax/Capita	0.0001 (0.0003)	-0.0001 (0.0003)	0.009 (0.011)
(Intercept)	2.633*** (0.239)	1.943*** (0.139)	42.439*** (5.269)
Observations	720	720	720
R ²	0.299	0.235	0.102
Adjusted R ²	0.294	0.229	0.096
Residual Std. Error	0.691	0.408	16.159
F Statistic	60.801***	43.791***	16.213***
<i>Note:</i>	2-way clustered SE; *p<0.1; **p<0.05; ***p<0.01		

Table A.16: Regressions for electoral competition with interactions - Excl. Carinthia (Study 1)

	N Parties (31)	Eff. N _{LT} (32)	Margin of Victory (33)	N Parties (34)	Eff. N _{LT} (35)	Margin of Victory (36)
Direct Mayoral Elections	0.200 (0.130)	0.358*** (0.083)	-15.414*** (4.382)	0.277* (0.153)	0.337*** (0.093)	-13.543*** (3.337)
Direct:Incumbent	-0.097 (0.075)	-0.138* (0.079)	6.456 (3.952)			
Direct:Population				-0.0001 (0.0001)	-0.00005** (0.00002)	0.002** (0.001)
Incumbent is candidate	0.042 (0.050)	0.047 (0.048)	-2.607 (3.308)			
Population	0.0002*** (0.00003)	0.0001*** (0.00001)	-0.001* (0.001)	0.0002*** (0.00004)	0.0001*** (0.00002)	-0.002*** (0.001)
Share of Pop. 65+	-0.018 (0.011)	-0.009 (0.006)	-0.362 (0.253)	-0.018 (0.011)	-0.009 (0.006)	-0.380 (0.246)
Share of Pop. with Uni Degree	0.049*** (0.014)	0.030*** (0.009)	-0.087 (0.292)	0.050*** (0.013)	0.030*** (0.010)	-0.105 (0.312)
Communal Tax/Capita	0.0001 (0.0003)	-0.0001 (0.0003)	0.010 (0.011)	0.0001 (0.0003)	-0.0001 (0.0003)	0.010 (0.011)
(Intercept)	2.602*** (0.246)	1.910*** (0.142)	44.346*** (5.777)	2.522*** (0.245)	1.877*** (0.148)	44.942*** (5.473)
Observations	720	720	720	720	720	720
R ²	0.299	0.238	0.107	0.305	0.242	0.110
Adjusted R ²	0.292	0.231	0.098	0.299	0.235	0.102
Residual Std. Error	0.692	0.408	16.136	0.688	0.406	16.102
F Statistic	43.404***	31.783***	12.190***	52.138***	37.895***	14.626***
Note: 2-way clustered SE; *p<0.1; **p<0.05; ***p<0.01						

Table A.17: Regressions for turnout - Excl. Carinthia (Study 1)

	Baseline (37)	:Incumbent (38)	:Population (39)
Direct Mayoral Elections	4.863*** (1.503)	5.212*** (1.573)	3.641* (1.983)
Direct:Incumbent		-0.406 (0.828)	
Direct:Population			0.001 (0.0005)
Incumbent is candidate		0.071 (0.406)	
Eff. N	-0.176 (0.738)	-0.191 (0.755)	-0.059 (0.751)
Population	-0.001*** (0.0003)	-0.001*** (0.0003)	-0.002*** (0.0004)
Share of Pop. 65+	0.016 (0.144)	0.014 (0.143)	0.016 (0.144)
Share of Pop. with Uni Degree	-0.573*** (0.144)	-0.572*** (0.144)	-0.586*** (0.145)
Communal Tax/Capita	-0.004 (0.003)	-0.004 (0.003)	-0.004 (0.003)
Year	-0.201 (0.127)	-0.201 (0.127)	-0.198 (0.128)
(Intercept)	488.666* (253.369)	488.596* (254.253)	483.604* (255.077)
Observations	720	720	720
R ²	0.422	0.423	0.427
Adjusted R ²	0.417	0.415	0.420
Residual Std. Error	5.598	5.605	5.581
F Statistic	74.370***	57.719***	66.141***
<i>Note:</i>	2-way clustered SE; *p<0.1; **p<0.05; ***p<0.01		

Table A.18: Regressions for electoral competition with interactions, Ext. Data (Study 1)

	N Parties (40)	Eff. N _{LT} (41)	Margin of Victory (42)	N Parties (43)	Eff. N _{LT} (44)	Margin of Victory (45)
Direct Mayoral Elections	0.085 (0.080)	0.311*** (0.063)	-12.762*** (1.550)	0.214** (0.103)	0.293*** (0.084)	-13.273*** (2.604)
Direct:Population				-0.0001** (0.00003)	0.00001 (0.00002)	0.0002 (0.001)
Population	0.0002*** (0.00002)	0.0001*** (0.00001)	-0.001** (0.0003)	0.0002*** (0.00002)	0.0001*** (0.00001)	-0.001* (0.0004)
Share of Pop. 65+	-0.006 (0.007)	-0.003 (0.006)	-0.214 (0.135)	-0.006 (0.007)	-0.003 (0.006)	-0.212 (0.137)
Share of Pop. with Uni Degree	0.045*** (0.010)	0.030*** (0.007)	-0.399** (0.171)	0.045*** (0.010)	0.030*** (0.007)	-0.398** (0.171)
Communal Tax/Capita	0.0002* (0.0001)	0.0001 (0.0001)	0.0001 (0.003)	0.0002* (0.0001)	0.0001 (0.0001)	0.0001 (0.003)
(Intercept)	2.475*** (0.166)	1.814*** (0.123)	44.783*** (2.716)	2.434*** (0.179)	1.820*** (0.124)	44.947*** (2.848)
Observations	6,654	6,654	6,654	6,654	6,654	6,654
R ²	0.332	0.250	0.131	0.337	0.251	0.131
Adjusted R ²	0.332	0.250	0.130	0.336	0.250	0.130
Residual Std. Error	0.737	0.453	17.729	0.734	0.453	17.729
F Statistic	661.512***	443.900***	199.617***	562.654***	370.398***	166.561***
Note: 2-way clustered SE; * p<0.1; ** p<0.05; *** p<0.01						

Table A.19: Regressions for turnout, Ext. Data (Study 1)

	Baseline (46)	:Population (47)
Direct Mayoral Elections	5.889*** (1.518)	4.959*** (1.868)
Direct:Population		0.0004 (0.0003)
Eff. N	0.207 (0.420)	0.188 (0.408)
Population	-0.001*** (0.0002)	-0.002*** (0.0003)
Share of Pop. 65+	-0.112 (0.103)	-0.108 (0.105)
Share of Pop. with Uni Degree	-0.454*** (0.162)	-0.451*** (0.161)
Communal Tax/Capita	-0.005*** (0.001)	-0.005*** (0.001)
Year	-0.162 (0.146)	-0.162 (0.145)
(Intercept)	410.358 (292.183)	410.882 (290.536)
Observations	6,654	6,654
R ²	0.435	0.438
Adjusted R ²	0.434	0.437
Residual Std. Error	5.799	5.782
F Statistic	730.269***	647.549***
<i>Note:</i>	2-way clustered SE; *p<0.1; **p<0.05; ***p<0.01	

Table A.20: Regressions for effective number of parties (Goloso), Ext. Data (Study 1)

	Baseline (48)	:Population (49)
Direct Mayoral Elections	0.293*** (0.050)	0.273*** (0.070)
Direct:Population		0.00001 (0.00002)
Population	0.00004*** (0.00001)	0.00004*** (0.00001)
Share of Pop. 65+	0.00000 (0.005)	0.0001 (0.005)
Share of Pop. with Uni Degree	0.023*** (0.006)	0.023*** (0.006)
Communal Tax/Capita	0.0001 (0.0001)	0.0001 (0.0001)
(Intercept)	1.482*** (0.095)	1.489*** (0.094)
Observations	6,654	6,654
R ²	0.220	0.221
Adjusted R ²	0.220	0.220
Residual Std. Error	0.400	0.400
F Statistic	375.639***	313.794***
<i>Note:</i>	2-way clustered SE; *p<0.1; **p<0.05; ***p<0.01	

Table A.21: Regressions for electoral competition - Excl. Upper Austria, Ext. Data (Study 1)

	N Parties (50)	Eff. N _{LT} (51)	Margin of Victory (52)	N Parties (53)	Eff. N _{LT} (54)	Margin of Victory (55)
Direct Mayoral Elections	0.090 (0.094)	0.314*** (0.087)	-14.395*** (1.661)	0.222* (0.125)	0.333*** (0.115)	-16.885*** (2.525)
Direct:Population				-0.0001 (0.00004)	-0.00001 (0.00002)	0.001** (0.001)
Population	0.0002*** (0.00002)	0.0001*** (0.00001)	-0.0005 (0.0003)	0.0002*** (0.00002)	0.0001*** (0.00001)	-0.001* (0.0004)
Share of Pop. 65+	-0.007 (0.007)	-0.008 (0.005)	-0.054 (0.133)	-0.009 (0.007)	-0.008 (0.005)	-0.023 (0.137)
Share of Pop. with Uni Degree	0.046*** (0.011)	0.030*** (0.008)	-0.481*** (0.174)	0.046*** (0.011)	0.030*** (0.008)	-0.482*** (0.173)
Communal Tax/Capita	0.0002 (0.0002)	0.00003 (0.0001)	0.003 (0.003)	0.0002 (0.0002)	0.00003 (0.0001)	0.003 (0.003)
(Intercept)	2.484*** (0.188)	1.917*** (0.117)	41.649*** (2.768)	2.477*** (0.195)	1.916*** (0.118)	41.775*** (2.860)
Observations	5,363	5,363	5,363	5,363	5,363	5,363
R ²	0.338	0.228	0.131	0.341	0.228	0.134
Adjusted R ²	0.337	0.227	0.130	0.341	0.227	0.133
Residual Std. Error	0.751	0.448	18.003	0.749	0.448	17.974
F Statistic	546.621***	316.101***	161.485***	462.900***	263.756***	138.058***
Note: 2-way clustered SE; *p<0.1; **p<0.05; ***p<0.01						

Table A.22: Regressions for turnout - Excl. Upper Austria, Ext. Data (Study 1)

	Baseline (56)	:Population (57)
Direct Mayoral Elections	6.123*** (1.563)	6.021*** (2.041)
Direct:Population		0.00004 (0.0003)
Eff. N	-0.022 (0.515)	-0.020 (0.515)
Population	-0.002*** (0.0002)	-0.002*** (0.0003)
Share of Pop. 65+	-0.103 (0.118)	-0.102 (0.124)
Share of Pop. with Uni Degree	-0.487** (0.190)	-0.487** (0.190)
Communal Tax/Capita	-0.006*** (0.001)	-0.006*** (0.001)
Year	-0.238 (0.155)	-0.239 (0.155)
(Intercept)	565.367* (309.965)	565.966* (310.162)
Observations	5,363	5,363
R ²	0.453	0.453
Adjusted R ²	0.452	0.452
Residual Std. Error	5.946	5.947
F Statistic	634.064***	554.767***
<i>Note:</i>	2-way clustered SE; *p<0.1; **p<0.05; ***p<0.01	

Table A.23: Regressions for electoral competition - Excl. Carinthia, Ext. Data (Study 1)

	N Parties (58)	Eff. N _{LT} (59)	Margin of Victory (60)	N Parties (61)	Eff. N _{LT} (62)	Margin of Victory (63)
Direct Mayoral Elections	0.022 (0.074)	0.240*** (0.054)	-11.709*** (1.485)	0.149 (0.094)	0.207*** (0.066)	-11.587*** (2.421)
Direct:Population				-0.0001** (0.00003)	0.00001 (0.00002)	-0.0001 (0.001)
Population	0.0002*** (0.00002)	0.0001*** (0.00001)	-0.001** (0.0003)	0.0002*** (0.00002)	0.0001*** (0.00001)	-0.001 (0.0004)
Share of Pop. 65+	-0.011* (0.006)	-0.007* (0.004)	-0.168 (0.130)	-0.011* (0.006)	-0.007* (0.004)	-0.169 (0.131)
Share of Pop. with Uni Degree	0.043*** (0.010)	0.030*** (0.007)	-0.414** (0.174)	0.043*** (0.010)	0.030*** (0.007)	-0.414** (0.174)
Communal Tax/Capita	0.0003** (0.0001)	0.0002** (0.0001)	-0.0004 (0.003)	0.0003** (0.0001)	0.0002** (0.0001)	-0.0004 (0.003)
(Intercept)	2.557*** (0.156)	1.880*** (0.101)	44.324*** (2.694)	2.523*** (0.165)	1.889*** (0.099)	44.292*** (2.774)
Observations	6,267	6,267	6,267	6,267	6,267	6,267
R ²	0.334	0.236	0.112	0.338	0.237	0.112
Adjusted R ²	0.334	0.236	0.111	0.338	0.236	0.111
Residual Std. Error	0.729	0.438	17.912	0.727	0.438	17.914
F Statistic	628.172***	387.249***	158.055***	533.668***	324.301***	131.703***

Note: 2-way clustered SE; * p<0.1; ** p<0.05; *** p<0.01

Table A.24: Regressions for turnout - Excl. Carinthia, Ext. Data (Study 1)

	Baseline (64)	:Population (65)
Direct Mayoral Elections	5.869*** (1.548)	5.072*** (1.907)
Direct:Population		0.0004 (0.0003)
Eff. N	0.090 (0.416)	0.060 (0.398)
Population	-0.001*** (0.0002)	-0.002*** (0.0003)
Share of Pop. 65+	-0.123 (0.108)	-0.119 (0.110)
Share of Pop. with Uni Degree	-0.447*** (0.170)	-0.446*** (0.168)
Communal Tax/Capita	-0.005*** (0.001)	-0.005*** (0.001)
Year	-0.170 (0.152)	-0.171 (0.151)
(Intercept)	428.794 (304.618)	429.608 (303.493)
Observations	6,267	6,267
R ²	0.435	0.437
Adjusted R ²	0.434	0.437
Residual Std. Error	5.862	5.851
F Statistic	688.268***	607.845***
<i>Note:</i>	2-way clustered SE; *p<0.1; **p<0.05; ***p<0.01	

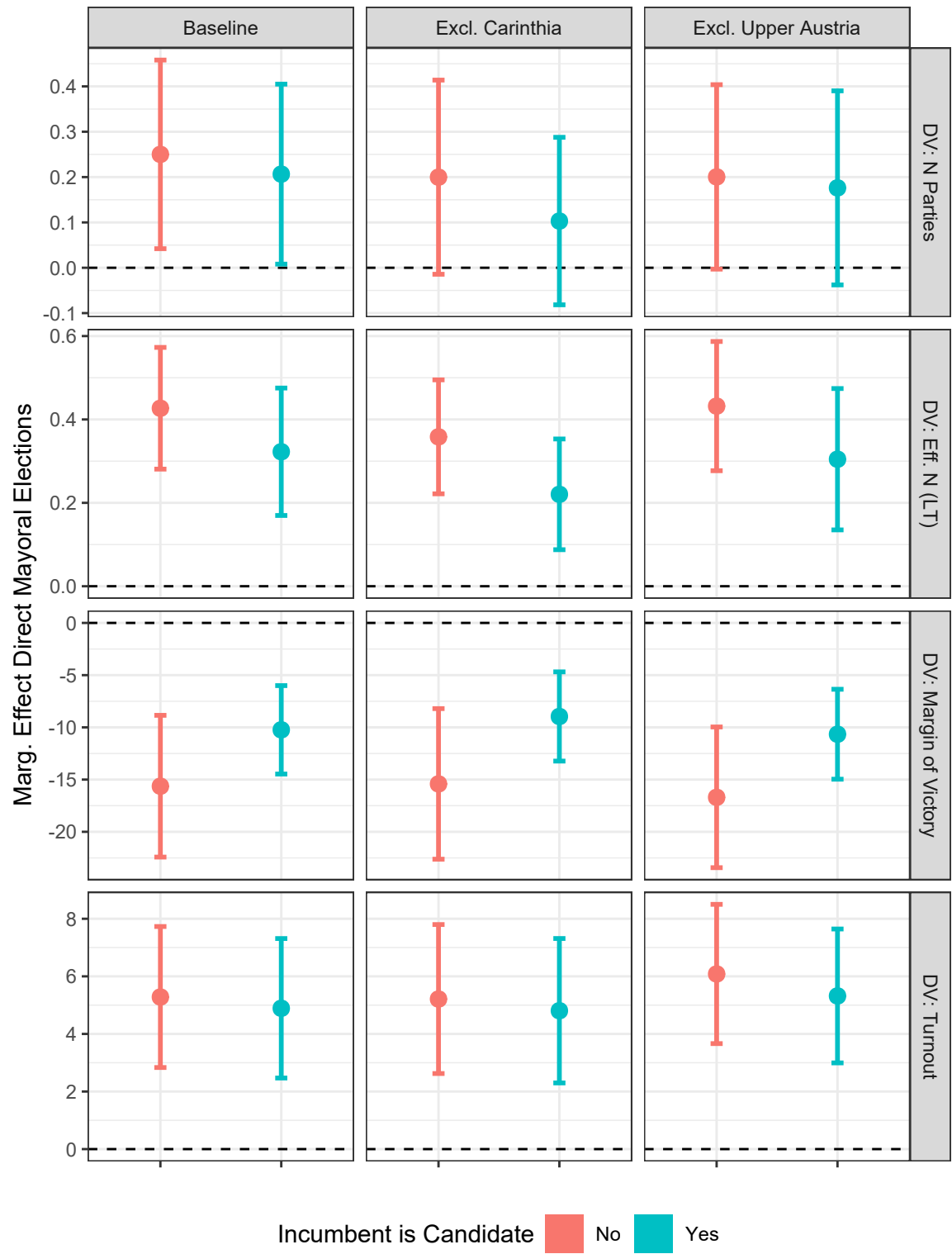
Table A.25: Regressions for electoral competition - Q10-Q90, Ext. Data (Study 1)

	N Parties (66)	Eff. N _{LT} (67)	Margin of Victory (68)	N Parties (69)	Eff. N _{LT} (70)	Margin of Victory (71)
Direct Mayoral Elections	0.093 (0.089)	0.311*** (0.070)	-12.886*** (1.883)	0.217* (0.130)	0.308*** (0.101)	-14.885*** (3.916)
Direct:Population				-0.0001 (0.00005)	0.00000 (0.00003)	0.001 (0.001)
Population	0.0003*** (0.00003)	0.0001*** (0.00002)	-0.002*** (0.001)	0.0003*** (0.00004)	0.0001*** (0.00002)	-0.003*** (0.001)
Share of Pop. 65+	-0.006 (0.008)	-0.002 (0.007)	-0.268 (0.171)	-0.006 (0.008)	-0.002 (0.007)	-0.268 (0.173)
Share of Pop. with Uni Degree	0.044*** (0.008)	0.030*** (0.006)	-0.300 (0.214)	0.044*** (0.008)	0.030*** (0.006)	-0.296 (0.214)
Communal Tax/Capita	0.0001 (0.0001)	0.0001 (0.0001)	0.002 (0.003)	0.0001 (0.0001)	0.0001 (0.0001)	0.002 (0.003)
(Intercept)	2.335*** (0.206)	1.719*** (0.148)	47.232*** (3.898)	2.280*** (0.218)	1.721*** (0.150)	48.121*** (4.194)
Observations	5,323	5,323	5,323	5,323	5,323	5,323
R ²	0.186	0.216	0.143	0.188	0.216	0.144
Adjusted R ²	0.186	0.216	0.142	0.187	0.216	0.143
Residual Std. Error	0.709	0.443	17.129	0.709	0.443	17.124
F Statistic	243.756***	293.704***	177.686***	204.976***	244.711***	148.849***
Note: 2-way clustered SE; *p<0.1; **p<0.05; ***p<0.01						

Table A.26: Regressions for turnout - Q10-Q90, Ext. Data (Study 1)

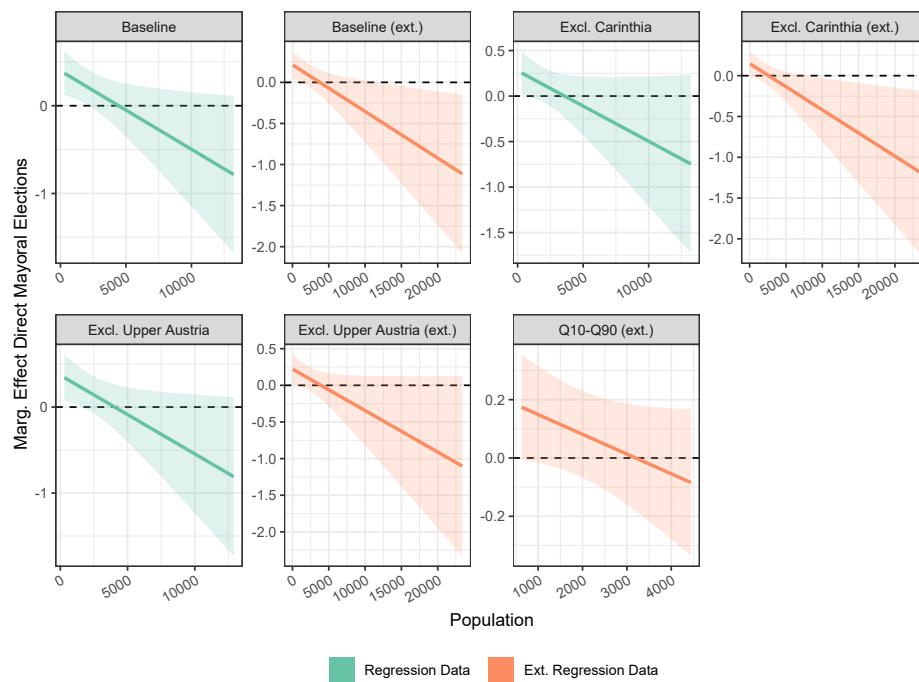
	Baseline (72)	:Population (73)
Direct Mayoral Elections	5.875*** (1.436)	4.467** (2.074)
Direct:Population		0.001 (0.001)
Eff. N	0.723* (0.385)	0.722* (0.381)
Population	-0.003*** (0.0003)	-0.003*** (0.0004)
Share of Pop. 65+	-0.163* (0.095)	-0.163* (0.096)
Share of Pop. with Uni Degree	-0.508*** (0.108)	-0.506*** (0.108)
Communal Tax/Capita	-0.004*** (0.001)	-0.004*** (0.001)
Year	-0.125 (0.138)	-0.124 (0.137)
(Intercept)	337.691 (276.807)	337.808 (275.337)
Observations	5,323	5,323
R ²	0.400	0.403
Adjusted R ²	0.399	0.402
Residual Std. Error	5.250	5.240
F Statistic	506.718***	447.858***
<i>Note:</i>	2-way clustered SE; *p<0.1; **p<0.05; ***p<0.01	

Figure A.2: Marginal effects of direct mayoral elections, interactions with incumbent candidacy - Robustness checks (Study 1)



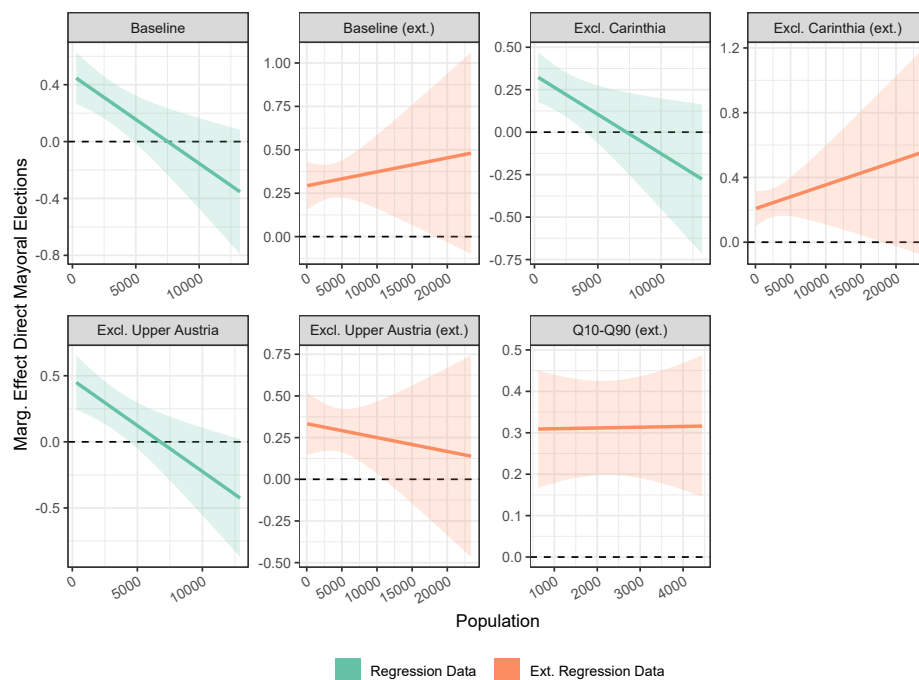
Note: Standard errors based on 2-way clustering.

Figure A.3: Marginal effects of direct mayoral elections on number of parties, interactions with population - Robustness checks (Study 1)



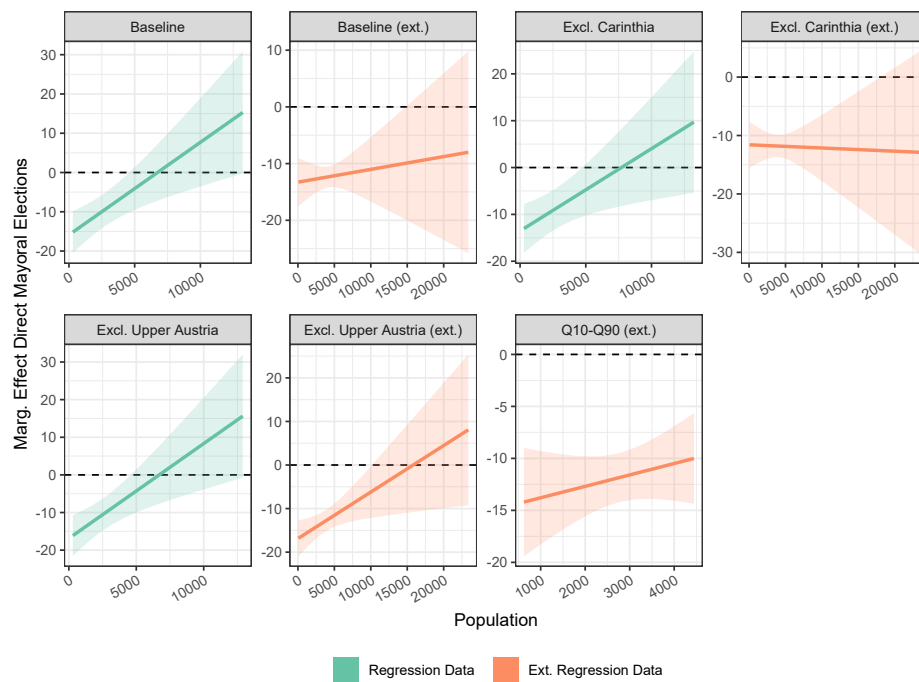
Note: Standard errors based on 2-way clustering.

Figure A.4: Marginal effects of direct mayoral elections on effective number of parties, interactions with population - Robustness checks (Study 1)



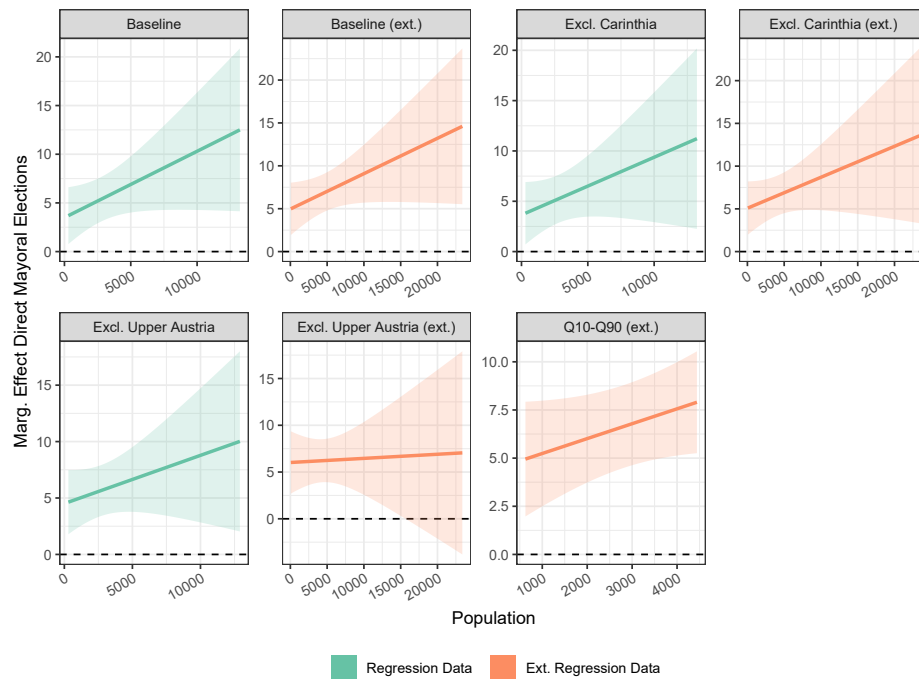
Note: Standard errors based on 2-way clustering.

Figure A.5: Marginal effects of direct mayoral elections on margin of victory, interactions with population - Robustness checks (Study 1)



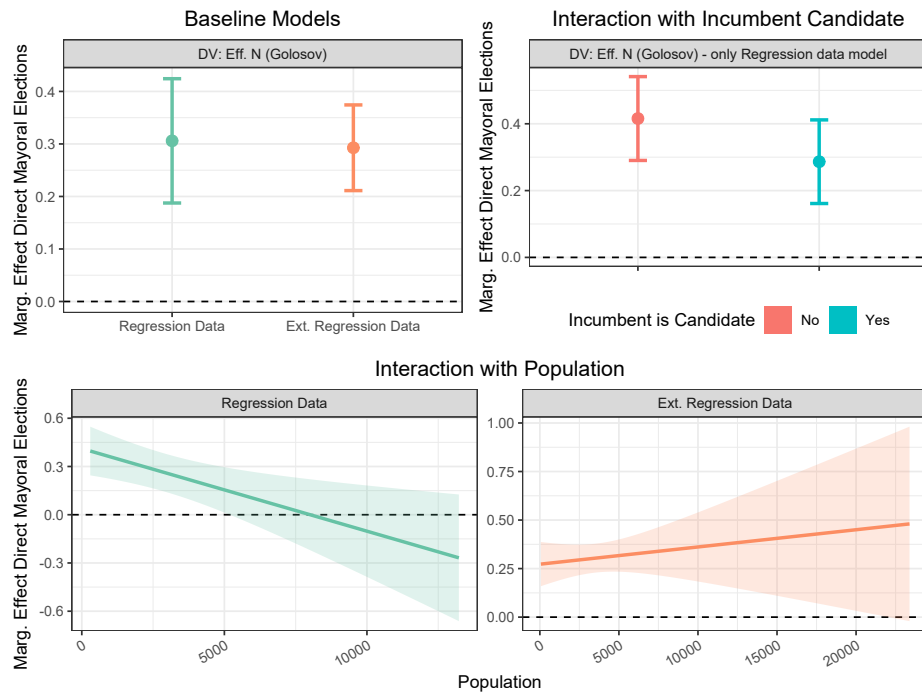
Note: Standard errors based on 2-way clustering.

Figure A.6: Marginal effects of direct mayoral elections on turnout, interactions with population - Robustness checks (Study 1)



Note: Standard errors based on 2-way clustering.

Figure A.7: Marginal effects of direct mayoral elections on the effective number of parties (Goloso)
 - Robustness checks (Study 1)



Note: Standard errors based on 2-way clustering.

A.3 Study 2: Appendix

A.3.1 Distribution statistics (Study 2)

Table A.27: Distribution of DVs (Pre-Treatment), Study 2

	Mean	SD	Min	Max
Control Group (N=42)				
N Parties	1.500	0.862	1.000	4.000
Eff. N _{LT}	1.268	0.518	1.000	2.831
Eff. N _G	1.182	0.361	1.000	2.156
Margin of Victory	83.709	29.981	3.052	100.000
Turnout	93.259	2.073	87.252	96.774
Treatment Group (N=153)				
N Parties	3.183	1.232	1.000	7.000
Eff. N _{LT}	2.175	0.663	1.000	4.626
Eff. N _G	1.790	0.509	1.000	3.837
Margin of Victory	41.643	27.196	0.246	100.000
Turnout	92.527	2.348	85.071	98.684
Small Municipalities Treatment Group (N=75)				
N Parties	2.533	1.155	1.000	5.000
Eff. N _{LT}	1.885	0.700	1.000	3.746
Eff. N _G	1.603	0.536	1.000	3.421
Margin of Victory	51.614	33.279	0.246	100.000
Turnout	93.497	2.123	87.389	98.684
Overall (N=195)				
N Parties	2.821	1.352	1.000	7.000
Eff. N _{LT}	1.979	0.735	1.000	4.626
Eff. N _G	1.659	0.542	1.000	3.837
Margin of Victory	50.704	32.711	0.246	100.000
Turnout	92.684	2.306	85.071	98.684

Table A.28: Distribution of Socio-Economic Covariates, Study 2

	Mean	SD	Min	Max
Control Group (N=98)				
Eligible Voters	775	483	94	1897
Communal Tax/Capita	143.97	151.10	-22.26	805.55
Share of Pop. 65+	18.55	2.42	13.76	25.83
Share of Pop. with University Degree	4.60	2.47	0.97	11.48
Treatment Group (N=375)				
Eligible Voters	4028	5512	123	36134
Communal Tax/Capita	280.48	208.04	3.29	1057.42
Share of Pop. 65+	17.81	3.65	9.05	29.02
Share of Pop. with University Degree	6.59	2.88	0.93	15.78
Small Municipalities Treatment Group (N=175)				
Population	1111	660	123	2546
Communal Tax/Capita	216.82	185.82	3.29	1057.42
Share of Pop. 65+	16.95	3.10	10.24	25.92
Share of Pop. with University Degree	5.83	2.59	0.93	13.06
Overall (N=455)				
Population	3327	5066	94	36134
Communal Tax/Capita	251.07	204.87	-22.26	1057.42
Share of Pop. 65+	17.97	3.44	9.05	29.02
Share of Pop. with University Degree	6.16	2.91	0.93	15.78

Table A.29: Distribution of Socio-Economic Covariates (Pre-Treatment), Study 2

	Mean	SD	Min	Max
Control Group (N=42)				
Eligible Voters	678	417	94	1637
Communal Tax/Capita	76.15	88.04	1.42	403.27
Share of Pop. 65+	17.50	2.52	13.76	23.54
Share of Pop. with University Degree	3.18	1.72	0.97	6.50
Treatment Group (N=153)				
Eligible Voters	3513	4837	123	26826
Communal Tax/Capita	171.34	127.25	3.29	579.88
Share of Pop. 65+	15.53	2.92	9.05	23.03
Share of Pop. with University Degree	4.63	1.77	0.93	9.95
Small Municipalities Treatment Group (N=75)				
Population	954	551	123	1958
Communal Tax/Capita	136.99	122.07	3.29	543.86
Share of Pop. 65+	14.95	2.51	10.24	20.79
Share of Pop. with University Degree	4.07	1.60	0.93	7.99
Overall (N=195)				
Population	2902	4442	94	26826
Communal Tax/Capita	150.84	125.95	1.42	579.88
Share of Pop. 65+	15.95	2.95	9.05	23.54
Share of Pop. with University Degree	4.32	1.85	0.93	9.95

A.3.2 Sample for incumbency data (Study 2)

Table A.30: Incumbency data: Sample, response, and sources (Study 2)

Municipality	Response	Source
Control Group		
Au	Yes	-
Damüls	-	Elections data ^a , gemeindearchiv.at ^b
Dünserberg	Yes	-
Eichenberg	-	BM-Index ^c , Wikipedia ^d , gemeindearchiv.at
Hittisau	-	Wikipedia, Elections data, gemeindearchiv.at
Hohenweiler	-	Wikipedia, gemeindearchiv.at
Krumbach	Yes	-
Langen bei Bregenz	Yes	-
Lingenau	Yes	-
Riefensberg	-	Wikipedia, Elections data, gemeindearchiv.at
Sibratsgfall	-	BM-Index, Wikipedia, gemeindearchiv.at
St. Anton im Montafon	Yes	-
St. Gallenkirch	Yes	-
Sulz	-	BM-Index, Wikipedia, gemeindearchiv.at
Treatment Group		
Alberschwende	-	BM-Index, Wikipedia
Altach*	Yes	-
Andelsbuch	Yes	-
Bludenz*	Yes	-
Bludesch	Yes	-
Brand	Yes	-
Bregenz*	Yes	-
Buch	-	BM-Index, gemeindearchiv.at
Bürs*	Yes	-
Dornbirn*	Yes	-
Düns	Yes	-
Feldkirch*	-	BM-Index, Wikipedia
Frastanz*	Yes	-
Fußach*	-	Wikipedia, Elections data
Gaißau	-	BM-Index, Wikipedia, gemeindearchiv.at
Gaschurn	Yes	-
Göfis*	-	Wikipedia, gemeindearchiv.at
Götzis*	Yes	-
Hard*	-	Wikipedia, Elections data
Höchst*	-	BM-Index, Wikipedia, gemeindearchiv.at
Hohenems*	-	Wikipedia, Elections data
Hörbranz*	Yes	-
Kennelbach	-	BM-Index, Wikipedia, gemeindearchiv.at
Klaus	Yes	-
Koblach*	Yes	-
Lauterach*	-	Wikipedia, gemeindearchiv.at
Lochau*	Yes	-
Lorüns	Yes	-
Ludesch	Yes	-
Lustenau*	Yes	-
Mäder*	Yes	-
Meiningen	-	Wikipedia, Elections data
Mittelberg*	Yes	-
Nenzing*	Yes	-
Nüziders*	Yes	-

Table A.30: (continued)

Municipality	Response	Source
Rankweil*	-	Wikipedia, Elections data
Röns	Yes	-
Satteins	-	BM-Index, Wikipedia, gemeindearchiv.at
Schlins	Yes	-
Schnifis	Yes	-
Schruns*	-	BM-Index, Wikipedia, gemeindearchiv.at
Schwarzach*	-	Wikipedia, Elections data, gemeindearchiv.at
Silbertal	Yes	-
Stallehr	Yes	-
Thüringen	Yes	-
Thüringerberg	Yes	-
Tschagguns	-	Wikipedia, gemeindearchiv.at
Vandans	-	BM-Index, Wikipedia, APA ^e
Weiler	-	BM-Index, Wikipedia, gemeindearchiv.at
Wolfurt*	Yes	-
Zwischenwasser	Yes	-

*: Municipality with more than 2,000 eligible voters in 2000 - excluded from small municipalities subsample.

^a Elections data: Data on mayoral elections (results, candidates).

^b gemeindearchiv.at: Data from the *Vorarlberger Gemeindedokumentation* (Kuhn, n.d.).

^c BM-Index: Index on Austrian mayors (Hoffer, 1994).

^d Wikipedia: Wikipedia pages of municipalities and local politicians.

^e APA: Newspaper reports from the *APA Online Manager*.

A.3.3 Additional Results (Study 2)

Figure A.8: Time Trends of Eff. N (Golosov) (Study 2)

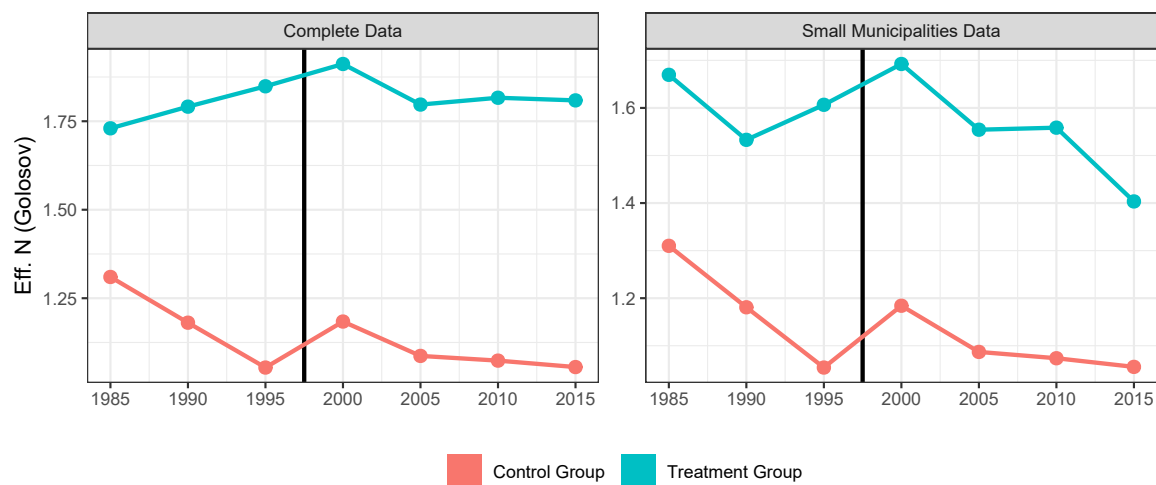


Table A.31: DiD for electoral competition - Incumbency (Study 2)

	N Parties (79)	Eff. N _{LT} (80)	Margin of Victory (81)
Diff-in-Diff	0.431 (0.409)	0.197 (0.251)	-9.089 (13.404)
Diff-in-Diff:Incumbent	0.327 (0.315)	0.271 (0.181)	-11.200 (9.344)
Incumbent is Candidate	-0.081 (0.121)	-0.090 (0.067)	4.342 (3.505)
Observations	336	336	336
Controls	X	X	X
Municipality FE	X	X	X
Year FE	X	X	X
R ²	0.835	0.804	0.753
Adjusted R ²	0.786	0.745	0.679
RMSE	0.519	0.325	17.860

Note: Clustered SE; *p<0.1; **p<0.05; ***p<0.01

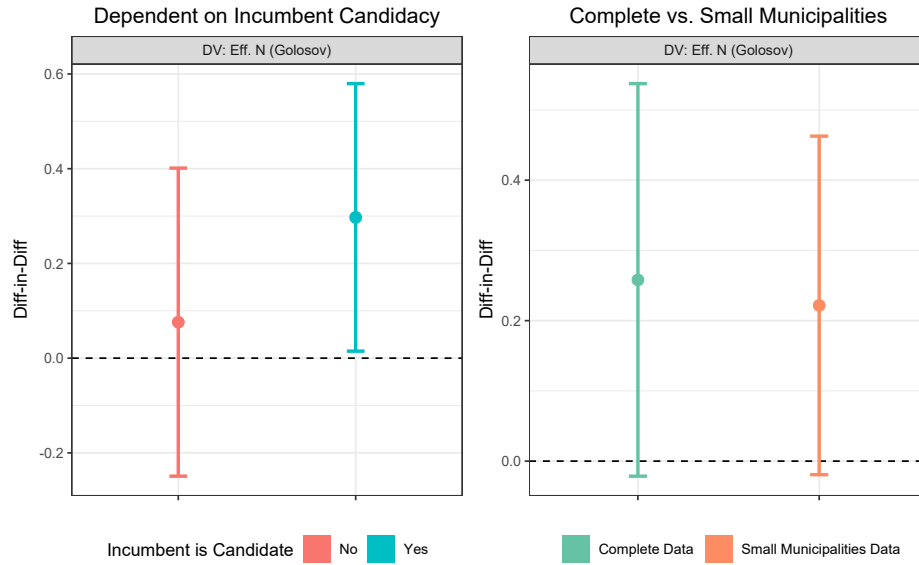
Table A.32: DiD for electoral competition - Small Municipalities (Study 2)

	N Parties (82)	Eff. N _{LT} (83)	Margin of Victory (84)
Diff-in-Diff	0.566* (0.282)	0.344* (0.189)	-19.029* (10.715)
Eligible Voters (in 1000s)	-0.058 (0.557)	-0.004 (0.410)	-10.699 (18.216)
Share of Pop. 65+	-0.035 (0.040)	-0.029 (0.027)	0.127 (1.473)
Share of Pop. with Uni Degree	-0.004 (0.076)	-0.047 (0.055)	4.299 (3.208)
Communal Tax/Capita	-0.001* (0.0006)	-0.0005 (0.0005)	0.031 (0.039)
Observations	224	224	224
Municipality FE	X	X	X
Year FE	X	X	X
R ²	0.684	0.676	0.630
Adjusted R ²	0.595	0.585	0.525
RMSE	0.537	0.334	21.153
<i>Note:</i> Clustered SE; *p<0.1; **p<0.05; ***p<0.01			

Table A.33: DiD for Eff. N - Golosov (Study 2)

	Baseline (85)	:Incumbent (86)	Small Municipalities (87)
Diff-in-Diff	0.258 (0.170)	0.076 (0.198)	0.222 (0.146)
Diff-in-Diff:Incumbent		0.221 (0.145)	
Incumbent is Candidate		-0.088 (0.054)	
Observations	336	336	224
Controls	X	X	X
Municipality FE	X	X	X
Year FE	X	X	X
R ²	0.763	0.766	0.638
Adjusted R ²	0.695	0.696	0.536
RMSE	0.258	0.258	0.257
<i>Note:</i> Clustered SE; *p<0.1; **p<0.05; ***p<0.01			

Figure A.9: Time Trends of Eff. N (Goloso) (Study 2)



Note: Clustered Standard Errors.

Table A.34: Baseline Event-Study Models (Study 2)

	N Parties (91)	Eff. N _{LT} (92)	Margin of Victory (93)	Turnout (94)
Direct ₁₉₈₅	-0.955** (0.391)	-0.559* (0.307)	30.824** (13.129)	1.209 (1.315)
Direct ₁₉₉₀	-0.679* (0.378)	-0.250 (0.250)	14.849 (13.191)	0.460 (1.235)
Direct ₂₀₀₀	-0.371 (0.241)	-0.130 (0.162)	15.672 (11.840)	2.720** (1.280)
Direct ₂₀₀₅	0.110 (0.255)	0.150 (0.145)	-5.065 (8.302)	4.530** (2.545)
Direct ₂₀₁₀	0.190 (0.201)	0.141 (0.134)	-3.902 (7.561)	4.797* (2.650)
Direct ₂₀₁₅	0.299 (0.238)	0.249 (0.153)	-5.986 (7.981)	5.379* (2.993)
Observations	336	336	336	336
Controls	X	X	X	X
Municipality FE	X	X	X	X
Year FE	X	X	X	X
R ²	0.844	0.812	0.766	0.936
Adjusted R ²	0.795	0.753	0.693	0.916
RMSE	0.508	0.320	17.586	4.016

Note:

Clustered SE; *p<0.1; **p<0.05; ***p<0.01

Table A.35: Event-Study Models: Interactions with incumbent candidacy (Study 2)

	N Parties (95)	Eff. N _{LT} (96)	Margin of Victory (97)	Turnout (98)
Direct ₁₉₈₅	-1.057** (0.450)	-0.750** (0.335)	36.902** (15.848)	-0.221 (2.387)
Direct ₁₉₈₅ :Incumbent	0.107 (0.237)	0.210 (0.147)	-6.751 (10.011)	1.561 (1.986)
Direct ₁₉₉₀	-0.923** (0.438)	-0.455 (0.329)	33.061 (22.253)	-0.658 (2.036)
Direct ₁₉₉₀ :Incumbent	0.254 (0.296)	0.217 (0.263)	-19.778 (19.217)	1.178 (1.627)
Direct ₂₀₀₀	-0.167 (0.247)	0.210* (0.123)	0.448 (10.470)	-1.208 (1.922)
Direct ₂₀₀₀ :Incumbent	-0.210 (0.221)	-0.333** (0.137)	15.096* (7.931)	3.846** (1.770)
Direct ₂₀₀₅	-1.217 (0.964)	-0.762 (0.495)	46.427 (31.641)	-1.067 (3.608)
Direct ₂₀₀₅ :Incumbent	1.396 (0.945)	0.968* (0.492)	-54.478* (31.157)	5.763* (3.076)
Direct ₂₀₁₀	-0.006 (0.384)	-0.077 (0.169)	4.536 (7.877)	6.696* (3.397)
Direct ₂₀₁₀ :Incumbent	0.246 (0.374)	0.276 (0.191)	-10.798 (6.809)	-2.300 (2.561)
Direct ₂₀₁₅	0.287 (0.249)	0.198 (0.150)	-12.893 (13.425)	7.523** (3.724)
Direct ₂₀₁₅ :Incumbent	0.052 (0.228)	0.104 (0.140)	4.988 (12.641)	-2.416 (2.810)
Observations	336	336	336	336
Controls	X	X	X	X
Municipality FE	X	X	X	X
Year FE	X	X	X	X
R ²	0.848	0.820	0.776	0.937
Adjusted R ²	0.795	0.756	0.698	0.915
RMSE	0.502	0.315	17.233	3.972
<i>Note:</i>		Clustered SE; *p<0.1; **p<0.05; ***p<0.01		

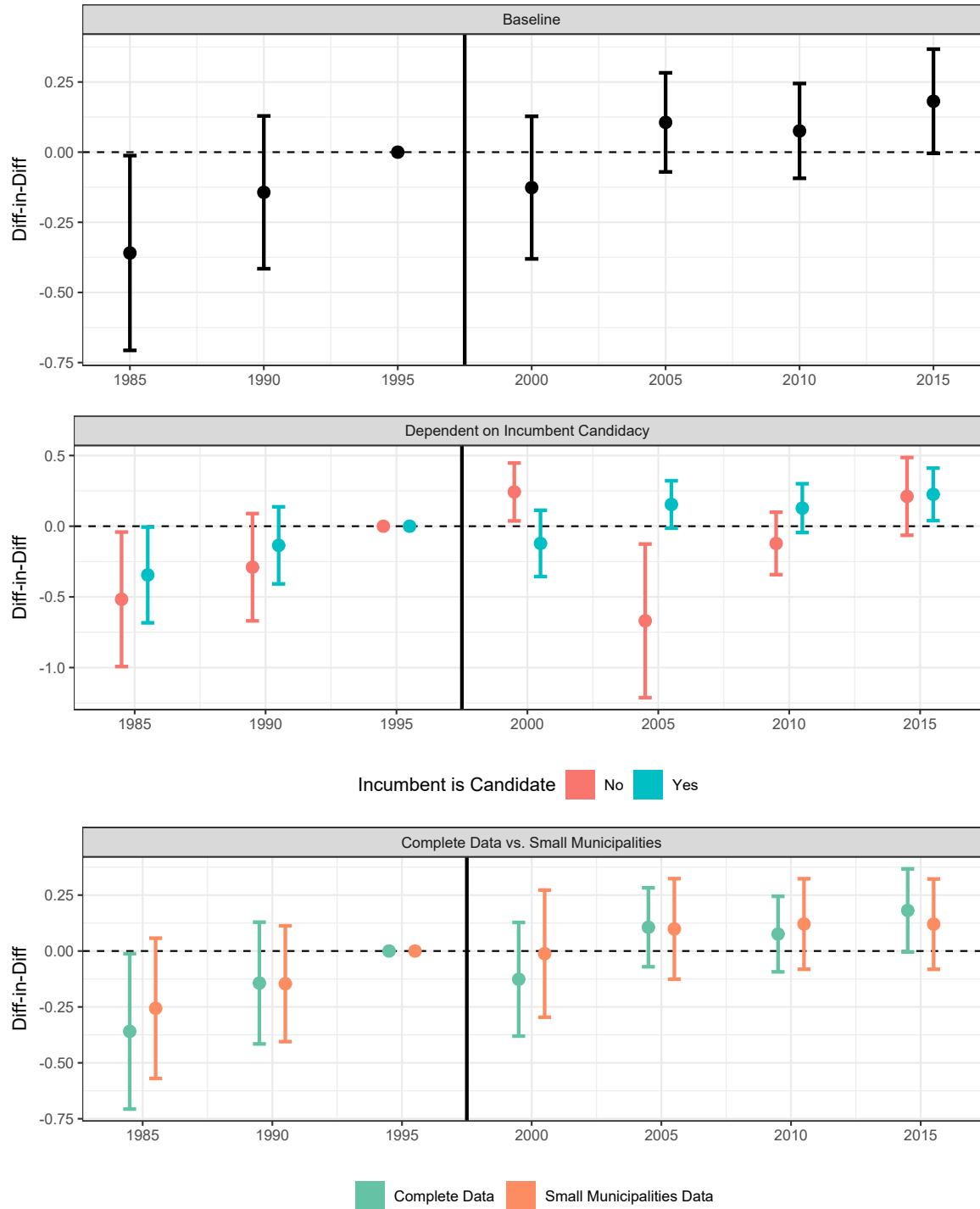
Table A.36: Event-Study Models - Small Municipalities Data (Study 2)

	N Parties (99)	Eff. N _{LT} (100)	Margin of Victory (101)	Turnout (102)
Direct ₁₉₈₅	-0.892** (0.388)	-0.452 (0.280)	26.645* (13.303)	2.130 (1.445)
Direct ₁₉₉₀	-0.561 (0.361)	-0.239 (0.235)	17.900 (13.407)	0.923 (1.345)
Direct ₂₀₀₀	-0.215 (0.280)	-0.027 (0.186)	8.827 (14.481)	2.126* (1.181)
Direct ₂₀₀₅	0.084 (0.351)	0.119 (0.192)	-8.187 (11.759)	6.419** (2.480)
Direct ₂₀₁₀	0.187 (0.264)	0.169 (0.160)	-9.730 (9.962)	8.433*** (2.229)
Direct ₂₀₁₅	0.163 (0.275)	0.153 (0.176)	-4.484 (9.653)	7.978*** (2.499)
Observations	224	224	224	224
Controls	X	X	X	X
Municipality FE	X	X	X	X
Year FE	X	X	X	X
R ²	0.699	0.686	0.643	0.930
Adjusted R ²	0.603	0.586	0.529	0.908
RMSE	0.532	0.333	21.033	3.655
<i>Note:</i>		Clustered SE; *p<0.1; **p<0.05; ***p<0.01		

Table A.37: Event-Study Models for Eff. N - Golosov (Study 2)

	Baseline (103)	:Incumbent (104)	Small Municipalities (105)
Direct ₁₉₈₅	-0.359* (0.211)	-0.517* (0.289)	-0.256 (0.191)
Direct ₁₉₈₅ :Incumbent		0.172 (0.209)	
Direct ₁₉₉₀	-0.143 (0.166)	-0.290 (0.231)	-0.146 (0.157)
Direct ₁₉₉₀ :Incumbent		0.155 (0.203)	
Direct ₂₀₀₀	-0.126 (0.154)	0.242* (0.125)	-0.012 (0.173)
Direct ₂₀₀₀ :Incumbent		-0.364*** (0.105)	
Direct ₂₀₀₅	0.106 (0.107)	-0.669** (0.330)	0.099 (0.137)
Direct ₂₀₀₅ :Incumbent		0.823** (0.326)	
Direct ₂₀₁₀	0.076 (0.103)	-0.122 (0.134)	0.121 (0.123)
Direct ₂₀₁₀ :Incumbent		0.249 (0.151)	
Direct ₂₀₁₅	0.181 (0.113)	0.211 (0.167)	0.120 (0.123)
Direct ₂₀₁₅ :Incumbent		0.014 (0.161)	
Observations	336	336	224
Controls	X	X	X
Municipality FE	X	X	X
Year FE	X	X	X
R ²	0.773	0.785	0.645
Adjusted R ²	0.702	0.709	0.531
RMSE	0.256	0.250	0.257
<i>Note:</i> Clustered SE; *p<0.1; **p<0.05; ***p<0.01			

Figure A.10: Event-Study Eff. N - Golosov (Study 2)



Note: Clustered Standard Errors.