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Essays on local politics

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Abstract

In the first chapter I analyse whether electing more women to municipal councils can affect female political candidacy in the future. I use cases of close elections in Czech municipalities and a regression discontinuity design (RDD). I find that fewer female candidates run in elections following the marginal election of an additional woman in the prior electoral cycle. The effect is stronger in those municipalities where the marginal female candidate joined two or more other female candidates in the council, indicating that sufficient representation, as viewed by the politicians or the community, was a likely mechanism behind the observed effect.

In the second chapter I question whether personal characteristics of local politicians such as gender, education and occupation influence municipal budget allocation. I find no evidence that any of these characteristics matter for budget allocation, deficit or debt. These findings hold even in the smallest municipalities, where the influence of every single council member on council decisions should be larger.

In the final chapter I analyze how a temporary increase in council responsibilities, budget and interaction with the community in a municipality can affect the candidacy of local independent politicians. I take the flooding in the Czech Republic in 2002 as a trigger for the above mentioned temporary changes in council governance. I find that in the municipalities that were more damaged than others, one electoral cycle after the disaster the local independent candidates were more likely to submit their own slates instead of running on nation-wide or other parties' slates. A plausible reason behind the change is the empowerment of independent candidates and a better bond with the community.

Abstrakt

V první kapitole analyzuji, zda zvolení více žen do obecního zastupitelstva může ovlivnit budoucí kandidaturu žen. Využívám případ nedávných komunálních voleb v České republice a strategii nespojité regrese (regression discontinuity design, RDD). Zjišťuji, že méně žen kandiduje v období po vítězství dodatečné ženy s těsným volebním výsledkem v předchozím volebním období. Efekt se projevuje silněji v obcích, kde se kandidátka s těsným volebním výsledkem spojila s jednou nebo více ženami v zastupitelstvu. To naznačuje, že snaha o dostatečné zastoupení žen, z pohledu politiků nebo komunity, je pravděpodobný mechanismus vysvětlující pozorovaný jev.

V druhé kapitole si kladu otázku, zda osobní charakteristiky místních politiků, například pohlaví, vzdělání nebo zaměstnaní, ovlivňují alokaci obecního rozpočtu. Nenacházím žádný důkaz, že některá z uvedených charakteristik ovlivňuje rozpočet, deficit nebo dluh. Tato zjištění platí i pro nejmenší obce, kde by vliv jednotlivých členů zastupitelstva na rozhodování měl být silnější.

V poslední kapitole analyzuji, jak dočasné zvýšení odpovědnosti zastupitelstva, rozpočtu a interakce s obecní komunitou může ovlivnit kandidaturu místních nezávislých politiků. Záplavy v České republice v roce 2002 považuji za zdroj uvedených dočasných změn v zastupitelské správě. Zjišťuji, že v obcích, které byly více poškozeny, místní nezávislí kandidáti v období následujícím po záplavách častěji kandidovali na vlastní kandidátní listině než na celonárodních nebo stranických kandidátních listinách. Možné vysvětlení důvodu změn v kandidatuře je posílení nezávislých kandidátů a lepší vztahy s místní komunitou.

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Introduction

In the three chapters of this thesis I analyze questions about representation in a local political economy.

One of the main duties of the government is to ensure that both economy and society are managed such that the needs of a high share of the population are attended to. Likely the most efficient way to account for the needs of major demographic groups is to have their representatives in governing bodies. Achieving strong representation in decision making bodies is quoted as a goal by national governments as well as international organizations. For example, achieving gender parity is included in the United Nations Millennium Development Goals.

On the municipal level, representation is as important as on the regional and state levels. Municipalities are the first and closest link between population and government. Although the set of public goods provided by municipal councils is country-specific, they are often responsible for providing basic public goods such as sewage, waste removal and early stages of education. In this regard, alongside electing women to councils, a crucial angle of representation is having the local community members taking active part in municipality governance.

While it is necessary to know how to achieve optimal representation, it is also useful to know whether representatives of certain demographic groups make different policy decisions, especially in developed countries. The literature on local representation to date does not have clear answers to these questions. With this thesis I attempt to contribute to answering some of them. First, I study how female representation can be achieved and whether actions to achieve it can have an adverse effect. Second, I consider the undertakings that can influence local politicians to strengthen their positions. Finally, I analyze whether representation of different groups actually has any effect on policy; specifically, on financial indicators.

In the first chapter I study the changes in female political participation that occur when an additional female candidate is elected to the local council. To address the endogeneity related to non-random election outcomes I employ a regression discontinuity design. I focus on close competition for the last seat in the Czech municipal (local) elections between a male and a female candidate. I find that the election of an additional female candidate leads to fewer newly participating female candidates in the following elections. The effect is stronger in the municipalities where at least two other women were elected to the council. The latter finding is consistent with the explanation that in the Czech municipalities sufficient female representation, from the politicians' or the electorate's point of view, has likely been achieved.

In the second chapter I analyse whether local politicians' personal characteristics - gender, education and occupation - influence municipal budget allocation. In a dynamic regression discontinuity design I compare municipalities where candidates with a particular characteristic narrowly won or lost. The analysis is based on Czech local elections and municipal budget data. Educated candidates are favored by the Czech electorate, while female candidates are disfavored. However, I find no robust effect of electing additional women, educated councilors or entrepreneurs on budget allocation, deficit or debt. This holds even in the smallest municipalities where the effect of an additionally elected candidate is expected to have a higher weight on decision making.

In the third chapter I provide new evidence of how an increase in municipal councils' responsibilities can lead to the independence of local candidates from nation-wide parties. After the flooding in the Czech Republic in 2002, the amount of work for local councils in the flooded municipalities increased, as did their budget and amount of interaction with the local population. One electoral cycle later the local candidates in the more damaged municipalities were more likely to submit their own slates instead of running on nation-wide parties' and other slates. I argue that a plausible channel behind this effect is that the local candidates gained experience and profited from higher social capital, which resulted in them being more independent from nation-wide parties.

Chapter 1

Does the Election of an Additional Female Councilor Increase Women's Candidacy in the Future?

1.1 Introduction

Female political participation is a topic that draws a substantial amount of attention from international organizations and society worldwide.[1] Debates about female underrepresentation have also spread to various levels of governance, from the local all the way to the national. Gender parity in political institutions is viewed as an important goal, since it is a way to account for women's preferences that may be different from men (Campbell, Childs & Lovenduski 2010, Swers 2002, Wangnerud 2000). Gender parity in politics is also a sign of the legitimacy of democratic institutions, as women represent half of the population (Stevens 2007). In addition,

[1] Increasing the number of seats women hold in national parliaments is one of the Millenium Development Goals (United Nations). The Organization for Economic Co-operation and Development (OECD) suggests that the increase in female political participation is an important sphere to invest in.

women can be better representatives than men (Anzia & Berry 2011). Meanwhile we observe an under-representation of women in political institutions, not only in developing, but also in developed countries. Various ways to increase female representation, such as gender quotas (Bagues & Campa 2017, Esteve-Volart & Bagues 2012) and exposure of potential female politicians to a role model, i.e. an existing female politician (Bhalotra, Clots-Figueras & Iyer 2018, Broockman 2014, Gilardi 2015), are analysed in the literature.[2] It would be useful for policy makers to know whether the process of increasing female participation only needs to be stimulated in the beginning and not for longer. At present it remains unclear whether a marginal increase in the number of female politicians can stimulate a spillover.

In this paper I analyse Czech local elections data and show that increasing the pool of incumbent women via a competitive election may have an opposite effect than expected, i.e. lead to fewer female candidates on slates in subsequent elections. Since the outcomes of the elections could potentially be endogenous to the municipality characteristics (Smith, Reingold & Owens 2012), I employ a regression discontinuity design (RDD). I compare municipalities where the marginally elected councilor is a female who placed just ahead of a male candidate to those where the situation was the opposite.

The question of what influences female political participation has been studied in the literature from different angles. On the local level, Beaman, Chattopadhyay, Duflo, Pande & Topalova (2009) and Eggers (2011) analyse the effect of electing a female mayor and De Paola, Lombardo & Scoppa (2010) examine how a gender quota affected female representation after it was abolished. Bhalotra et al. (2018) and Broockman (2014) concentrate on the state level. To the best of my knowledge, only one paper (Gilardi 2015) has so far employed the combination of the three design features that are characteristic of this paper: 1) the influence of a council seat holder rather than a mayor; 2) local political level rather than state; 3) competitive election of a female candidate rather than competitive election in a setting with a gender quota. Gilardi (2015) studies both municipalities and the competitive election of

[2]The topic is also extensively studied in political science. See, among others, Wolbrecht & Campbell 2007 and Murray 2008.

female council members. The setting is, however, not ordinary - Switzerland at the time when women were first allowed to participate in elections in 1969.[3] In addition, the paper is more descriptive than causal since the identification strategy is not based on a random election of candidates. It is common in the literature to use a RDD that takes into account the victory margin between the elected and unelected candidates, in order to avoid endogeneity (Bhalotra et al. 2018, Brollo & Troiano 2013, Broockman 2014, Clots-Figueras 2011, Eggers 2011, Ferreira & Gyourko 2014).

Analysing how the gender of a local council member influences other women is an important extension to the literature that already documents the influence of female mayors and state legislators. First, though less noticeable than a mayor, a council member participates in decision-making and is among community leaders too. Second, the decision to participate in the elections on the local level is the first a potential politician takes in his/her career that can lead to becoming a mayor; the municipal level is also likely to be the first step for those who want to be involved in politics on the higher regional or state levels. Third, from the regulatory perspective, the gender of a council seat holder is relatively easy to regulate. It is, therefore, useful to study this angle to see the full picture of how female political participation is shaped.

Gender quotas introduce a large, policy-induced variation in the number of women, either on slates or among council members, and are therefore popular among researchers addressing a variety of questions (Baltrunaite, Bello, Casarico & Profeta 2014, Beaman et al. 2009, Bhavnani 2009, Bagues & Campa 2017, Chattopadhyay & Duflo 2004, Chen 2010, De Paola et al. 2010, Deininger, Jin, Nagarajan & Xia 2015, Eggers 2011, Weeks & Baldez 2015). Quotas, however, might also have a negative effect on attitudes of the electorate, since the latter have to choose from among a pool of candidates which is possibly not natural for them (Clayton 2015). Although gender quotas affect the candidate pool and do not compromise the competitive flow of elections, competitive election of women in a setting without a gender

[3] In Swiss municipalities in the canton of Zurich.

quota does not face this particular issue of a potentially negative attitude. It might be problematic due to possible unobservable women-friendliness inside a particular municipality. Since I apply the RDD and estimate the model on a narrow margin this concern is irrelevant.

Comparing the municipalities of interest on the narrowest margin, I find that exposure of a municipality to an additional woman in the local council has a negative effect on political participation of new female candidates[4] [5] in subsequent elections. In those municipalities I observe fewer new female candidates on slates[0]. The participation rate of new female candidates drops by at least 3 percentage points.[6] Meanwhile, both the likelihood of an incumbent female politician participating in elections again and the likelihood of winning conditional on participation are higher than for a female candidate who ran in elections and did not get elected (in line with Trounstine 2011 and Redmond & Regan 2015).

The negative effect on the number of new female candidates is mainly driven by the municipalities, where the number of other female candidates elected besides the marginally elected one was 2 or more. The latter finding serves as a piece of evidence that the main negative effect can be explained by the sufficiency of female representation in municipal councils as viewed by the voters. Although electing a female mayor has been proven to decrease voter bias towards female candidates in Germany (Baskaran & Hessami 2018), it does not seem that Czech voters are willing to see more women on their councils once they have been exposed to a certain number of female councilors.

My findings add a new insight to the existing literature. Electing a female mayor has a positive long-term effect on female political participation in India on the local level (Beaman et al. 2009). No effect was documented for France on the local level (Eggers 2011) and the US on the state level (Broockman 2014). A positive effect was found in Italy (De Paola et al. 2010) and in Switzerland when women

[4]New female candidates are those who did not participate in the elections in time *t-1* when the additional female councilor was elected and do participate in the elections in time *t*.

[5]A slate is a list of candidates submitted by a party to the elections committee.

[6]I define the participation rate of new female candidates as the number of new female candidates (3.2 on average) divided by the total number of candidates in the municipality (18.3 on average).

were first allowed to participate in elections in 1969 (Gilardi 2015). I explain the difference between my results and those in the above mentioned studies by noting that the female political participation level is rather high in the Czech Republic and was significantly lower in India, Italy and Switzerland in the 1970s.[7] I show that electing additional women might not always have a positive effect on female political participation, especially in a setting where women take a significant part in politics.

My findings relate most closely to those in Bhalotra et al (2018). The authors study Indian state elections and find that electing a female state official reduces the entry of new female politicians in the future, especially in the constituencies with entrenched gender bias. They conclude that the reduction in the entry of new female candidates is suggestive of a "backlash" effect from voters and political parties. In my setting of Czech local elections I also observe suggestive evidence that the reduction in new female candidates' entry is likely due to the constituencies reaching the optimal female presence in their councils, from their point of view, as opposed to the theoretical perspective.

In my setting I do not find evidence for the extensively discussed "demonstration effect" (Broockman 2014, Eggers 2011, Gilardi 2015, Campbell & Wolbrecht 2006, Wolbrecht & Campbell 2007), whereby observing women involved in politics might inspire other women to participate in elections too. Though the possibility of a role model seems natural, to date it is only proven to affect the intentions of other women to participate in politics (Campbell & Wolbrecht 2006, Wolbrecht & Campbell 2007), or aspirations of adolescents (Beaman, Dnflo, Pande & Topalova 2012), and, in only one case, actual participation (Gilardi 2015). With fewer female candidates on slates after a municipality was exposed to more female councilors I find no evidence in support of the role model influence of elected female politicians on other women.

I also show that my results are not driven by the political affiliation of the marginally elected councilors. Multiple studies find that political parties influence policy outcomes (Pettersson-Lidbom 2008, Joshi 2015, Migueis 2013, Freier

[7]In contrast to the nearly 30% of female council members in the Czech councils, in Italy approximately 7% of councilors are women (De Paola et al. 2010), in India - under 14% in most areas (Electoral commission of India 2014).

& Odendahl 2012). In the gender-related literature, a conclusion as to whether the partisanship of female politicians matters has not been reached. Women seem to influence women from the same party (Reingold & Harrell 2010), and in the eyes of the electorate partisanship matters more than gender (Hayes 2011), but the political outcomes of female politicians are not affected by their partisanship (Ferreira & Gyourko 2014). In this paper I can only respond to the question of whether it matters that the female councilor is representing a nation-wide party or a local movement. I find that representing a nation-wide party, with its clear political ideology, rather than a local movement concentrated on running the municipality efficiently, does not matter.

Since gender quotas continue to affect female political participation after they are abolished (De Paola et al. 2010, Bhavnani 2009) I check whether electing an additional female councilor has a long-term effect too. I do not observe a statistically significant influence of an additionally elected female candidate on female political participation two elections ahead, possibly due to small sample size.

My findings hold for the municipalities where the competition for the last seat was narrow. Also, the municipalities where the two marginal candidates are of different gender have a higher number of female candidates on slates than those where the two marginal candidates are of the same gender. The fact that the results apply to the municipalities with higher competition among women unfortunately limits the external validity of the paper.

The paper proceeds as follows. I first describe the election process in the Czech Republic in the institutional background section (1.2). I then comment on my empirical strategy (1.3). The data description follows (1.4). Finally, I check whether the necessary RDD assumptions hold (1.5) and present the results (1.6), as well as robustness checks and minor extensions (1.7).

1.2 Institutional background

Municipalities are the lowest level of the political system in the Czech Republic, with regional and central levels above them. There are more than 6,000 municipalities in the country, where the number of councilors can range from 5 to more than 50. The majority of the municipalities (more than 4,500) are rather small - fewer than 10 councilors on the councils (Table 1.1). There are on average 4 slates in each municipality, which is a good approximation for the number of candidates running in elections per mandate, since most slates have as many candidates as there are mandates to be allocated (Table 1.2).

In my analysis I focus on small municipalities with fewer than 10 councilors. In these communities inhabitants are more likely to know their leaders. Also, an additional female councilor changes the gender composition of the council noticeably, unlike in the large ones. Over 70% of the participating candidates do not belong to any party and report themselves as independent candidates. This suggests that at the municipal level, the local reputation of candidates is more important than political affiliation. Changing the definition of a small municipality to less than 11, 12, 13 or 14 increases the sample by 10% at most and does not influence the results.

Table 1.1: Municipalities by council size

	Elections year		
Council size	2002	2006	2010
5	424	431	439
6	50	48	31
7	2,560	2,615	2,679
8	20	13	14
9	1,506	1,497	1,457
10	4	3	4
Total small municipalities	1,561	*4,607*	1,621
11	355	353	361
12	2	3	4
13	53	50	51
14	1	3	2
15	1,002	988	965
17 and more	342	346	346
Total	*6,319*	*6,350*	*6,353*

Municipal elections are held in all municipalities at the same time every 4 years. Recently, elections took place in 2002, 2006, 2010 and 2014. The ballots on these elections include lists of candidates (slates) representing various political parties, or

slates of independent candidates who decided to create a local movement, usually with the purpose of participating in the coming elections. There tends to be more than one local movement in a given municipality and year. It is also common for two or more parties to submit a common slate. Independent candidates, as an alternative to creating a local movement, often join a particular party or local movement slate for the elections. A candidate can also participate in the elections as an individual candidate, i.e. file a slate that contains only him/her. On average, there are 2 individual candidates in a municipality (Panels A-C of the Table 1.2). In the municipalities that had close elections between female and male candidates for the last seat, the number of individual candidates is on average twice as high (Panels D-F of the Table 1.2). The municipalities where the election was close are more competitive and therefore less stable, which creates demand for a higher variety among candidates and presents an opportunity to the individual candidates.

The number of votes each voter can allocate to the candidates is equal to the number of seats to be filled in the council (n). Voters have three options: 1) select one particular party; 2) select n candidates from different slates; 3) select m candidates from different slates ($m< n$) and a particular slate. If one party is selected, then each of the first n candidates from the slate gets a vote.[8] If m candidates from different slates and a party are selected ($m\leq n$), then m votes are allocated to the selected candidates from different slate, and n-m votes are allocated to the first n-m candidates in the selected slate.

In order to participate in the allocation of mandates, the candidates from a given slate need to collectively receive at least 5% of all votes cast in the municipality. The threshold is adjusted for the slates that contain fewer candidates than there are mandates to be allocated. The total number of votes a given slate has collected is calculated as a simple summation of the votes received by each candidate on the slate. If a given slate was never selected as a whole, but one or several candidates were selected separately, the total number of votes that these candidates collected counta as the total number of votes for the slate as a whole. The mandates are

[8]Most slates contain n candidates or fewer. Therefore, in case a voter selects one slate, it leads to all candidates on the slate receiving a vote.

allocated to the slates that passed the 5% or the adjusted 5% threshold, based on the total number of votes that each slate received. The total number of votes each slate collected is divided by 1,2,3 etc. The calculated number is called a 'share'. The shares are ranked from highest to lowest, and the n highest shares are allocated a mandate.

The mandates each slate won are then distributed to the first candidates according to the final positioning of candidates within the slate. The final ranking of candidates within each slate, in turn, depends on their initial position on the slate, the number of votes cast for each of the candidates, as well as for the party slate that the candidate represents. Candidates with a share of votes 10% higher than the average share per candidate on the slate can move higher inside the slate (I define such candidates as jumpers). The jumpers move to the top of the slate no matter what position they took before, and are ranked at the top of their slate according to the number of votes they have received. Having received 10% more votes than an average candidate on the slate does not necessarily mean moving up, though. If, for example, our jumper was 5th on his/her slate, and four other candidates on the slate collected even more votes than him/her, the jumper in question will stay at his/her initial position. The jumping candidate can even move lower down the slate if there are 5 or more other candidates on the slate that received more votes than him/her.

The candidates who did not jump, i.e. who received less than 10% more votes than an average candidate on their slate, are placed below all the jumpers and are ranked based on their initial position on the slate. The number of votes they received is not taken into account when defining their final position within the slate.

On average, 26% of candidates in a municipality can be classified as jumpers, with only 40% of those having actually moved higher on the slate compared to their initial positioning. The remaining 60%, even though they received 10% more votes than an average candidate on their slate, either remain in the same position, or move lower down the slate. The reason for such an outcome is that other candidates on the slate also received enough votes to be jumpers, but, in addition, they received

more votes than the candidate in question, and thus moved even higher. The mean number of candidates who are elected only because they jumped and received enough votes to move higher in the slate is 1.5 per municipality (Table 1.2).

This mandates' allocation procedure is called d'Hondt's method and is described in more detail in Appendix l.A. The main feature of this method, calculating the shares to identify who gets elected, does not allow the parties to predict precisely how many candidates from their slate will obtain a mandate in close elections, neither can they know in advance which candidate will be marginal. This method of mandates allocation allows me to observe not only the elected candidates, but also how far each unelected candidate was from being elected. Most importantly, I observe the marginally unsuccessful candidates and can calculate the winning margin of the marginally victorious candidates. The victory margin can be calculated as a difference between the shares of the marginally successful and marginally unsuccessful candidates. To be able to interpret the results better, I express the victory margin in terms of the share of voters who voted. This step is summarized in the Data description section and described in detail in Appendix l.A.

After the council is elected, the members of the council elect the board, the mayor and the deputy from the council members. In municipalities with fewer than 10 council members only the mayor and the deputy (in the smallest municipalities only the mayor) are elected, become full-time employees of the municipality and receive a salary. The remaining council members participate in monthly or bi-monthly meetings (and are compensated with a symbolic payment). Being elected as a mayor or deputy means quitting any current employment for the term of office.[9] It is important to note that if men are more likely to be the primary bread winners, their career could suffer from a 4-year break. Meanwhile, if women are more likely to be employed locally as teachers or in a similar position, a 4-year break from this type of employment is likely to be less career damaging. At the same time, the salary of a council leader is not likely to be significantly lower than other local salaries in smaller municipalities, but is likely to be lower than salaries in nearby cities. Serving

[9]The current employer is obliged to employ the person after the Mayor/Deputy term is over.

as a council member and potentially as a mayor or a deputy is therefore likely to be more attractive to women than men.[10]

1.3 Empirical strategy

The mandates' allocation mechanism in the Czech municipal elections allows me to apply a regression discontinuity design (RDD). This design has been well summarized by Imbens & Lemieux (2008) and widely used in the recent economics literature (for example, Lee 2008, Cunat, Gine & Guadalupe 2012) and also by researchers analysing elections data (Bhalotra et al. 2018, Brollo & Troiano 2013, Broockman 2014, Eggers 2011, Ferreira & Gyourko 2014). RDD allows estimation of the local treatment effect. The identifying assumptions are not strict and can be partly tested.

The local RDD is based on estimating the local treatment effect using the observations which are close to the cut-off point of the assignment to treatment variable. The first identifying assumption is that being treated or not for those observations that are around the threshold cannot be directly manipulated by the agents and is hence as good as random. The assumption can be tested by comparing the density of cases around the cut-off point. Second, it is also assumed that the agents are not different in terms of observable and unobservable characteristics, i.e. there is no discontinuity in co-variates. This assumption can be tested by comparing observable characteristics of the agents that are on the different sides of the cut-off point; the observed co-variates have to be similar for these observations. The unobserved co-variates cannot be tested, but are assumed to be similar once the observed co-variates prove to be so. Controlling for the continuous assignment to the treatment variable or its polynomial is a common practice while estimating the treatment effect. This allows me to account for how close the agents are to being elected, and therefore treated.

[10]In municipalities with fewer than 10 council members there are 20% more slates headed by women. The head of the slate is likely to become a mayor or a deputy if the party collects a majority of votes.

This study seeks to estimate the effect of an additional woman elected to a council, on female political participation. The empirical strategy therefore relies on the assumption that the election of the marginal candidate is a random draw from two candidates, controlling for the distance to the threshold: one who won the mandate (the so-called marginal winner) and another who follows the last-elected candidate in the final ranking (the marginal loser). Municipalities where the two marginal candidates are of different gender are therefore exposed to a different treatment in terms of the council gender composition. At the same time the source of the difference in the treatment comes from a quasi-experiment and is not driven by endogenous municipality characteristics, such as gender preferences.

The assignment to treatment variable can be constructed from the votes cast for slates and for individual candidates. As described in the institutional framework section and in Appendix l.A, mandates are allocated to the slates based on the total votes cast to the slate. Within the slate the allocation of mandates is based on the initial ranking of candidates, as well as the votes cast for each candidate separately. Thus, the victory margin is a function of the votes cast to the slate, and the final ranking of the candidates is a function of the votes cast for them. Details of the victory margin calculation can be found in the data description section and Appendix l.A.

To estimate the council gender composition effect on female political participation the following model is estimated. Only the municipalities where a female and a male candidate compete for the last seat are used:

$$Outcomei = aDi + /3g\ (Victory\ Margin\hat{}\}\cdot + \quad \epsilon_i \tag{1.1}$$

where *Outcomei* is a municipality-specific outcome, *Di* - treatment indicator (1 if the last-elected candidate is female, 0 if male) and *g (Victor yMargirii)* - quadratic function of the assignment to treatment variable, that allows for a different slope to the left and to the right sides of the cut-off.

In addition, the model is estimated using the optimal bandwidth framework

introduced by Calonico, Cattaneo & Titiunik (2014). The optimal bandwidth estimation procedure showed that for the sample of small municipalities the optimal bandwidth is |-3;3|:

$$Outcomei = aDi + /3g\ (Victory\ Margin\hat{}\} + \epsilon_i \quad (1.2)$$

where *Outcome*^ is a municipality-specific outcome, *Di* - treatment indicator (1 if the last-elected candidate is female, 0 if male) and *g (Victor yMargin.i)* - linear function of the assignment to treatment variable, that allows for a different slope to the left and right sides of the cut-off.

In both cases the model is estimated using ordinary least squares, with council size and election year fixed effects, as well as robust standard errors.

The same model is used for two purposes: 1) to estimate the treatment effect on female political participation in the elections in time *t,* which follow the elections in time *t-1* where the treatment happened; 2) to check the data for the co-variate balance, i.e. to verify whether RDD assumptions hold.

For the deeper analysis and robustness checks I use a modified model that allows me to control for different indicators (Equation 1.3). To Equation 1.1 I add the control of interest and its interaction with the main treatment indicator:

$$Outcomei = vD, + /3g(VictoryMargin\hat{} + yControli + dControl * D_t + \epsilon_i \quad (1.3)$$

The variables of interest in Equation 1.3 are the treatment indicator D_i and the interaction of the treatment indicator with the control variable of interest *Control* * D_i

1.4 Data description

For this study I use the Czech municipal elections data provided by the Czech Statistical Office. The data is publicly available on the Czech Statistical Office web site[11] and has been studied from various angles (Jurajda & Munich 2015, Palguta 2013, Palguta 2014, Palguta 2015). The data on the four recent elections are available and incorporated in the study: elections in 2002, 2006, 2010 and 2014.

The data-set on each of the elections presents the following candidate-level information: name, surname, age, education[12], occupation[13], political affiliation and initial ranking of the candidate on the slate. The information about election outcomes includes the number of votes each candidate received, the place of each candidate according to the final ranking of candidates inside the slate, the order of candidates in the mandates allocation, and an indicator of whether a candidate was elected or not. The data for separate elections has the same structure, except for a few variables which are missing in some elections and had to be recovered from other existing information.

The gender indicator was missing for three out of the four elections and had to be recovered almost manually using the names of the candidates. It was possible to determine the gender of most of the candidates from their names. In those few cases[14] of names that are universal for both genders the surnames and occupation of the candidate were used to determine gender.[10] More details about how the data

[n]The Czech Statistical Office website: https://www.czso.cz/.

[12]Education is not consistently reported, only 12% of all candidates in the municipalities of interest have either the pre- or post-name title present, and only 8% of the candidates do in the municipalities of interest on the narrowest margin. In the Czech Republic it is common to use education titles in most official documents. There is no reason to believe that some candidates do not report their title and it is therefore safe to assume that the lack of a title means no tertiary education.

[13]Occupation is also not consistently reported. On the narrowest margin there are very few major groups of occupations, for example, retired or own business. An indicator variable of the marginal candidate being involved in one of these occupations is not significant and does not influence the main result. An indicator variable of the marginal candidate being involved in any occupation also does not give an insight into results.

[14]There are 6 such cases in 2006, 2 in 2010 and 8 in 2014.

[15]The majority of Czech surnames have gender-specific ending; the word endings of professions are also different for men and women.

was created can be found in Appendix l.C.

In the data-sets from earlier elections, the final ranking of candidates inside each slate was missing and had to be calculated using votes cast to each candidate. Further, the procedure of allocation of mandates was replicated to find the final ranking of all candidates and calculate the victory margin among the two marginal candidates. The victory margin is expressed as a share of all voters who came to vote (see Appendix l.A for the calculation mechanism), such that the victory margin range |-5;5| means that the sample for the estimation contains the municipalities where the victory margin between the marginally winning and losing candidates was 5% or lower of voters who came to vote. The victory margin variable is created such that it is positive for the cases where a female candidate was marginally elected against a male candidate, and negative in the reverse cases. The cases where the victory margin is 0 are resolved using the variable indicating whether a candidate won a mandate or not, and are very rare.[16].

In the literature it is customary to express the victory margin as the difference in vote shares between the winning and losing candidates (Baskaran & Hessami 2018, Bhalotra et al 2017, Ferreira & Gyourko 2014, Brollo & Troiano 2013, Broockman 2014). It is important to note that these papers either analyse mayoral elections or elections in single-member districts. In these cases one voter has one vote and expressing the victory margin in terms of difference in vote share is straightforward. Since in the case of Czech local elections each voter has as many votes as there are seats to be allocated, I express the victory margin in terms of share of voters instead of share of votes.

For the purpose of my empirical strategy, I select those municipalities, or electoral districts (EDs) where the competition for the last seat in the council was between a male and a female candidate. This reduces my sample to a third of the original sample (approximately 6,000 municipalities instead of 18,000 pooled municipalities from the different years). When estimating the model, I focus on yet smaller samples where I observe the truly quasi-random variation in the treatment

[16]There are 26 such cases in 2002, 18 in 2006 and 22 in 2010.

among the municipalities. In the sample closest to the cut-off point I am left with 935 observations (Panel F in Table 1.2).

Table 1.2: Summary statistics

Variable	Mean	Std. Dev.	Min.	Max.
Panel A: All EDs				
Number of candidates in ED	33.868	50.629	5	971
Average age of candidates	46.123	3.708	28.667	65.8
Number of female candidates in ED	10.639	17.365	0	325
Number of elected female candidates	2.544	1.777	0	18
Number of new female candidates in ED	6.491	12.39	0	280
Number of educated candidates	8.042	19.499	0	440
Number of seats in a council	9.722	4.68	5	55
Number of slates in ED	4.34	3.627	1	39
Number of slates in ED in previous elections	4.38	3.647	1	39
Number of individual candidates	1.699	3.956	0	39
Number of individual candidates in previous elections	1.844	4.05	0	39
Share of jumpers among all candidates	0.262	0.159	0	0.833
Share of jumpers who move up among jumpers	0.421	0.295	0	1
Number of jumpers who are elected	1.586	2.081	0	14
N			18,938	
Panel B: EDs of interest				
Number of candidates in ED	37.543	53.081	5	703
Average age of candidates	46.087	3.539	30.643	62.6
Number of female candidates in ED	12.239	18.388	0	256
Number of elected female candidates	2.776	1.816	0	18
Number of new female candidates in ED	7.318	13.016	0	202
Number of educated candidates	9.008	20.537	0	378
Number of seats in a council	10.022	4.87	5	47
Number of slates in ED	4.469	3.507	1	28
Number of slates in ED in previous elections	4.653	3.616	1	38
Number of individual candidates	1.576	3.815	0	28
Number of individual candidates in previous elections	1.858	4.101	0	38
Share of jumpers among all candidates	0.286	0.148	0	0.833
Share of jumpers who move up among jumpers	0.443	0.262	0	1
Number of jumpers who are elected	1.828	2.115	0	13
N			6,088	
Panel C: Small EDs of interest				
Number of candidates in ED	17.351	11.118	5	81
Average age of candidates	45.697	3.762	30.643	62.6
Number of female candidates in ED	5.612	4.349	0	35
Number of elected female candidates	2.181	1.257	0	8
Number of new female candidates in ED	3.198	3.243	0	25
Number of educated candidates	2.576	3.11	0	29
Number of seats in a Council	7.474	1.2	5	9

Continued on the next page

Table 1.2 — continued from the previous page

Variable	Mean	Std. Dev.	Min.	Max.
Number of slates in ED	4.086	3.59	1	24
Number of slates in ED in previous elections	4.4	3.772	1	25
Number of individual candidates	2.106	4.211	0	24
Number of individual candidates in previous elections	2.444	4.451	0	25
Share of jumpers among all candidates	0.286	0.171	0	0.833
Share of jumpers who move up among jumpers	0.418	0.292	0	1
Number of jumpers who are elected	0.968	1.2	0	7
N		4,256		
Panel D: Small EDs of interest, mandatesdO, victory margin [-5:5]				
Number of candidates in ED	19.024	12.166	5	81
Average age of candidates	45.527	3.597	33.917	61.308
Number of female candidates in ED	6.084	4.748	0	35
Number of elected female candidates	2.189	1.27	0	8
Number of new female candidates in ED	3.465	3.474	0	25
Number of educated candidates	2.797	3.369	0	29
Number of seats in a Council	7.689	1.177	5	9
Number of slates in ED	5.213	4.021	1	24
Number of slates in ED in previous elections	6.172	4.207	2	25
Number of individual candidates	3.181	4.956	0	24
Number of individual candidates in previous elections	4.162	5.36	0	25
Share of jumpers among all candidates	0.224	0.173	0	0.833
Share of jumpers who move up among jumpers	0.335	0.295	0	1
Number of jumpers who are elected	1.062	1.284	0	7
N		2,314		
Panel E: Small EDs of interest, mandatesdO, victory margin [-2:2]				
Number of candidates in ED	18.3	11.88	5	81
Average age of candidates	45.5	3.645	33.917	60
Number of female candidates in ED	5.814	4.62	0	35
Number of elected female candidates	2.184	1.27	0	8
Number of new female candidates in ED	3.226	3.282	0	25
Number of educated candidates	2.652	3.269	0	27
Number of seats in a Council	7.651	1.155	5	9
Number of slates in ED	5.923	4.359	1	24
Number of slates in ED in previous elections	7.246	4.458	2	25
Number of individual candidates	4.089	5.408	0	24
Number of individual candidates in previous elections	5.433	5.754	0	25
Share of jumpers among all candidates	0.191	0.175	0	0.833
Share of jumpers who move up among jumpers	0.287	0.296	0	1
Number of jumpers who are elected	0.919	1.257	0	7
N		1,489		
Panel F: Small EDs of interest, mandatesdO, victory margin]-l;l]				
Number of candidates in ED	18.037	11.874	5	81
Average age of candidates	45.51	3.733	34.231	57.7
Number of female candidates in ED	5.741	4.525	0	35

Continued on the next page

Table 1.2 — continued from the previous page

Variable	Mean	Std. Dev.	Min.	Max.
Number of elected female candidates	2.198	1.254	0	6
Number of new female candidates in ED	3.17	3.241	0	23
Number of educated candidates	2.665	3.417	0	27
Number of seats in a Council	7.649	1.124	5	9
Number of slates in ED	6.334	4.499	1	24
Number of slates in ED in previous elections	7.964	4.529	2	25
Number of individual candidates	4.589	5.587	0	24
Number of individual candidates in previous elections	6.304	5.851	0	25
Share of jumpers among all candidates	0.169	0.17	0	0.833
Share of jumpers who move up among jumpers	0.258	0.292	0	1
Number of jumpers who are elected	0.814	1.219	0	7
N		935		

The small municipalities in the sample of greatest interest (Panels D-F in Table 1.2) are different from the larger ones (Panels A and B). On average, they are 30% smaller in terms of council size (number of seats to be allocated) and two times smaller in terms of the number of candidates who run in the elections. At the same time they are not very different in the proportion of women in the pool of all candidates (around 30% in all the sample specifications). The average number of slates - a political competition indicator, is also similar across municipalities if we exclude the individual candidates. There are more individual candidates in the municipalities that had close elections.

The need to limit the sample to municipalities where the competition for the last seat was between two candidates of different gender unfortunately leaves me with a non-representative sample. In the municipalities where the competition for the last seat was between two candidates of the same gender (usually between two male candidates) there are fewer female candidates to vote for, they are placed slightly lower and therefore receive fewer votes (Table l.A.l). The number of elected female candidates, excluding the marginally elected female candidate, is however very similar even on the narrowest margin. The full summary statistics tables for the excluded municipalities are in Appendix l.B.

Table 1.A.5 presents the evolution of female political participation over the years

studied in all municipalities, and in small municipalities respectively. The number and share of both participating and elected female candidates in the pool of candidates increased over the years, and their positioning on slates improved too. This pattern could be of concern if I had found a positive effect of the treatment. In that case one could argue that the finding is simply the result of the overall trend. As will be presented below, the estimated treatment effect is negative and the overall trend towards higher female political participation in the local elections cannot be causing it.

1.5 RDD assumptions: co-variate balance check

Before discussing the results, I present the RDD assumptions tests. First, I show that continuity of observable characteristics holds. The treated and the control municipalities are not different in the number of inhabitants, number of children born per year (Panels A of Tables 1.A.6 and 1.A.7), neither are they systematically distinct in the local budget income and spending per inhabitant[17] on the narrowest margin around the threshold (column 5 in Panel B of the Table 1.A.6). On wider samples (columns 1-4 in Panel B of the Table 1.A.6) several types of spending turned out to be higher or lower in the treated municipalities, but are not systematic. For the optimal bandwidth, the treated municipalities seem to receive higher subsidies and thus spend more (Panel B of Table 1.A.7). The electorate in the treated municipalities does not have different preferences towards nation-wide parties[18] than that in the control municipalities (Panels C of Tables 1.A.6 and 1.A.7).

The median age of all candidates, all female candidates, elected candidates and elected female candidates is not different for the two groups of the municipalities on the narrowest margins[19] (columns 3-5 in Panels D of Tables 1.A.6 and Panel D of

[17]The outcome variables here are two-year averages: the year of the elections and the previous year.

[18]Nation-wide parties include KDU-CSL, SZ, CSSD, KSCM, ODS and TOP09. These are the parties that in each of the four municipal elections had more than 1,000 candidates across municipalities. CSSD, ODS, KDU-CSL and KSCM are also stably present in the Czech Parliament.

[19]I exclude the two marginal candidates. In the case of elected candidates, I exclude the

Table 1.A.7). In the whole sample elected women tend to be 1.5 years older in the treated municipalities than in control ones (columns 1-2 in Panel D of Table 1.A.6). Although the point estimate is statistically significant, it is not so quantitatively. The education level of all candidates, female candidates, elected candidates and elected female candidates is also not different[19] on the narrowest margin (columns 3-5 in Panel E of Table 1.A.6 and Panel E of Table 1.A.7). There are statistically, but not quantitatively, more educated candidates among the elected candidates in the treated municipalities than in the control ones.

In the elections of treatment (in time *t-1*) the treated and the control municipalities had a similar number of participating female candidates in the pool of all candidates, as well as the number of elected female candidates, if I exclude those who were elected marginally (Panels F of Tables 1.A.6 and 1.A.7). Again, there is a small statistical difference in the number of female candidates and the share of votes they receive[20] if we look at the whole sample (column 1 in Panel F of Table 1.A.6). For the optimal bandwidth sample, women seem to have been placed slightly lower in the treated compared to control municipalities.

The marginal winners and losers seem to be representing slates of the same length on average and are not more likely to be on the nation-wide party's slate[18] (Panels G of Tables 1.A.6 and 1.A.7). The marginal candidates are not different in their age or education level. The slates the marginally victorious female and male candidates represent have, on average, the same number of other candidates elected, as well as the same number of elected female candidates and the median position women occupy on the slates. Nevertheless, in the optimal bandwidth sample women tend to be better positioned on their slates. As before, I observe some difference between the treated and control municipalities in the specifications where I use the whole sample. The difference seems to be present in those specifications where I expect selection to take place. Most importantly, the last specification, with the narrowest victory margin, shows that the treated and the control municipalities are

marginally elected candidate.

[20]Number of votes that were cast to all female candidates over total number of votes cast to all the candidates in the municipality.

not significantly different from each other in the placement of female candidates and the share of votes those candidates receive, as well as the number of participating and elected women.

There is one interesting observation to make. The slates that the marginally winning women represent have a higher share of women than those that are represented by the marginally winning male candidates. Meanwhile, the same is true for the share of women on the slates of the marginally losing candidates. There seem to be slates that have a high share of women. This does not however pose a threat to identification. The opposite case, where the marginally winning male candidates represent slates with more women, would be problematic. Then one could claim that though a man is elected, he is likely to be supporting female issues, as his party is. In my case it is not clear and rather unlikely that the women from the women-friendly slates are different in one way or another from the women that represent other slates.

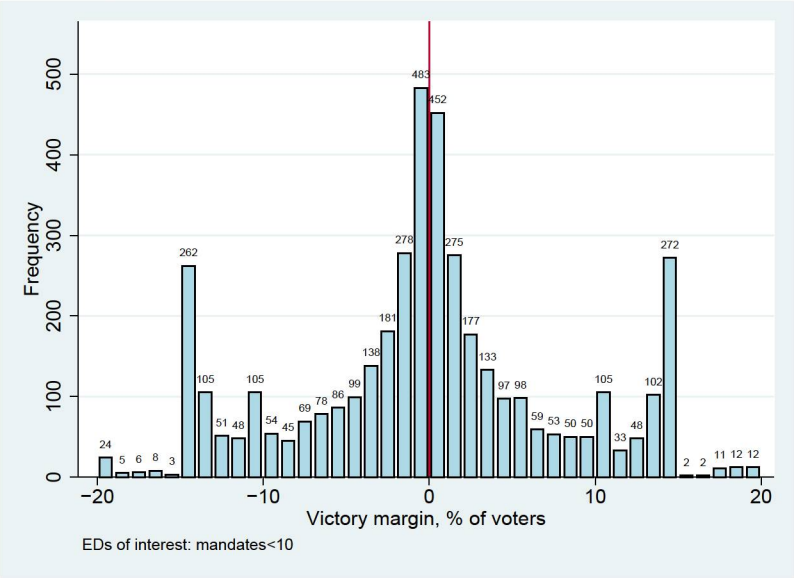
There are several differences that I observe between treated and control municipalities. Nevertheless, the treated and control municipalities do not seem to be systematically different from each other in observable characteristics.

I also present a co-variate balance check for the large municipalities in Table l.A.8. Most co-variates are similar for the treated and control municipalities. Interestingly, the number of female candidates in the elections of treatment is higher on the second to narrowest margin (column 4 in Panel F of Table l.A.8), as well as the share of female candidates and the share of votes cast to women on the margin |-5;5| (column 3 in Panel F of Table l.A.8). They are not systematically different. The one systematic difference is the better positioning of women on the marginal winners slate (Panel G of the table Table l.A.8), which gives a reason to think that the marginal winners' slates could also be more pro-women than other slates. Also, in the large municipalities, it is less the case that women tend to be concentrated in particular slates (Panel G of Table l.A.8), as it was in the small municipalities (Panel G of Table 1.A.6).

Finally, I test for manipulation around the cut-off point. Figure 1.1 shows the

density of cases around the cut-off point and presents evidence consistent with no manipulation happening around the cut-off. The distribution resembles a normal distribution with no clear jump in the number of observations from any of the two threshold sides.

Figure 1.1: Density of cases around the cut-off



1.6 Main results

Table 1.3 presents the main results of the paper. The specifications of interest are the last three columns (columns 3-5 of Table 1.3), where I focus on small municipalities and narrow victory margins. Electing an additional female councilor did not affect the pool of total female candidates consistently (Panels A and B of Table 1.3)[21], as the effect is statistically significant on the narrowest margin only if we look at all women (column 5), and not on all narrow margins if we exclude the marginally elected woman from the sample of all women (columns 3 and 5). The number of newly participating candidates has been affected more consistently: estimation on the three chosen margins shows both statistically and quantitatively significant

[21]I also tried as outcomes the number of female candidates who participated again, the median position of all female candidates and new female candidates on slates. They did not appear to be influenced by the treatment.

results (Panel E of Table 1.3). The effect is significant for the margins up to [-8;8| with the exception of the margin |-3;3| (Figure 1.3) and holds on the optimal bandwidth (Panel A of Table 1.A.9). The negative sign of the estimated coefficient means that on average, having a female candidate elected in the elections in time *t-1* results in at least 0.6 fewer new female candidates in the next elections in time *t*. The newly participating female candidates are those who did not participate in the elections in time *t-1* when the treatment happened but participate in the following elections in time *t*. With a mean number of 3.2 newly participating female candidates in the sample municipalities for the specification of interest, the treatment effect results in at least 0.6 fewer new female candidates. This drop in the number of new female candidates means that the participation rate of new female candidates is at least 3 percentage points, or 18%, lower in the municipalities that were exposed to more female councilors. The corresponding graphs are presented in Figure 1.2. Although the data points are visually dispersed, quadratic fit (on the graph), as well as linear and fractional polynomial fits[22] show a jump down around the cutoff. The corresponding graphs for the total number of female candidates and for the number of female candidates excluding the marginal female candidates are in Appendix l.B (Figures l.A.l and 1.A.2 respectively).

[22]Available from author upon request.

Table 1.3: Main results

Model specifications					
Observations	6,088	4,256	2,314	1,489	935
Sample	ALL	mandates <10	mandates <10	mandates <10	mandates <10
Victory margin	ALL	ALL	[-5;5]	[-2;21	M:ll
Panel A					
Number of female candidates					
Additional	0.622	0.690	-0.559	-0.630	-1.116*
woman	(0.407)	(0.526)	(0.391)	(0.529)	(0.654)
Adj. R-sq	0.827	0.821	0.131	0.131	0.118
Panel B					
Number of female candidates, excluding the marginally winning or losing female candidates					
Additional	0.471	0.167	-0.809**	-0.803	-1.349**
woman	(0.406)	(0.525)	(0.386)	(0.523)	(0.645)
Adj. R-sq	0.827	0.821	0.132	0.133	0.124
Panel C					
Participation probability : marginal female winner vs loser					
Additional	0.151***	0.218***	0.249***	0.173***	0.232***
woman	(0.021)	(0.028)	(0.045)	(0.064)	(0.084)
Adj. R-sq	0.047	0.047	0.042	0.051	0.044
Panel D					
Probability to win again conditional on participating again: marginal female winner vs loser					
Observations	3,172	2,065	1,107	718	448
Additional	0.149***	0.168***	0.239***	0.254***	0.231*
woman	(0.030)	(0.041)	(0.068)	(0.097)	(0.128)
Adj. R-sq	0.048	0.037	0.020	0.027	0.032
Panel E					
Number of newly participating female candidates					
Additional	0.200	-0.085	-0.577**	-0.635+	-1.307***
woman	(0.307)	(0.394)	(0.286)	(0.387)	(0.470)
Adj. R-sq	0.803	0.792	0.093	0.086	0.088

Note: Elections year*council size fixed effects and robust standard errors used in all regressions. + l'-value—0.101.

Quadratic victory margin controlled for in all regressions.

Figure 1.2: Number of newly participating female candidates

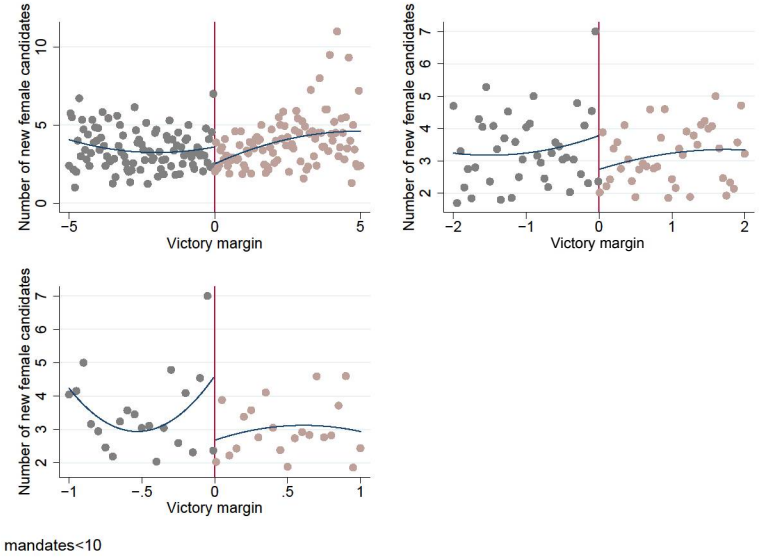
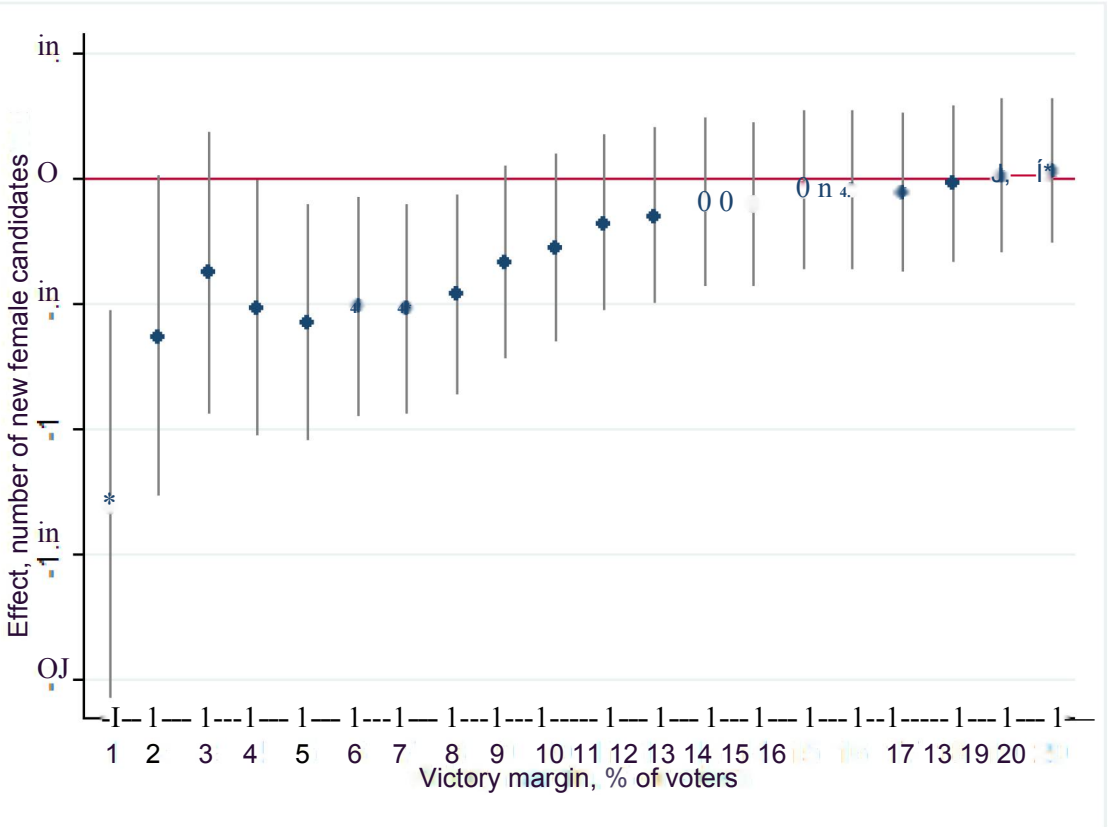


Figure 1.3: Main results: coefficients by victory margin



Note: Each coefficient comes from a separate regression as in Table 3.

In large municipalities the results are different and are presented in Table 1.A.10 in Appendix l.B. The effect goes in the opposite direction, but is not statistically significant (Panels A, B and E). The likelihood of participating in the next elections for the marginally elected women compared to the unelected is positive (Panel C), like in small municipalities (Panel C of Table 1.3), but twice as low. Interestingly, the probability to win again conditional on participation does not depend on winning in the previous elections (Panel D). In small municipalities the winning probability given participation is higher for the incumbents (Panel D of Table 1.3). Therefore, in small councils, unlike in the large ones, the marginally elected candidates do become a part of the council, are noticed, and are likely to get involved in local politics. This incumbency effect has been well documented in the literature (Trounstine 2011, Redmond & Regan 2015 among others). This observation is intuitive and supports the earlier claim that in the large councils a marginally elected candidate is less noticeable than in the small councils.

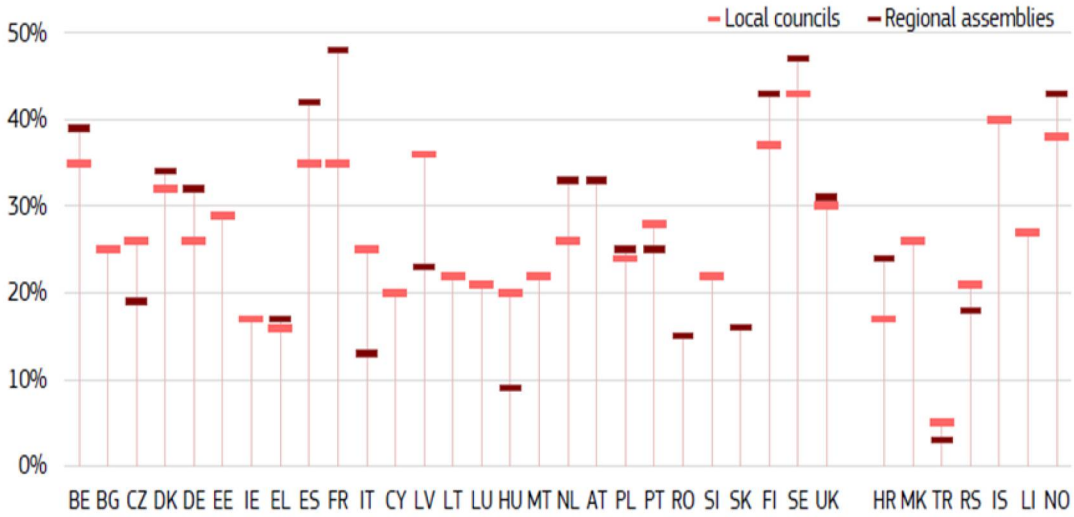
Since the RDD estimates the local treatment effect rather than the average treatment effect, the results apply to a particular category of municipalities. Compared to the municipalities where the two marginal candidates are of the same gender (Table l.A.l in Appendix l.B), those with marginal candidates of opposite gender have relatively more women among the candidates. Those women are not better placed and the number of elected women is not different. The difference in the two types of municipalities is therefore in the level of female political activity. My results apply to the municipalities that have higher competition among women: there are more female candidates running for the council seat.

My findings differ from the evidence documented in the literature to date. They are likely to differ from the evidence of the positive influence of electing women in India because India is less advanced in terms of female political participation. There, women's share in parliament is not higher than 13%[23] (after elections in 2014) and labor force participation did not reach 30% in the years before 2014[24]. According to the European Commission's report on women and men in leadership positions in the

[23]Source: Inter-Parliamentary Union: http://www.ipu.0rg/wnm-e/c:lassif.htn1
[24]Source: The World Bank: http://databank.worldbank.org/data/

European Union, in 2011 the Czech Republic was close to, yet below the European average of female participation in local politics (27% vs 32% on average in the EU - see Figure 1.4). At the same time the full-time employment rate for women reaches 60% in 2014 - one of the highest in Eupore.[25] The evidence suggests that the Czech Republic is rather advanced in terms of both female political participation and female economic involvement.

Figure 1.4: Female political participation in local (2011) and regional (2012) levels in the Czech Republic and other EU27 countries



Source: European Commission - Women and men in leadership positions in the European Union, 2013. Note: EU averages are 32% (local) and 27% (regional).

The difference between my findings and the positive effect documented in Italy (De Paola et al. 2010) and Switzerland can also be explained using similar reasoning. The results for Switzerland hold only shortly after the introduction of women into politics (Gilardi 2015). In Italy before the quota was introduced women used to occupy approximately 7% of local council seats (De Paola et al. 2010). As summarized in Table 1.A.5 women hold nearly 30% of seats in the Czech local councils. The Czech Republic is therefore more advanced in female political participation than Italy in the 1990s and early 2000s and than Switzerland in the 1970s.

[25]Source: European Union Labour Force Survey, http://ec.europa.eu/eurostat/web/microdata/european-union-labour-force-survey.

Though the direct negative effect of the female incumbents' presence on other women's political participation has not been documented to date, several studies demonstrate that having a female representative can cause either no or a negative effect on other women's interest in politics. The experimental evidence provided by Wolak (2015) shows that women are not more willing to vote when they see more women on ballots. In a setting unrelated to politics, Bagues, Sylos Labini & Zinovyeva (2017) show that female candidates for professorship positions in Italy and Spain may be exposed to lower favoritism when a female evaluator is present in the evaluating committee. Clayton (2015) finds that in the municipalities that had mandates reserved for female politicians in Lesotho, women tend to be less interested in politics. In the Czech Republic, the negative influence seems to extend to the decisions of potential female politicians.

While rejecting the role model type of influence of female politicians on other women in Czech municipalities, my results raise further questions regarding the mechanism behind these effects. First, what is the reason for the negative effect? Second, which side does the decision come from - demand or supply? With the data I have I am not able to evaluate whether these are the potential female candidates who choose not to participate in the elections, or the parties who decide not to include female candidates on slates. As for the reason for the negative effect, several explanations are possible. The marginally elected women could have performed poorly as councilors and left the community less willing to see more women on council. Alternatively, the marginally elected women could have performed well and are expected to be elected again and cover the female representation needed on the council as viewed by the community. With the analysis below I show that the reason for the negative effect is indeed the sufficient representation of women from the community point of view. Either candidates or parties have anticipated, and/or expressed their own point of view, that no more women are needed in the council and/or the electorate will not want to vote for more women. In a separate analysis I have established that the result is not solely driven by those women who were elected again, i.e. were fairly successful.[26] Neither is the effect stronger in the

[26]The respective output is available from the author upon request.

municipalities, where the marginally elected women were not elected in the next elections. I conclude that the success of the marginally elected female councilors is not likely to play a role.

To show that sufficient representation is the likely explanation of the main result of the paper, I test whether the negative effect on the new female candidates is related to how many other women were elected to the council. I include in my main specification an indicator variable taking value one if at least two other female candidates were elected alongside with the marginally elected female candidate, as well as the interaction of the the indicator with the treatment variable (as in Equation 2; results in Table 1.4 and Panel B of Table 1.A.9). I also estimate the main specification model (Equation 1) for the two separate samples - 0 or 1 other female candidates elected and 2 or more other female candidates elected. Both estimation methods show that the main effect is stronger and largely driven by the municipalities where 2 or more other female candidates were elected alongside with the marginally elected woman. On the optimal bandwidth, the main effect holds exclusively for the municipalities with 2 or more other female candidates elected. The likely reason behind the negative effect is thus the sufficiency of female representatives in the council. Although recent evidence from German municipalities shows that voters can be willing to elect more women to councils once exposed to female mayors (Baskaran & Hessami 2018), I do not observe a similar pattern when electing more female councilors in the Czech municipalities.

Table 1.4: Marginally elected women and other elected women

Model specifications					
Observations	6,088	4,256	2,314	1,489	935
Sample	ALL	mandates <10	mandates <10	mandates <10	mandates <10
Victory margin	ALL	ALL	[-5;5]	[-2;21	[-1:4
			Panel A		
			Number of female candidates		
Additional	1.024***	0.388	-0.197	-0.283	-0.693
woman	(0.367)	(0.249)	(0.419)	(0.551)	(0.675)
At, least 2	-0.633*	-0.457*	-0.594*	-0.804*	-1.558***
oth. worn. elec.	(0.340)	(0.239)	(0.357)	(0.433)	(0.541)
* Add.worn.					
			Panel B		
			Number of female candidates, excluding the marginally winning or losing female candidates		
Additional	0.834**	0.159	-0.462	-0.482	-0.948
woman	(0.366)	(0.246)	(0.412)	(0.543)	(0.666)
At least 2	-0.576*	-0.436*	-0.559	-0.751*	-1.512***
oth. worn. elec.	(0.338)	(0.235)	(0.351)	(0.425)	(0.531)
* Add.worn.					
			Panel C		
			Number of newly participating female candidates		
Additional	0.465*	0.104	-0.399	-0.444	-0.900*
woman	(0.271)	(0.189)	(0.310)	(0.407)	(0.493)
At least 2	-0.401	-0.192	-0.314	-0.423	-1.035**
oth. worn. elec.	(0.255)	(0.188)	(0.273)	(0.322)	(0.406)
* Add.worn.					
			Panel D		
			Number of newly participating female candidates -		
			municipalities with 2 or more non-marginal female candidates elected		
Observations	3854	2250	1215	789	491
Additional	0.019	-0.153	-1.341***	-1.359**	-1.810**
woman	(0.441)	(0.259)	(0.429)	(0.584)	(0.719)
			Panel E		
			Number of newly participating female candidates -		
			municipalities with none or 1 non-marginal female candidates elected		
Observations	2234	2006	1099	700	444
Additional	0.540*	0.197	0.223	0.080	-0.997+
woman	(0.286)	(0.230)	(0.379)	(0.511)	(0.627)

Note: Elections year*council size fixed effects and robust standard errors used in all regressions. +P-value—0.112. Quadratic victory margin controlled for in all regressions, as well as the main effect, of at least 2 non-marginal women elected in the municipality.

Since I am testing the main hypothesis for several related groups, I perform multiple hypothesis testing using a Holm-Bonferroni correction of errors for the

Table 1.5: Holm-Bonferroni correction for multiple testing

Sample	P-value	Holm-Bonferroni corrected P-value
Large municipalities	0.160	0.320
Small municipalities	0.044	0.132
Small municipalities with less than two other women elected	0.812	0.812
Small municipalities with two or more other women elected	0.010	0.040

optimal bandwidth sample. After the correction, the main result on the sample of all small municipalities crosses the 10% statistical significance level (Table 1.5). However, the main result for the small municipalities with two or more other female candidates elected remains significant.

1.7 Robustness checks & Extensions

1.7.1 Robustness checks

Although Figure 1.1 documents that there is no manipulation of the forcing variable around the cut-off point, in this section I additionally demonstrate that my findings are not dependent on the election process in the Czech Republic. I argue that parties' decisions on candidate placement inside slates do not drive the results. I also show that there is likely to be no other characteristic of the marginal candidates apart from gender that influences other women's participation because the result holds if I control for the electorate's favourites.

First, there could be a concern that the results are driven by the partisanship of the candidate rather than the gender. Parties create slates, and therefore decide on the positioning of the candidates in the initial slate composition. Placing particular candidates in particular places on the slate could be strategic and could lead to the gender of the marginally elected candidate being possibly influenced by the party.

The candidates that were elected marginally can be divided into 3 categories: 1) jumpers, who were initially placed lower than they needed in order to be elected; 2) those who were elected from the position that they initially took in their slate ranking; 3) those who were initially placed higher than the position they took in the final ranking, i.e. they were meant to be elected by their parties, but because other

candidates on the slate collected more votes, the candidates in question moved down the ranking inside the slate. The first category - the jumpers - are the electorate's favourites. The candidates in the third category, on the contrary, are the parties' favourites. The second category are the candidates who were neither excessively favoured by their party, nor by the electorate. They were placed by their parties to the not clearly electable positions, and they were not excessively favoured by the electorate. Those are the candidates who were indeed elected randomly. I therefore test whether my results hold for the sample of these neutral candidates (Panels A-C of Table l.A.ll and Panel C of Table 1.A.9 in Appendix l.B). For the optimal bandwidth I only test the municipalities with 2 or more other women elected for robustness, since that is where the main result is statistically significant. Overall, the results are very similar to those in Table 1.4, except the main specification (Panel A), where the point estimate is both statistically and quantitatively significant only on the narrowest margin (column 5). Estimating the model separately for the municipalities where 2 or more other women were elected (Panel B) and for those that only elected 1 other woman at most (Panel C) gives the same results as in the main analysis (Table 1.4) - I observe the negative effect on the newly participating women in the municipalities where 2 or more women were elected, and not so in those were none or 1 was elected. I therefore conclude that the parties' choices did not drive the results of the paper.

Second, from the institutional background section we also know that voters can influence the final positioning of candidates inside slates and therefore in the sequence of mandates allocation. What could follow is that the marginal candidates happened to be marginal as a result of the extensive voting for them. They received many votes, moved higher in the mandates allocation and received the last mandate. In such a case one could argue that the candidate was elected due to the electorate's preference towards him/her.

To test whether this is the case or not I do the following. I first define candidates that received enough preferential votes to move up inside their slate from their initial not electable position to an electable position as high jumpers (they comprise 1/3

of all jumpers). I then create two indicator variables: 1) an indicator that the marginal winner in the municipality is a high jumper; and 2) interaction of this indicator with the treatment variable. The main effect (Panel D of Table l.A.ll and Panel C of Table 1.A.9 in Appendix l.B) remains negative and significant on the margins |-5;5| and |-1;1|, for the sample with optimal bandwidth, and also if I exclude the municipalities with the high jumpers (Panel E). This indicates that the main result is not driven by the marginal candidates who are likely to be favourites of the respective electorate.

1.7.2 Does partisanship matter?

Political parties play an important role for potential politicians as a channel to become involved in politics (Reingold & Harrell 2010). At the same time the electorate may pay higher attention to the political affiliation of candidates than to their gender (Hayes 2011). In my case an important question is whether the political affiliation of the marginally elected candidates is not the true cause of the main effect I observe.

Unlike in the United States and other countries with two-party system, there are several strong parties at the national and regional levels in the Czech Republic. Moreover, on the local level these nation-wide parties often play little role - they are not involved extensively potentially because local politics is likely to play only a small role in national politics. On the municipal level the so-called local movements tend to be more active. The distinguishing feature of local movements from nation-wide parties is the absence of a strict party ideology. Local movements are groups of local candidates who share a common view on how their municipality should function and who do not necessarily concentrate on how politics in general should work. In addition, a local movement is often created with the purpose of participating in the upcoming elections. In the next elections, the local politicians are likely to reshuffle into new local movements. It is therefore difficult to track local movements from one election to another.

Given that the difference between local movements and nation-wide parties is clear and the difference between separate local movements is less so, the test I

perform is designed to check whether affiliation of the marginally elected candidates with a nation-wide party matters. The complicating factor in this analysis is the small number of such marginally winning candidates: 10 cases with the marginally winning female candidate and 9 cases with the male candidates on the narrowest margin. Adding two indicator variables to the main model, an indicator that the marginally elected candidate represents a nation-wide party and its interaction with the main treatment variable, do not affect the main result on the lowest margin (Table 1.A.12 in Appendix l.B).

It is also important to note that the fewer new female candidates are characteristic to the slates of the local movements, as they are prevalent in the small municipalities on the narrow margin. There are only 21 municipalities where the number of new women on nation-wide parties' slates is non-zero.

Beside nation-wide parties and local movements, individual candidates seem to play their separate role in the council. Their only observable difference is that they are on average two times less educated than the candidates that decide to participate in groups (Table 1.6). As candidates, their decision to position themselves separately from even local movements during elections is likely sending a specific message to the electorate, since they influence the results significantly (Panels D-F of the Table 1.A.12 in Appendix l.B). Individual candidates comprise 30-50% of the marginally elected candidates on the narrow margins (Table 1.2). Electing individual candidates has a twice as strong effect as gender on the number of newly participating female candidates (Panel D). In the municipalities, where such candidates were elected marginally, the gender of the marginally elected candidate does not matter (Panel E). In the remainder of municipalities, gender does matter (Panel F). I conclude that my main effect is not driven by the individual candidates solely, nor is it driven by the candidates from regular slates.

1.7.3 Long-term influence

The question of whether policy interventions that are supposed to address low female representation work after they are abolished is present in the literature. De

Table 1.6: Basic candidates' characteristics: nation-wide party vs local movements vs individual candidates

Variable	Mean	Std. Dev.	Min.	Max.
Nation-wide parties: 19.82% of all candidates				
% of women	0.283	0.45	0	1
Average age	55.481	13.55	22	106
Share of educated	0.253	0.435	0	1
Local movements: 74.82% of all candidates				
% of women	0.327	0.469	0	1
Average age	47.771	12.011	22	94
Share of educated	0.21	0.407	0	1
Individual candidates: 5.36% of all candidates				
% of women	0.307	0.461	0	1
Average age	47.336	11.563	22	85
Share of educated	0.101	0.302	0	1

Note: data from elections of treatment in 2002. 2006 and 2010.

Paola et al. (2010) and Bhavnani (2009) find that female representation can be addressed with temporary quotas. I check whether the negative effect on the number of newly participating female candidates persists, i.e. whether it is also present in the elections in the time *t+1* after the municipality was treated as a result of the elections in the time *t-1*.

The point estimate of the treatment indicator is negative, but is quantitatively lower and not statistically significant (Panels A-C of the Table 1.A.13 in Appendix l.B). In the large municipalities the point estimate is positive in all specifications, but also not statistically significant (Table 1.A.13 in Appendix l.B). Either the negative effect on the number of new female participants does not persist in the longer run, or, alternatively, the coefficient is not significant due to the low number of observations and hence low predictive power.

1.8 Conclusions

In this paper I analyse Czech municipal elections data with the purpose of understanding how female political participation is affected if an additional woman is elected to the council. I estimate the local RDD using a narrow victory margin between a male and a female candidate competing for the last seat in the council. I find that in the municipalities where a female candidate was elected instead of a male candidate, fewer new women participate in the following elections. The

participation rate of the new female candidates decreases by at least 3 percentage points, or 18%. The effect is mainly driven by the municipalities where 2 or more other female candidates were elected in addition to the marginal one. These results suggest that the negative effect can be explained with the sufficient representation of women in the council.

To the best of my knowledge, this paper is the first evidence of how the gender of a local council member can affect female political participation in a society where women occupy a non-negligible share of seats in councils (close to 30%). The study contributes to the literature by showing no evidence in support of female role models in local politics. I also show that the affiliation of a female candidate with a nation-wide party does not matter to the potential female politicians in local politics in the Czech Republic. I do not observe a long-term effect of electing an additional female councilor.

The results are robust to parties' decisions and the preferences of the electorate. The elections system in the Czech Republic, and the data, allow me to test whether the parties' decisions to place the candidates in a particular order inside slates are responsible for the main result. I am also able to test whether the effect is not driven solely by the electorate's favourite candidates, which could threaten identification. The empirical evidence goes against the two concerns.

Despite having strong internal validity, the regression discontinuity design unfortunately suffers from often weak external validity. In my case, the need to limit the data for the analysis to the municipalities with the two marginal candidates of different gender makes my sample different from the total population of municipalities in the Czech Republic in the number of active female candidates on slates. On average, more women run in elections in the municipalities used for the analysis than those that were excluded.

Although the result show strong evidence in favor of sufficient female representation as a reason for the negative effect of electing an additional female candidate to the council on other female candidates, I am not able to reveal the entire mechanism. The data does not allow me to study whether the party leaders decide not

to include new women on their slates or whether the potential female politicians decide not to run. While further research is needed to reply to this question, my analysis reveals that electing more female politicians can result in a negative side effect that the policy makers should take into account. In societies like the Czech Republic, where nearly 30% of seats are given to women in a competitive election, an additional female councilor, instead of triggering a spillover can lead to a lower number of other women involved in local politics. It is therefore unlikely that gender parity can be reached naturally in these communities. If reaching gender parity is a goal, a policy intervention such as a gender quota may be needed.

1.A Appendix: D'Hondt's method

This method has number of modifications and is widely used. In the Czech Republic the method has been used to allocate the mandates in the municipal council elections since 1990, the regional elections since 2000, the national elections since 2002 and in the European Parliament elections since 2004. The method works in the following way.

Example:

Mandates to be allocated: 4

Votes cast to party A: 21529

Votes cast to party B: 64583

Votes cast to party C: 21527

Votes cast to party D: 16124

The essence of the method is that the total number of votes cast to each party is divided by the set of numbers ("electoral divisors") to obtain the so called Shares. Since 2001 the divisors are: 1,2,3,4,5 etc.

Example:

Assume each party has nominated four candidates. Then the shares are:

Shares A: 21529, 10765, 7177, 5383

Shares B: 64583, 32292, 21528, 16146

Shares C: 21527, 10764, 7176, 5382

Shares D: 16124, 8062, 5375, 4031

These Shares are then ranked from highest to lowest. The necessary amount of mandates N is allocated to the parties that occupy the first N positions.

Example:

1. 64583 B
2. 32292 B
3. 21529 A
4. 21528 B

In order to participate in the allocation of mandates, a slate needs to collect at least 5% of the total amount of votes that were allocated to the candidates in the municipality. If the slate is represented by fewer candidates than the amount of mandates to be allocated, the condition is adjusted: the slate needs to accumulate 5% of the following number. The total amount of votes cast to all candidates in the municipality are divided by the amount of mandates to be allocated and multiplied by the number of candidates representing the slate. Therefore, the slates that nominate fewer candidates than have to be elected in the municipality have to accumulate fewer votes than 5% of the total amount to participate in the allocation of mandates.

The mandates allocated to the party are distributed to the candidates inside the party slate according to their positions on the slate. If a candidate receives 10 % more votes than the average per candidate on the slate, the candidate moves up inside the slate.

Calculating Victory Margin

I express the victory margin in terms of the share of voters who came to vote

in the respective elections. It can be interpreted in the following way. Let us take the case of victory margin equal to 5%. If voter turnout was 5% higher and the additional voters casted their votes for the marginal loser's slate, such that the final ranking on the slate was not affected, then the marginal loser would be elected instead of the marginal winner.

As described above, to rank the candidates for the mandates allocation the so-called Shares are calculated. The Share assigned to a given candidate is calculated as the total number of votes received by his/her slate divided by the final position of the candidate on slate (Equation l.A.l).

$$Share = \frac{TotalNumberOfVotesCastToTheSlate}{FinalPositionOfCandidateOnSlate} \qquad (1.A.1)$$

In order to express the victory margin in the share of voters that came to vote, I first need to return to the number of votes cast to the slate, then divide it by the number of mandates to calculate how many voters that number of votes corresponds to, and finally find the share that this number of voters take in the total number of voters (Equation 1.A.2).

$$VotesShare = \frac{Share * NumberOfMandatesWonByTheSlate}{Mandates} \Big/ Voters \qquad (1.A.2)$$

Finally, I calculate victory margin as the difference between votes shares of the marginal winner and loser (Equation 1.A.3).

$$Victory\ Margin = VotesShare_{winner} - VotesShare_{loser} \qquad (1.A.3)$$

l.B Appendix: Additional Tables and Figures

Table l.A.l: Summary statistics: Comparison of municipalities of interest (marginal candidates of different gender) with the excluded municipalities (marginal candidates of the same gender)

Variable	Mean	Std. Dev.	Min.	Max.
All EDs				
EDs with marginal candidates of different gender; Nr. of EDs		*6,088*		
Total number of candidates	35.296	46.35	6	584
Number of female candidates	11.173	15.52	1	188
Number of elected female candidates (excl. marginal)	2.253	1.713	0	13
Median position of female candidates on slates	0.305	0.195	0	0.889
Share of votes cast to female candidates	0.301	0.117	0	0.91
EDs with marginal candidates of the same gender; Nr. of EDs		*9,511*		
Total number of candidates	35.199	48.121	6	867
Number of female candidates	10.092	15.762	0	288
Number of elected female candidates (excl. marginal)	2.289	1.752	0	18
Median position of female candidates on slates	0.289	0.213	0	0.889
Share of votes cast to female candidates	0.246	0.13	0	1
Mandates< 10, victory margin [-5;5]				
EDs with marginal candidates of different gender; Nr. of EDs		*2,314*		
Total number of candidates	19.106	11.1	6	90
Number of female candidates in ED	6.063	4.350	1	46
Number of elected female candidates (excl. marginal)	1.654	1.14	0	7
Median position of female candidates on slates	0.211	0.209	0	0.806
Share of votes cast to female candidates	0.299	0.124	0.038	0.91
EDs with marginal candidates of the same gender; Nr. of EDs		*3,164*		
Total number of candidates	18.704	11.132	6	88
Number of female candidates in ED	4.913	4.319	0	35
Number of elected female candidates (excl. marginal)	1.711	1.236	0	7
Median position of female candidates on slates	0.193	0.209	0	0.833
Share of votes cast to female candidates	0.236	0.137	0	0.806
Mandates< 10, victory margin [-2;2]				
EDs with marginal candidates of different gender; Nr. of EDs		*l,f89*		
Total number of candidates	18.799	11.452	6	90
Number of female candidates in ED	5.985	4.507	1	46
Number of elected female candidates (excl. marginal)	1.656	1.131	0	7
Median position of female candidates on slates	0.175	0.207	0	0.786
Share of votes cast to female candidates	0.299	0.125	0.038	0.777
EDs with marginal candidates of the same gender; Nr. of EDs		*2,468*		
Total number of candidates	18.548	11.573	6	88
Number of female candidates in ED	4.839	4.428	0	35
Number of elected female candidates (excl. marginal)	1.709	1.241	0	7
Median position of female candidates on slates	0.162	0.205	0	0.833
Share of votes cast to female candidates	0.234	0.136	0	0.806
Mandates< 10, victory margin [-1;1]				
EDs with marginal candidates of differentS gender; Nr. of EDi		*! 935*		
Total number of candidates	18.513	11.684	6	90
Number of female candidates in ED	5.887	4.565	1	46
Number of elected female candidates (excl. marginal)	1.653	1.119	0	6
Median position of female candidates on slates	0.151	0.201	0	0.786
Share of votes cast to female candidates	0.302	0.126	0.053	0.777
EDs with marginal candidates of the same gender; Nr. of EDs		*1,601*		
Total number of candidates	18.3	11.875	6	88
Number of female candidates in ED	4.79	4.583	0	35
Number of elected female candidates (excl. marginal)	1.711	1.243	0	7
Median position of female candidates on slates	0.138	0.198	0	0.833
Share of votes cast to female candidates	0.233	0.137	0	0.806

Note: Municipalities with two marginal female candidates comprise approximately 12-13% of the excluded sample in small municipalities. All co-variates are as of elections of treatment.

Table 1.A.2: Summary statistics: EDs that are excluded from the sample

Variable	Mean	Std. Dev.	Min.	Max.
Panel B: EDs with same gender candidates competing for the last seat				
Number of candidates in ED	36.85	52.933	5	971
Number of female candidates in ED	11.326	17.957	0	325
Number of seats in a Council	10.027	4.874	5	55
Number of slates in ED	4.631	3.743	1	39
Number of slates in ED in previous elections	4.749	3.687	1	39
N		9,577		
Panel C: EDs with same gender candidates competing for the last seat, mandatesdO, victory margin [-5:5]				
Number of candidates in ED	18.366	11.936	5	99
Number of female candidates in ED	5.313	4.688	0	46
Number of seats in a Council	7.678	1.161	5	9
Number of slates in ED	5.574	4.251	1	25
Number of slates in ED in previous elections	6.288	4.205	2	25
N		3,764		
Panel D: EDs with same gender candidates competing for the last seat, mandatesdO, victory margin [-2:2]				
Number of candidates in ED	17.936	11.801	5	90
Number of female candidates in ED	5.183	4.627	0	46
Number of seats in a Council	7.68	1.133	5	9
Number of slates in ED	6.310	4.492	1	25
Number of slates in ED in previous elections	7.373	4.431	2	25
N		2,468		
Panel E: EDs with same gender candidates competing for the last seat, mandatesdO, victory margin [-1:1]				
Number of candidates in ED	17.611	11.731	5	90
Number of female candidates in ED	5.098	4.672	0	46
Number of seats in a Council	7.709	1.121	5	9
Number of slates in ED	6.845	4.711	1	25
Number of slates in ED in previous elections	8.154	4.579	2	25
N		1,601		

Table 1.A.3: Summary statistics: EDs that are excluded from the sample: two marginal female candidates

Variable	Mean	Std. Dev.	Min.	Max.
Panel B: EDs with female candidates competing for the last seat				
Number of candidates in ED	31.158	38.169	5	344
Number of female candidates in ED	10.976	13.607	0	137
Number of seats in a Council	9.488	4.2	5	45
Number of slates in ED	4.314	3.534	1	23
Number of slates in ED in previous elections	4.513	3.543	1	23
N			1,199	
Panel C: EDs with female candidates competing for the last seat, mandates<10, victory margin [-5:5]				
Number of candidates in ED	18.023	11.449	5	63
Number of female candidates in ED	6.399	4.795	0	29
Number of seats in a Council	7.677	1.166	5	9
Number of slates in ED	5.477	4.317	1	23
Number of slates in ED in previous elections	6.255	4.236	2	20
N			474	
Panel D: EDs with female candidates competing for the last seat, mandates<10, victory margin [-2:2]				
Number of candidates in ED	17.438	11.564	5	63
Number of female candidates in ED	6.248	4.851	0	29
Number of seats in a Council	7.657	1.135	5	9
Number of slates in ED	6.464	4.631	1	23
Number of slates in ED in previous elections	7.575	4.418	2	20
N			306	
Panel E: EDs with female candidates competing for the last seat, mandatesdO, victory margin [-1:1]				
Number of candidates in ED	17.316	11.817	6	63
Number of female candidates in ED	6.173	4.883	0	27
Number of seats in a Council	7.699	1.157	5	9
Number of slates in ED	7.122	4.9	1	23
Number of slates in ED in previous elections	8.495	4.519	2	20
N			196	

Table 1.A.4: Summary statistics: EDs that are excluded from the sample: two marginal male candidates

Variable	Mean	Std. Dev.	Min.	Max.
Panel B: EDs with male candidates competing for the last seat				
Number of candidates in ED	37.665	54.675	5	971
Number of female candidates in ED	11.376	18.496	0	325
Number of seats in a Council	10.105	4.958	5	55
Number of slates in ED	4.677	3.77	1	39
Number of slates in ED in previous elections	4.783	3.706	1	39
N			8,378	
Panel C: EDs with male candidates competing for the last seat, mandatesdO, victory margin [-5:5]				
Number of candidates in ED	18.416	12.006	5	99
Number of female candidates in ED	5.157	4.652	0	46
Number of seats in a Council	7.678	1.16	5	9
Number of slates in ED	5.588	4.242	1	25
Number of slates in ED in previous elections	6.293	4.201	2	25
N			3,290	
Panel D: EDs with male candidates competing for the last seat, mandatesdO, victory margin [-2:2]				
Number of candidates in ED	18.007	11.835	5	90
Number of female candidates in ED	5.032	4.575	0	46
Number of seats in a Council	7.683	1.133	5	9
Number of slates in ED	6.289	4.472	1	25
Number of slates in ED in previous elections	7.344	4.433	2	25
N			2,162	
Panel E: EDs with male candidates competing for the last seat, mandatesdO, victory margin [-1:1]				
Number of candidates in ED	17.652	11.723	5	90
Number of female candidates in ED	4.948	4.623	0	46
Number of seats in a Council	7.71	1.116	5	9
Number of slates in ED	6.806	4.684	1	25
Number of slates in ED in previous elections	8.106	4.587	2	25
N			1,405	

Table 1.A.5: Summary statistics: female political participation evolution

Year	Variable	Mean	Std. Dev.	Min.	Max.
2002	***All EDs: 6,319***				
	Number of female candidates in ED	8.204	13.822	0	245
	Share of female candidates in ED	0.253	0.134	0	0.8
	Number of elected female candidates in ED	2.219	1.702	0	14
	Share of elected female candidates in ED	0.229	0.154	0	0.857
	Median position of female candidates on slates	0.256	0.215	0	0.909
	Small EDs: 4,560				
	Number of female candidates in ED	3.616	3.217	0	40
	Share of female candidates in ED	0.244	0.146	0	0.8
	Number of elected female candidates in ED	1.7	1.242	0	7
	Share of elected female candidates in ED	0.228	0.166	0	0.857
	Median position of female candidates on slates	0.214	0.221	0	0.889
2006	***All EDs 6,350***				
	Number of female candidates in ED	9.321	15.263	0	475
	Share of female candidates in ED	0.28	0.136	0	1
	Number of elected female candidates in ED	2.444	1.775	0	18
	Share of elected female candidates in ED	0.254	0.159	0	1
	Median position of female candidates on slates	0.288	0.21	0	0.889
	Small EDs 4>6O4				
	Number of female candidates in ED	4.336	3.822	0	46
	Share of female candidates in ED	0.273	0.15	0	1
	Number of elected female candidates in ED	1.895	1.278	0	7
	Share of elected female candidates in ED	0.255	0.172	0	1
	Median position of female candidates on slates	0.249	0.221	0	0.889
2010	***All EDs 6,353***				
	Number of female candidates in ED	11.042	17.56	0	288
	Share of female candidates in ED	0.298	0.133	0	1
	Number of elected female candidates in ED	2.563	1.786	0	18
	Share of elected female candidates in ED	0.269	0.16	0	1
	Median position of female candidates on slates	0.337	0.206	0	0.889
	Small EDs 4t6%0				
	Number of female candidates in ED	4.974	4.224	0	35
	Share of female candidates in ED	0.293	0.147	0	1
	Number of elected female candidates in ED	2.019	1.276	0	8
	Share of elected female candidates in ED	0.274	0.174	0	1
	Median position of female candidates on slates	0.308	0.224	0	0.889
2014	***All EDs 6,359***				
	Number of female candidates in ED	11.777	20.466	0	325
	Share of female candidates in ED	0.309	0.135	0	1
	Number of elected female candidates in ED	2.637	1.807	0	19
	Share of elected female candidates in ED	0.278	0.161	0	1
	Median position of female candidates on slates	0.341	0.201	0	0.889
	Small EDs 4>636				
	Number of female candidates in ED	5.109	4.332	0	38
	Share of female candidates in ED	0.305	0.15	0	1
	Number of elected female candidates in ED	2.092	1.288	0	8
	Share of elected female candidates in ED	0.284	0.174	0	1
	Median position of female candidates on slates	0.314	0.22	0	0.889

Table 1.A.6: Co-variate balance check

Model specifications					
Observations	5,951	4,224	2,292	1,477	925
Sample	ALL	mandates <10	mandates <10	mandates <10	mandates <10
Victory margin	ALL	ALL	[-5;5]	[-2;21	M:ll
Panel A. Demographic indicators					
(two-year average - year of elections of treatment and the previous year)					
Number of inhabitants					
Additional	1.966	4.700	8.201	37.460	36.715
woman	(79.383)	(14.575)	(22.793)	(28.221)	(35.894)
Number of children born per year					
Additional	0.002	-0.041	-0.327	-0.218	0.136
woman	(0.880)	(0.180)	(0.292)	(0.366)	(0.438)
Panel P. Local budget indicators					
(two-year average - year of elections of treatment and the previous year)					
Total local budget spending per inhabitant					
Additional	267.212	854.281	2340.134*	-103.374	1004.588
woman	(637.118)	(753.905)	(1224.506)	(1603.390)	(1945.379)
Current local budget spending per inhabitant					
Additional	49.786	469.026	891.646	-772.339	-636.782
woman	(474.321)	(451.610)	(712.698)	(890.245)	(1089.825)
Capital local budget spending per inhabitant					
Additional	217.426	385.255	1448.488*	668.966	1641.370
woman	(353.587)	(500.719)	(811.423)	(1095.932)	(1357.086)
Subsidies received by the municipality per inhabitant					
Additional	393.091	853.876*	1873.230**	616.268	1825.595
woman	(488.861)	(495.218)	(794.054)	(1053.125)	(1215.759)
Local budget tax income per inhabitant					
Additional	54.241	76.038	-447.636	-1126.803*	-1343.785
woman	(161.190)	(250.586)	(412.895)	(637.464)	(861.475)
Local budget non-tax income per inhabitant					
Additional	111.066	161.405	251.835	-0.514	417.316
woman	(147.495)	(205.911)	(305.962)	(304.735)	(362.771)
Local budget capital income per inhabitant					
Additional	-343.733***	-423.667**	80.839	92.658	-60.723
woman	(120.496)	(181.727)	(256.255)	(257.178)	(307.176)
Panel C. Share of votes cast to nation- -wide parties in the previous elections (elections of treatment)					
Additional	0.004	0.002	-0.001	-0.004	-0.010
woman	(0.005)	(0.006)	(0.009)	(0.012)	(0.015)
Panel D. Median age of candidates in the previous elections (elections of treatment)					
Median age of all candidates (excluding the two marginal)					
Additional	0.256	0.373	-0.757	-0.917	-0.541
woman	(0.230)	(0.333)	(0.532)	(0.765)	(1.022)
Median age of female candidates (excluding the marginal)					
Additional	0.197	0.366	-1.067	-0.746	0.157
woman	(0.451)	(0.686)	(1.023)	(1.527)	(2.121)

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Table 1.A.6 — continued from the previous page

Model specifications					
Observations	5,951	4,224	2,292	1,477	925
Sample	ALL	mandates <10	mandates <10	mandates <10	mandates <10
Victory margin	ALL	ALL	[-5;5]	[-2;21	M:ll
Median age of elected candidates (excluding the marginal)					
Additional	0.361	0.364	-0.716	-0.429	-0.299
woman	(0.239)	(0.349)	(0.555)	(0.789)	(1.048)
Median age of elected female candidates (excluding the marginal)					
Additional	1.206*	1.784*	-2.146	-0.950	1.430
woman	(0.677)	(1.020)	(1.637)	(2.364)	(3.165)
Panel E. Share of educated candidates in the previous elections (elections of treatment.)					
Share of educated candidates among all candidates (excluding the two marginal)					
Additional	0.007	0.005	0.005	0.016	-0.001
woman	(0.005)	(0.006)	(0.010)	(0.013)	(0.017)
Share of educated female candidates among all female candidates (excluding the marginal)					
Additional	0.010	0.010	0.005	0.020	0.020
woman	(0.008)	(0.011)	(0.018)	(0.027)	(0.034)
Share of educated candidates among elected candidates (excluding the marginal)					
Additional	0.017**	0.016*	0.017	0.032	0.015
woman	(0.008)	(0.010)	(0.015)	(0.021)	(0.026)
Share of educated female candidates among elected female candidates (excluding the marginal)					
Additional	0.018	0.022	0.025	0.060	0.076
woman	(0.013)	(0.017)	(0.027)	(0.038)	(0.051)
Panel F. Female political participation in the previous elections (elections of treatment)					
Number of female candidates					
Additional	0.667*	0.039	-0.367	-0.077	-0.186
woman	(0.357)	(0.228)	(0.400)	(0.582)	(0.775)
Share of female candidates					
Additional	0.004	-0.002	-0.007	0.009	0.016
woman	(0.005)	(0.007)	(0.011)	(0.015)	(0.021)
Number of elected female candidates (excluding the marginal)					
Additional	0.079	0.040	-0.123	-0.051	0.274
woman	(0.060)	(0.062)	(0.099)	(0.135)	(0.173)
Median position of female candidates on slates					
Additional	-0.003	-0.006	-0.023	-0.031	-0.046
woman	(0.007)	(0.011)	(0.017)	(0.025)	(0.032)
Share of votes cast to female candidates in the municipality					
Additional	0.012**	0.011	-0.003	0.008	0.022
woman	(0.005)	(0.007)	(0.011)	(0.015)	(0.020)
Panel G. Characteristics of marginal candidates in the previous elections (elections of treatment)					
Length of the marginal winner's slate					
Additional	0.300***	0.395***	0.340*	0.330	0.331
woman	(0.095)	(0.133)	(0.199)	(0.283)	(0.381)
Indicator of the marginal winner represents a nation-wide party					
Additional	-0.038***	-0.016	-0.021	0.016	-0.013

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Table 1.A.6 — continued from the previous page

	Model specifications				
Observations	5,951	4,224	2,292	1,477	925
Sample	ALL	mandates <10	mandates <10	mandates <10	mandates <10
Victory margin	ALL	ALL	[-5;5]	[-2;21	M:ll
woman	(0.014)	(0.013)	(0.021)	(0.030)	(0.039)
	Median position of women on the marginal winner's slate				
Additional	0.065***	0.069***	0.028	0.032	0.025
woman	(0.009)	(0.012)	(0.020)	(0.028)	(0.036)
	Share of female candidates on the marginal winner's slate				
Additional	0.399***	0.590***	0.665***	0.637***	0.631***
woman	(0.011)	(0.014)	(0.023)	(0.033)	(0.044)
	Share of female candidates on the marginal loser's slate				
Additional	-0.423***	-0.646***	-0.730***	-0.713***	-0.678***
woman	(0.011)	(0.014)	(0.022)	(0.032)	(0.041)
	Number of candidates elected from the winner's slate				
Additional	0.148	0.283***	0.160	0.238	-0.010
woman	(0.095)	(0.102)	(0.164)	(0.228)	(0.294)
	Number of female candidates elected from the winner's slate other than the marginally elected				
Additional	0.139***	0.132***	0.006	0.045	0.046
woman	(0.039)	(0.043)	(0.063)	(0.084)	(0.102)
	Age of the marginal winner				
Additional	-1.100**	-1.138*	-0.140	-0.015	-1.131
woman	(0.493)	(0.660)	(1.064)	(1.506)	(1.969)
	Indicator that the marginal winner has higher education				
Additional	0.031*	0.030*	0.014	-0.012	0.013
woman	(0.017)	(0.018)	(0.030)	(0.041)	(0.052)

Note: Elections year*council size fixed effects, quadratic victory margin and robust standard errors used in all regressions.

Table 1.A.7: Optimal bandwidth: Co-variate balance check

	Model specifications
Observations	1847
Sample	mandates <10
Victory margin	i-3;3]
Panel A. Demographic indicators	
(two-year average - year of elections of treatment, and the previous year)	
Number of inhabitants	2.332
	(20.537)
Number of children born per year	-0.234
	(0.261)

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Table 1.A.7 — continued from the previous page

Model specifications	
Observations	1847
Sample	mandates <10
Victory margin	[-3;3]
Panel P. Local budget, indicators	
(two-year average - year of elections of treatment and the previous year)	
Total local budget spending per inhabitant	2054.715*
	(1058.742)
Current local budget spending per inhabitant	959.179
	(625.786)
Capital local budget spending per inhabitant	1095.536
	(689.919)
Subsidies received by the municipality per inhabitant	1830.617***
	(674.151)
Local budget tax income per inhabitant	-269.612
	(362.997)
Local budget non-tax income per inhabitant	140.887
	(289.464)
Local budget capital income per inhabitant	-149.359
	(235.167)
Panel C. Share of votes cast to nation-wide parties in the previous elections (elections of treatment.)	
Share of votes cast to nation-wide parties in the previous elections (elections of treatment)	0.001
	(0.008)
Panel D. Median age of candidates in the previous elections (elections of treatment)	
Median age of all candidates (excluding the two marginal)	-0.606
	(0.456)
Median age of female candidates (excluding the marginal)	-0.657
	(0.882)
Median age of elected candidates (excluding the marginal)	-0.671
	(0.480)
Median age of elected female candidates (excluding the marginal)	-0.877
	(1.396)
Panel E. Share of educated candidates in the previous elections (elections of treatment)	

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Table 1.A.7 — continued from the previous page

Model specifications	
Observations	1847
Sample	mandates <10
Victory margin	[-3;3]
Share of educated candidates among all candidates (excluding the two marginal)	0.003
	(0.009)
Share of educated female candidates among all female candidates (excluding the marginal)	0.004
	(0.016)
Share of educated candidates among elected candidates (excluding the marginal)	0.014
	(0.013)
Share of educated female candidates among elected female candidates (excluding the marginal)	0.019
	(0.024)
Panel F. Female political participation in the previous elections (elections of treatment)	
Number of female candidates	-0.076
	(0.343)
Share of female candidates	-0.004
	(0.009)
Number of elected female candidates (excluding the marginal)	-0.069
	(0.086)
Median position of female candidates on slates	-0.029*
	(0.015)
Share of votes cast to female candidates in the municipality	0.001
	(0.010)
Panel G. Characteristics of marginal candidates in the previous elections (elections of treatment)	
Length of the marginal winner's slate	-0.118
	(0.250)
Indicator of the marginal winner represents a nation-wide party	-0.006
	(0.018)
Median position of women on the marginal winner's slate	0.030*
	(0.017)
Share of female candidates on the marginal winner's slate	0.665***
	(0.020)

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Table 1.A.7 — continued from the previous page

Model specifications	
Observations	1847
Sample	mandates <10
Victory margin	[-3:3]
Share of female candidates on themarginal loser's slate	-0.706***
	(0.019)
Number of candidates elected from the winner's slate	0.066
	(0.143)
Number of female candidates elected from the winner's slate other than the marginally elected	0.021
	(0.054)
Age of the marginal winner	0.397
	(0.914)
Indicator that the marginal winner has higher education	0.011
	(0.026)

Note: Elections year*council size fixed effects, linear victory margin and robust standard errors used in all regressions.

Table 1.A.8: Co-variate balance check: large municipalities

Model specifications					
Observations	5,951	1,727	1,469	1,063	737
Sample	ALL	mandates >—10	mandates >—10	mandates>—10	mandates>—10
Victory margin	ALL	ALL	[-5;5]	[-2:21	[-ml
Panel A. Demographic indicators					
(two-year average - year of elections of treatment and the previous year)					
Number of inhabitants					
Additional	1.966	65.877	81.513	39.564	-42.741
woman	(79.383)	(260.989)	(322.837)	(450.963)	(568.116)
Number of children born per year					
Additional	0.002	1.287	1.651	1.783	0.597
woman	(0.880)	(2.871)	(3.527)	(4.947)	(5.821)
Panel P. Local budget, indicators					
(two-year average - year of elections of treatment and the previous year)					
Total local budget spending per inhabitant					
Additional	267.212	620.238	-190.020	-366.512	634.418
woman	(637.118)	(1424.902)	(1705.029)	(2262.720)	(2823.426)
Current local budget spending per inhabitant					
Additional	49.786	73.247	-465.576	191.677	1180.992
woman	(474.321)	(1277.382)	(1537.343)	(2054.664)	(2518.509)
Capital local budget spending per inhabitant					

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Table 1.A.8 — continued from the previous page

Model specifications					
Observations	5,951	1,727	1,469	1,063	737
Sample	ALL	mandates>=10	mandates>=10	mandates>=10	mandates>=10
Victory margin	ALL	ALL	[-5;5]	[-2;2]	M:ll
Additional woman	217.426	546.991	275.556	-558.189	-546.574
	(353.587)	(507.478)	(592.720)	(781.015)	(967.171)
Subsidies received by the municipality per inhabitant					
Additional woman	393.091	587.852	30.860	-50.698	1159.752
	(488.861)	(1274.789)	(1529.581)	(2031.736)	(2447.735)
Local budget tax income per inhabitant					
Additional woman	54.241	125.755	55.861	-18.965	-322.976
	(161.190)	(146.491)	(180.673)	(230.002)	(345.975)
Local budget non-tax income per inhabitant					
Additional	111.066	16.697	-0.693	83.694	-319.740
	(147.495)	(223.197)	(234.032)	(275.297)	(402.221)
Local budget capital income per inhabitant					
Additional woman	-343.733***	-156.203	-206.528	-136.214	-222.543
	(120.496)	(153.588)	(193.793)	(318.292)	(464.892)
Panel C. Share of votes cast to major parties in the previous elections (elections of treatment)					
Additional woman	0.004	0.013	0.014	0.018	0.024
	(0.005)	(0.011)	(0.014)	(0.019)	(0.025)
Panel D. Median age of candidates in the previous elections (elections of treatment)					
Median age of all candidates (excluding the two marginal)					
Additional woman	0.256	0.359	0.243	0.189	0.891
	(0.230)	(0.327)	(0.385)	(0.545)	(0.760)
Median age of female candidates (excluding the marginal)					
Additional woman	0.197	0.420	0.565	1.004	1.673*
	(0.451)	(0.434)	(0.501)	(0.710)	(0.934)
Median age of elected candidates (excluding the marginal)					
Additional woman	0.361	0.419	0.413	0.420	0.515
	(0.239)	(0.325)	(0.384)	(0.538)	(0.723)
Median age of elected female candidates (excluding the marginal)					
Additional woman	1.206*	0.859	1.550	1.288	0.252
	(0.677)	(0.856)	(1.050)	(1.454)	(1.909)
Panel E. Share of educated candidates in the previous elections (elections of treatment)					
Share of educated candidates among all candidates (excluding the two marginal)					
Additional woman	0.031*	0.006	-0.011	-0.054	0.052
	(0.017)	(0.039)	(0.047)	(0.066)	(0.088)
Share of educated female candidates among all female candidates (excluding the marginal)					
Additional woman	0.010	0.002	-0.002	-0.011	-0.005
	(0.008)	(0.011)	(0.013)	(0.017)	(0.023)
Share of educated candidates among elected candidates (excluding the marginal)					
Additional woman	0.017**	0.013	0.005	0.012	0.046
	(0.008)	(0.014)	(0.017)	(0.024)	(0.032)
Share of educated female candidates among elected female candidates (excluding the marginal)					

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Table 1.A.8 — continued from the previous page

Model specifications					
Observations	5,951	1,727	1,469	1,063	737
Sample	ALL	mandates>—10	mandates>—10	mandates>—10	mandates>—10
Victory margin	ALL	ALL	[-5;5]	[-2;21	M:ll
Additional	0.018	-0.006	-0.013	-0.044	-0.019
woman	(0.013)	(0.026)	(0.031)	(0.042)	(0.055)
Panel F. Female political participation in the previous elections (elections of treatment)					
Number of female candidates					
Additional	0.667*	1.697*	1.870	2.868*	1.339
woman	(0.357)	(0.993)	(1.223)	(1.666)	(2.260)
Share of female candidates					
Additional	0.004	0.010	0.014*	0.010	0.000
woman	(0.005)	(0.006)	(0.007)	(0.010)	(0.013)
Number of elected female candidates (excluding the marginal)					
Additional	0.079	0.028	0.161	-0.163	-0.246
woman	(0.060)	(0.145)	(0.176)	(0.241)	(0.314)
Median position of female candidates on slates					
Additional	-0.003	0.006	0.017	0.014	0.017
woman	(0.007)	(0.010)	(0.013)	(0.019)	(0.026)
Share of votes cast to female candidates in the municipality					
Additional	0.012**	0.011*	0.016**	0.009	-0.001
woman	(0.005)	(0.006)	(0.008)	(0.010)	(0.014)
Panel G. Characteristics of marginal candidates in the previous elections (elections of treatment)					
Length of the marginal winner's slate					
Additional	0.221*	0.214	0.239	0.355	0.488
woman	(0.122)	(0.215)	(0.277)	(0.435)	(0.641)
Indicator of the marginal winner represents a major party					
Additional	-0.038***	-0.040	-0.057	-0.062	-0.102
woman	(0.014)	(0.034)	(0.041)	(0.056)	(0.074)
Median position of women on the marginal winner's slate					
Additional	0.065***	0.062***	0.069***	0.076***	0.105***
woman	(0.009)	(0.014)	(0.017)	(0.024)	(0.033)
Share of female candidates on the marginal winner's slate					
Additional	0.399***	0.136***	0.144***	0.162***	0.144***
woman	(0.011)	(0.014)	(0.018)	(0.025)	(0.035)
Share of female candidates on the marginal loser's slate					
Additional	-0.423***	-0.134***	-0.130***	-0.142***	-0.149***
woman	(0.011)	(0.015)	(0.019)	(0.027)	(0.039)
Number of candidates elected from the winner's slate					
Additional	0.148	0.003	-0.060	-0.570	-0.131
woman	(0.095)	(0.219)	(0.258)	(0.355)	(0.461)
Number of female candidates elected from the winner's slate other than the marginally elected					
Additional	0.139***	0.106	0.133	-0.007	0.042
woman	(0.039)	(0.086)	(0.100)	(0.135)	(0.179)
Age of the marginal winner					

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Table 1.A.8 — continued from the previous page

	Model specifications				
Observations	5,951	1,727	1,469	1,063	737
Sample	ALL	mandates >=10	mandates >=10	mandates>=10	mandates>=10
Victory margin	ALL	ALL	[-5;5]	[-2;21	M:ll
Additional -1.100**	-0.770	-1.395	0.309	0.834	
woman	(0.493)	(0.880)	(1.054)	(1.479)	(1.974)
	Indicator that the marginal winner has higher education				
Additional	-0.004	-0.041	-0.031	-0.091	-0.132
woman	(0.017)	(0.039)	(0.047)	(0.065)	(0.086)

Note: Elections year*council size fixed effects, quadratic victory margin and robust standard errors used in all regressions.

Table 1.A.9: Optimal bandwidth: Effect of an additional woman elected on the number of newly participating female candidates

Model specifications	
Sample	mandates <10
Victory margin	[-3;3]
Panel A: Main effect	
Additional woman	-0.500**
	(0.248)
Observations	1,847
Panel B: municipalities with less or more than two other women elected	
Additional woman	0.067
	(0.321)
Additional woman * at least two other women elected	-1.048**
	(0.491)
Observations	1,847
Sample: municipalities where two or more other women elected	
Additional woman	-0.964***
	(0.373)
Observations	980
Sample: municipalities where less than two other women elected	
Additional woman	0.077
	(0.325)
Observations	867
Panel C: Robustness checks	
Number of newly participating female candidates - excluding high jumpers and party favourites from the sample	
Municipalities with two or more other women elected	
Additional woman	-0.662+
	(0.407)
Observations	668
Sample: municipalities where less than two other women elected	
Additional woman	-0.798**
	(0.387)
High jumper * Additional woman	-1.626
	(1.392)
Observations	980
Number of newly participating female candidates - excluding high jumpers from the sample	
Sample: municipalities where less than two other women elected	
Additional woman	-0.920**
	(0.363)
Observations	811

Note: Elections year*council size fixed effects and robust standard errors used in all regressions. Victory margin controlled for in all regressions. Victory margin is allowed to vary before and after the cut-off. In case two samples are tested against each other, the margin is allowed to vary for those samples as well. +l'-value—0.104.

Figure l.A.l: Number of female candidates

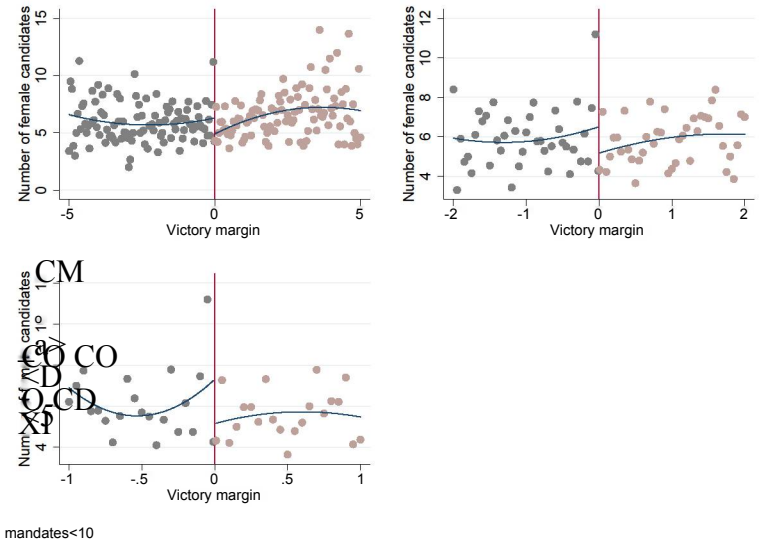

Figure 1.A.2: Number of female candidates, excluding the marginally winning or losing female candidates

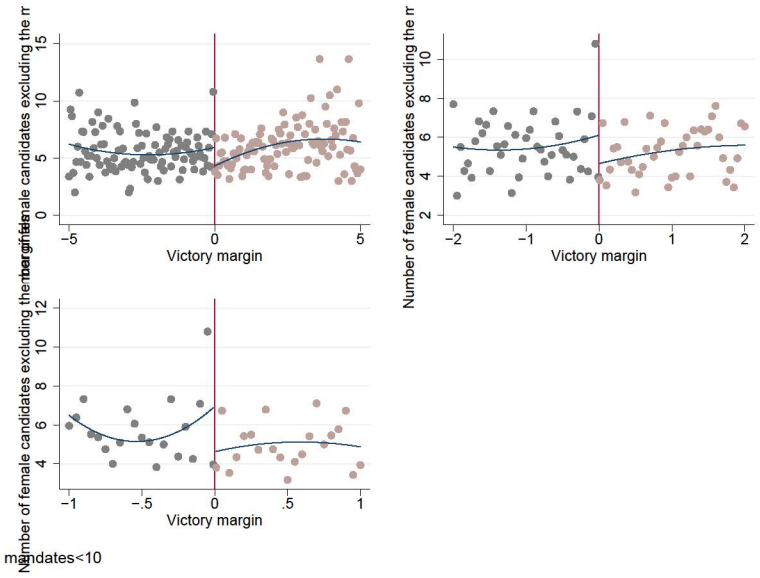

Table 1.A.10: Main results: large municipalities

Model specifications

Observations	6,088	1,832	1,570	1,149	805
Sample	ALL	mandates>=10	mandates>=10	mandates>=10	mandates>=10
Victory margin	ALL	ALL	[-5;5]	[-2;2]	Mill
			Panel A		
			Number of female candidates		
Additional woman	0.622	1.332	1.904	3.097	2.934
	(0.407)	(1.168)	(1.454)	(1.949)	(2.516)
Adj. R-sq	0.827	0.790	0.789	0.808	0.805
			Panel B		
			Number of female candidates, excluding the marginally winning or losing female candidates		
Additional woman	0.471	1.257	1.820	2.983	2.802
	(0.406)	(1.167)	(1.452)	(1.947)	(2.514)
Adj. R-sq	0.827	0.791	0.790	0.808	0.805
			Panel C		
			Participation probability : marginal female winner vs loser		
Additional woman	0.151***	0.075*	0.085*	0.114*	0.131+
	(0.021)	(0.041)	(0.049)	(0.066)	(0.088)
Adj. R-sq	0.047	0.014	0.007	0.017	0.026
			Panel U		
			Probability to win again conditional on participating again: marginal female winner vs loser		
Observations	3,172	1,107	948	707	494
Additional woman	0.149***	0.110**	0.070	0.028	0.058
	(0.030)	(0.055)	(0.064)	(0.089)	(0.120)
Adj. R-sq	0.048	0.010	0.013	0.018	0.014
			Panel E		
			Number of newly participating female candidates		
Additional woman	0.200	0.596	1.033	1.883	2.036
	(0.307)	(0.895)	(1.117)	(1.500)	(1.909)
Adj. R-sq	0.803	0.782	0.783	0.804	0.797

Note: Elections year*council size fixed effects and robust standard errors used in all regressions. + l'-value=0.135.

Quadratic victory margin controlled for in all regressions

Table l.A.ll: Robustness checks

Model specifications

Sample	ALL	mandates <10	mandates <10	mandates <10	mandates <10
Victory margin	ALL	ALL	[-5;5]	[-2;2j	M:ll
			Panel A		
		Number of newly participating female candidates - excluding high jumpers and party favourites from the sample			
Observations	3182	2550	1531	1062	703
Additional	0.208	0.242	-0.263	-0.368	-0.809*
woman	(0.338)	(0.193)	(0.304)	(0.395)	(0.460)
			Panel B		
		Number of newly participating female candidates - excluding high jumpers and party favourites from the sample - municipalities with 2 or more non-marginal female candidates elected			
Observations	1856	1312	788	554	369
Additional	-0.006	0.139	-0.950**	-0.960+	-1.613**
woman	(0.524)	(0.296)	(0.473)	(0.625)	(0.769)
			Panel C		
		Number of newly participating female candidates - excluding high jumpers and party favourites from the sample - municipalities with none or 1 non-marginal female candidates elected			
Observations	1326	1238	743	508	334
Additional	0.493	0.386	0.442	0.186	-0.182
woman	(0.305)	(0.243)	(0.378)	(0.484)	(0.556)
			Panel D		
		Number of newly participating female candidates			
Observations	6,088	4,256	2,314	1,489	935
Additional	0.085	0.043	-0.468*	-0.479	-1.197***
woman	(0.299)	(0.173)	(0.282)	(0.378)	(0.450)
High jumper	0.476	-0.092	-0.392	-1.056*	-0.789
* Add.worn.	(0.516)	(0.354)	(0.489)	(0.586)	(0.784)
			Panel E		
		Number of newly participating female candidates - excluding high jumpers from the sample			
Observations	5,172	3,332	2,045	1,336	846
Additional	-0.011	-0.038	-0.449++	-0.338	-0.777*
woman	(0.305)	(0.395)	(0.288)	(0.378)	(0.443)

Note: Elections year*council size fixed effects and robust standard errors used in all regressions. +P-value—0.125.

++P-value—0.119. Quadratic victory margin is controlled for in all regressions, as well as the main effect of the marginally elected candidate being a high jumper in regressions in Panel D.

Table 1.A.12: Does partisanship matter?

Model specifications

Sample	ALL	mandates <10	mandates <10	mandates <10	mandates <10
Victory margin	ALL	ALL	[-5;5]	[-2;21	M:ll
			Panel A		
			Number of newly participating female candidates		
Observations	6,088	4,256	2,314	1,489	935
Additional	0.290	0.075	-0.510*	-0.608	-1.265***
woman	(0.301)	(0.172)	(0.282)	(0.379)	(0.469)
Winner from	-0.342	-0.562	-0.881	-1.041	-0.275
NW party	(0.699)	(0.478)	(0.675)	(0.989)	(1.438)
* Add.worn.					
			Panel B		
			Number of newly participating female candidates - excluding nation-wide party representatives from the sample		
Observations	5,441	3,414	2,166	1,404	889
Additional woman	0.438	0.169	-0.512*	-0.421	-0.942**
	(0.300)	(0.381)	(0.282)	(0.378)	(0.465)
			Panel C		
			Number of newly participating female candidates		
Observations	6,088	4,256	2,314	1,489	935
Additional	0.150	-0.048	-0.544**	-0.687*	-1.223***
woman	(0.304)	(0.166)	(0.272)	(0.366)	(0.441)
Individual	-2.573***	-1.993***	-2.095***	-2.143***	-2.213***
candidate	(0.135)	(0.119)	(0.128)	(0.153)	(0.187)
			Panel D		
			Number of newly participating female candidates		
Observations	6,088	4,256	2,314	1,489	935
Additional	0.115	-0.254	-0.972***	-1.261***	-1.816***
woman	(0.387)	(0.247)	(0.351)	(0.438)	(0.528)
Individual	-2.626***	-2.186***	-2.424***	-2.630***	-2.733***
candidate	(0.207)	(0.165)	(0.175)	(0.215)	(0.280)
Individual	0.116	0.419*	0.723***	1.027***	1.090***
candidate	(0.325)	(0.232)	(0.249)	(0.305)	(0.390)
* Add.worn.					
			Panel E		
			Number of newly participating female candidates - municipalities where the marginally elected was an individual candidate		
Observations	917	882	831	680	485
Additional	0.268	0.271	0.144	-0.098	-0.140
woman	(0.196)	(0.184)	(0.234)	(0.312)	(0.377)
			Panel F		
			Number of newly participating female candidates - excluding marginally elected individual candidates		
Observations	5,171	3,374	1,483	809	450
Additional	0.061	-0.366	-1.361***	-1.362**	-2.641***
woman	(0.404)	(0.263)	(0.480)	(0.686)	(0.882)

Note: Elections year*council size fixed effects and robust standard errors used in all regressions. Quadratic victory-margin is controlled for in all regressions, as well as the main effect, of the marginally elected candidate representing a nation-wide party in regressions in Panel A.

Table 1.A.13: Long-term effect: Trend in coefficient

Model specifications - small municipalities					
Observations	3,760	2,620	1,453	941	588
Sample	ALL	mandates <10	mandates <10	mandates <10	mandates <10
Victory margin	ALL	ALL	[-5:5]	[-2;21	[-1:11
			Panel A		
			Number of female candidates		
Additional	1.227**	0.348	0.469	0.436	0.122
woman	(0.537)	(0.319)	(0.533)	(0.748)	(0.973)
			Panel B		
			Number of female candidates, excluding the marginally winning or losing female candidates		
Additional	0.580	-0.254	-0.122	-0.119	-0.404
woman	(0.537)	(0.320)	(0.535)	(0.752)	(0.977)
			Panel C		
			Number of newly participating female candidates		
Additional	0.804**	0.289	0.352	0.119	-0.318
woman	(0.409)	(0.243)	(0.410)	(0.578)	(0.753)
Model specifications - large municipalities					
Observations		1140	985	705	484
Sample		mandates>—10	mandates>—10	mandates>—10	mandates>—10
Victory margin		ALL	[-5:5]	[-2:21	[-1:11
			Panel U		
			Number of female candidates		
Additional		2.264	3.101	5.146*	5.415
woman		(1.550)	(1.919)	(2.730)	(3.627)
			Panel E		
			Number of female candidates, excluding the marginally winning or losing female candidates		
Additional		1.557	2.379	4.389	4.675
woman		(1.551)	(1.921)	(2.737)	(3.631)
			Panel F		
			Number of newly participating female candidates		
Additional		1.316	1.967	2.895	3.275
woman		(1.197)	(1.483)	(2.095)	(2.799)

Note: Elections year*council size fixed effects, quadratic victory margin and robust standard errors used in all regressions.

l.C Appendix: Data creation

Initial data creation

To create a pooled data-set consisting of elections in separate years I performed the following steps. First, I excluded the municipalities that had identical observa-

tions - candidates with identical names, surnames and age in the same municipality.[27] Next I merged separate elections data on the municipality ID, name, surname and age[28] of each candidate: the municipalities treated in time *t-1* are merged into time *t* data-set. For example, the municipalities treated in 2002 are merged into the 2006 data-set and analogically the remaining years - 2006 into 2010 and 2010 into 2014. As a result, I end up with three pairs of elections that I pull together. I keep an indicator of each elections pairing in order to control for it in the model estimation.

Further, I drop observations that either look troublesome or inconsistent. These are the observations for the following types of municipalities: 1) those that have a missing number of mandates to be allocated[29]; 2) those that have a number of mandates to be allocated equal to 0[30]; 3) those that have a different number of mandates to be allocated in the two consequent elections[31]. The reason for the latter might be either an increase in the number of inhabitants or some possible structural change. The distribution of the excluded municipalities across the treated and the control groups does not indicate any systematic pattern and therefore does not affect the analysis.

Long-term influence

To test the long-term effect of an additional female candidate election I first merge the 2002 elections data into the 2010 elections data and 2006 into 2014. I exclude the two marginal candidates in the elections in 2002 from the candidate pool in the elections in 2010 and the marginal candidates in 2006 from the elections in 2014. I define new female candidates in 2010 as those who did not participate in the elections in 2006 and in 2014 as those who did not participate in the elections in 2010.

[27]There are 30 such municipalities in 2002, 14 in 2006, 10 in 2010 and 26 in 2014.

[28]I do not allow for any discrepancy in age (+/- one year) since elections are held at the same time of the year - 1-2.11.2002, 20-21.10.2006, 15-16.10.2010, 10-11.10.2014.

[29]23 out of 6565, 10 in the control group and 13 in the treated group.

[30] 4 out of 6565, 3 in the control group and 1 in the treated group

[31]449 out of 6565, 242 in the control group and 234 in the treated group

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Chapter 2

Do Personal Characteristics of Councilors Affect Municipal Budget Allocation?

2.1 Introduction

There is a long-lasting debate in the literature on the importance of representation. According to the median voter theorem, representation should not matter for political outcomes. Policies will be the same irrespective of who is elected since the elected candidates will want to satisfy as many voters as possible and will thus take the decisions that are expected from them by the electorate. Therefore, the personal characteristics of the elected candidates should not matter for political decisions. On the other hand, the citizen-candidate model predicts that candidates have their own preferences that they implement as policies when they are elected, and the elected candidates are not those whose preferences are in accordance with the median voter (Osborne & Slivinski 1996). In the empirical literature certain personal characteristics of politicians have been confirmed to potentially influence their decisions in office (Baskaran, Bhalotra, Min & Uppal 2018, Chattopadhyay & Duflo 2004, Clots-Figueras 2011, Gagliarducci & Nannicini 2013 among others). Since ob-

servable characteristics such as gender, age or education are objective (as opposed to reputation and campaign promises), it is important to understand whether the electorate should take them into account when casting their votes.

In this paper I analyze whether gender, education and entrepreneurship of municipal council members have an effect on the budget allocation, deficit and debt. I address the question using the Czech municipal data on elections and budget indicators. Jurajda & Munich (2016) document that Czech voters favor educated candidates and cast fewer votes for women. In order to test whether the voters' expectations are met and the councilors with different characteristics take different decisions, I compare the municipalities that elected an additional candidate with a given characteristic to those municipalities that were a short step away from doing so. I employ the dynamic regression discontinuity design (DRDD) (Cellini, Ferreira & Rothstein 2010), as well as estimate the model using optimal bandwidth, to minimize endogeneity.

At a descriptive level, a higher share of elected women is correlated with higher revenues and spending, whereas a higher share of elected educated candidates is correlated with lower revenues and some current spending. Also, a higher share of entrepreneurs in a council is correlated with a higher share of subsidies and current spending. On the other hand, employing the dynamic regression discontinuity design and estimating the local linear regression model on optimal bandwidth I find that the budgetary indicators remain largely unaffected after the competitive election of either an additional female candidate, educated candidate, or entrepreneur. The debt level is higher with the election of an additional female candidate, and lower with an additional educated candidate. However, these findings are not entirely robust to including a higher order victory margin polynomial. I do find a negative effect of electing an additional entrepreneur on the current spending on voluntary fire fighters - a category that takes a small share of total budget and is easy to manipulate. The local linear regression also indicates that educated councilors are likely to increase capital revenues. However, at this point I am taking this result with caution as it needs further investigation. Finally, I can reject the possibility of

a larger than 15% effect of electing more women on total spending, current spending and the likelihood of reaching an annual deficit. I can also reject the possibility of a larger than 13% effect of electing more educated candidates on total spending, current spending, the likelihood of reaching an annual deficit and on the likelihood of having debt as well. As for additionally elected entrepreneurs, I can reject the likelihood of a larger than 11% effect on total spending, current spending, the likelihood of reaching an annual deficit, the likelihood of having debt and on the total debt of the municipality.

My analysis introduces a new angle to the widely studied question of personal characteristics' influence on policy decisions. Gender, education, social class, socio-economic background and prior experience of politicians and OECD leaders have been shown to correlate with policies and affect them on the country and state levels[1]. On the state level in India, female leaders raise economic performance more than male leaders (Baskaran et al 2018). On the municipal level, electing more women due to gender quotas seems to be effective for economic (Chattopadhyay & Duflo 2004) and social (Iyer, Mani, Mishra & Topalova 2012) outcomes in India, as well as in Italy (Baltrunaite, Casarico, Profeta & Savio 2016). Geographic origin of leaders (Besley, Pande & Rao 2012) seems to affect public goods provision too. For Europe and the US the results are mixed. The literature on mayors shows that gender can be correlated with spending (Holman 2014), but is not likely to have a causal effect (Ferreira & Gyourko 2014). Education of mayors, which does not necessarily make them stronger politicians (Curto & Gallego 2018), does not seem to affect budgets either (Freier & Thomasius 2016). Gagliarducci & Nannicini (2013) show that in Italy, in municipalities where mayors are better paid, they tend to be better educated and implement policies to reduce the size of government. Although the paper provides evidence that the education level of mayors can affect the budget, the identification strategy of the paper does not focus on education. Thus, mayors

[1] Abrams & Settle 1999, Aidt, Dutta & Loukoianova 2006, Chen 2010, Chen 2011, Clots-Figueras 2011, Clots-Figueras 2012, Hicks, Harnory Hicks & Maldonado 2015, Krogstrup & Walti 2011, Lott & Kenny 1999, Mavisakalyan 2014, Rehavi 2007, Besley, Montalvo & Reynal-Querol 2011, Dreher, Lamia, Lein & Somogyi 2009, Gohlmann & Vaubel 2007, Jochimsen & Thomasius 2014, Moessinger 2014, Hayo & Neumeier 2012, Hayo & Neumeier 2014, Hayo & Neumeier 2016, Jacqmin & Lefebvre 2016, Jones & Swiss 2014 among others

are likely to have other characteristics in addition to higher education, that may affect their policies and subsequently result in a smaller government.

As for local councilors that are not mayors, the literature only analyses the relationship between their gender and economic outcomes. The share of women on councils tends to correlate with the provision of public goods (Bratton & Ray 2002), and spending (Svaleryd 2009). However, a robust analysis shows no effect of gender of councilors on spending (Rigon & Tanzi 2012, Bagues & Campa 2017), with the exception of a small increase in a portion of administrative spending in Italy after electing more women via a gender quota (Rigon & Tanzi 2012) and a sizable effect of electing more women due to a gender quota on capital spending (Baltrunaite et al 2016). My analysis is the first to rigorously analyze the effect of electing more women to councils as a result of competitive elections where no quotas were implemented. Although in most of the elections with gender quotas the quotas apply to the candidate pool and not to the elected candidates, quotas make the electorate choose from a non-natural pool of candidates, and might affect their perception of candidates (Clayton 2015). My study is also one of the first to look at the education, and to analyse the occupation of councilors as potential sources of influence on public finances.

My findings of no effect of gender of councilors on budget allocation are in line with those of Rigon & Tanzi 2012 (who document only a small effect) and Bagues & Campa 2017. Similarly to these studies, my paper indicates that correlations reported in two other papers (Bratton & Ray 2002, Svaleryd 2009) should be treated with caution. I argue that my results do not contradict those reported in the papers on Indian councils (Iyer et al. 2012) because the political development there is at a different stage than in Europe and the US. Neither do I interpret my results as a contradiction to the effects documented in Baltrunaite et al (2016), since there the gender composition of councils has been affected to a much larger extent due to a gender quota on voting.

The likely absence of influence of educated councilors that I find is in line with the conclusions of Freier & Thomasius (2016), that education of mayors has no

effect on public finances, and is otherwise the first piece of evidence on whether councilors' education matters in local decision making. In the same way the lack of large influence of entrepreneurs on budget allocation and other budgetary indicators is new to the literature, and also sheds doubt on the correlations documented for the central governmental level (Dreher et al. 2009, Gohlmann & Vaubel 2007, Jochimsen & Thomasius 2014, Moessinger 2014).

The remainder of the paper is organized as follows. I first explain the institutional background behind the Czech local elections (Section 2.2), then describe how I am using the specifics of the Czech local elections for my estimation strategy (Section 2.3) and describe both the elections and spending data (Section 2.4). I further present the results of the RDD assumptions check (Section 2.5) and the main results of the paper (Section 2.6).

2.2 Institutional background

In the Czech Republic public governance is conducted on three main levels: state, regional and local. The local council has two defined responsibilities: they have to create conditions for pupils to comply with compulsory school attendance and also take part in communal waste disposal (from the manual for council members after the 2014 elections). In practice, municipal councils have more responsibilities, including post offices, roads, utilities, etc. Even though, de jure, councils have more freedom on how to spend the budget than they have responsibilities, in fact there are often many issues that need attention. As a result, the portion of the budget that can be spent freely is rather small. If a municipality does not have sufficient resources to cover the expenses, it can choose to run a deficit.

A limitation of the Czech municipal management that could affect my research design is that the marginally elected candidates could have little influence on the budget allocation. The elected councilors often do not participate in the municipality management to the same extent. The mayor and the deputy are often working full time, whereas other councilors participate in meetings several times per month. In

the larger municipalities groups are formed out of councilors to address the most important issues, while in the smaller ones this is not likely to happen. Thus, the input of a significant group of council members could be limited to making an input into discussion and voting. Even so, those councilors could make a sizable impact on the decisions taken by the council. Especially in small municipalities, even the marginally elected councilors are likely to have a chance to express their opinions and influence decision making.

Municipal elections are held once every four years in all municipalities during the same weekend in late October-mid November. Political parties, coalitions and independent candidates[2] submit their slates[3] to the election committee. From the ballot each voter can choose as many candidates as there are mandates to be distributed. The chosen candidates can be from the same slate, or different slates. The distribution of mandates depends not only on the number of votes each candidate received, but also on the initial positioning of the candidates on slates. The mandates are allocated using D'Hondt's method[4]. Most importantly, from the elections data one can identify which candidates were elected and with what margin, as well as how far the unelected candidates were from being elected.

2.3 Empirical strategy

Since candidates are not elected randomly, one cannot compare the municipalities where more or fewer candidates with a certain characteristic were elected to the council. To avoid the endogeneity in who is elected to the council, from the whole set of Czech municipalities I choose only those where the marginally elected and unelected candidates belong to different categories in a given characteristic. For example, to test the consequences of electing an additional female candidate, I com-

[2]Independent candidates are those who do not belong any political party - nation-wide or any other smaller party.

[3] A slate is a list of candidates.

[4]The detailed description of D'Hondt's method is available from the author upon request or in the Appendix A of the following publication: Kuliomina, J. (2016). "Does election of an additional female councilor increase women's candidacy in the future?", *CERGE-EI Working Paper Series,* No. 559.

pare the municipalities that elected a female candidate marginally and where a male candidate was competing for the last seat, to those municipalities where the situation was the opposite, i.e. a male candidate was elected marginally and a female candidate was the closest competitor for the last seat.

To account for a large victory margin that also lead to the endogenous election of the candidates, I employ both a dynamic regression discontinuity design (DRDD) described by Cellini et al. 2010 and a local linear regression on an optimal bandwidth of the running variable (Calonico, Cattaneo & Titiniuk 2014). The classic RDD is a well respected technique in the literature and is widely used when analysing elections data (Lee 2008, Cunat, Gine & Guadalupe 2012, Bhalotra, Clots-Figueras & Iyer 2018, Brollo & Troiano 2013, Broockman 2014, Eggers 2011, Ferreira & Gyourko 2014 among others). The DRDD adds the possibility of dynamic treatment to the conventional RDD and allows for multiple observations before and after the event in question instead of one observation before and one after.

The two identifying assumptions of the RDD are absence of manipulation into treatment and no discontinuity in the observed co-variates. I test both assumptions and present the results in Section 2.5.

I estimate the model corresponding to regression 2.1. The variables of interest are the interactions of the treatment indicators (candidate with a particular characteristic is elected) with a time after elections that can vary from 1 to 4. I control for a third order polynomial in the victory margin in regressions corresponding to DRDD, and for linear victory margin in regressions for the optimal bandwidth. I also use a fourth order polynomial for robustness in two cases. Further controls include year, time and municipality, combined with elections fixed effects. Standard errors are clustered at the municipality level.

$$\begin{aligned} Outcome_{itr} = a_T f(Treated_{ti}) + (3_T g\,(Victory\ Mar\ gin_u) + \\ \gamma Y \quad eart + \$Time_T + dMunicipality * Elections_i + ej_{iT} \end{aligned} \tag{2.1}$$

where $Outcomei_{tT}$ is a natural logarithm of municipality-year-time after elections specific outcome per inhabitant, $f(Treatedi_t)$ - interactions of the treatment indicator with the time after elections indicator (1-4), g *{Victory Mar ginu)* - third order polynomial of the victory margin that is allowed to vary to the right and to the left sides of the cut-off, interacted with the time after treatment indicators (1-4), $Year_t$ - year fixed effects, $Time_r$ - time fixed effects, *Municipality * ElectionSi* - municipality-elections fixed effects.

2.4 Data description

2.4.1 Elections data

The local elections data is available from the Czech Statistical Office website (Website A) for 2002-2010[5]. The data is rich and has enabled a number of studies to be conducted on it (Jurajda & Munich 2016, Palguta 2015, Palguta & Pertold 2017). It includes the following candidate-level information: name, age, gender (in several cases), education, party affiliation, initial position on slate, votes that the candidate received, occupation and other. Where missing, gender was deduced from the name, surname and occupation[5] [6].

Occupation is not a categorical variable in the original data and is not easily classifiable. In addition, it is missing for many candidates. I use this information to identify the self-reported entrepreneurs and create the respective indicator variable. Because the indicator had to be created manually from self-reported data, it is not likely to be entirely robust. It is possible that the self-employment status is under reported in the data; for example, if a candidate reported his/her profession and did not indicate that he/she is self employed. There could also be entrepreneurs among those candidates who did not report their occupation at all. In contrast, it is not likely that the self-employment status is over reported, since it is unlikely that

[5]The data for the elections in 2014 is also available, but not suitable for the current paper since the budget data for the same period is not available.

[6]Surnames and names of most professions are gender-specific in the Czech language

Table 2.1: Summary statistics - elections data

Variable	Mean	SD
Number of councilors	9.761	4.753
Number of candidates	32.047	47.234
Number of slates	4.379	3.645
Share of women	0.277	0.136
Share of elected women	0.250	0.159
Share of educated candidates	0.138	0.126
Share of elected educated candidates	0.209	0.205
Share of entrepreneurs	0.134	0.114
Share of elected entrepreneurs	0.138	0.138
Share of independent candidates	0.890	0.142
Share of elected independent candidates	0.884	0.177
Share of major party representatives	0.101	0.133
Share of elected major party representatives	0.107	0.165

candidates misreported being self-employed when in fact they were not.

The influence the under reporting of self-employment status could have on the results is as follows. It is possible that some of the candidates who I am treating as the control candidates, i.e. those the entrepreneurs were competing against for the last seats in the council, are also entrepreneurs. In other words, the control group could be contaminated. If the contamination is severe, this could lead to a downward bias in the coefficient estimate and potentially to a failure to identify the causal effect of electing additional entrepreneurs to local councils.

Education can be deduced from the titles that candidates self report too. Since the titles are very varied, I summarize education of candidates into an indicator variable that takes value 1 if a candidate has higher education and 0 otherwise.

Council size ranges from 5 to 70 depending on the population of the municipality. More than 60% of councils have fewer than 10 council members. 41% and 23% of municipalities elect 7 and 9 councilors respectively. Among bigger municipalities the largest group includes those municipalities with 15 councilors - 15% of all municipalities. On average, there are 25-27% of women among candidates and council members (Table 2.1), 13% of educated candidates and 20% of educated councilors, and 13% of entrepreneurs. 90% of candidates are independent, i.e. do not identify with any political party or coalition, and 10% belong to one of the major parties in the country.

2.4.2 Municipal budget data

The Czech municipal budget data were obtained online from a non-profit organization called Rozpočet Verejne (Website B). The budget allocation data on the municipality level is available for 2000-2012 and is very rich. Not only the aggregate categories of spending are available, but also a very detailed division of the sources and spending designation.

The main revenue categories are tax, non-tax, capital revenues and subsidies. The budget spending categories are classified both in terms of type and the purpose of spending. Spending is first divided into capital and current, then further into agriculture, industry and economy, services to inhabitants, social policy, security and public administration. Deficit is reported too.

Table 2.2: Summary statistics - municipal budget data

Variable	**Mean**	**SD**	**Min**	**Max**
Spending per inhabitant	18,575	36,005	342	5,801,352
Revenue per inhabitant	18,777	56,518	1,944	1,399,2086
Deficit per inhabitant	-258	30,960	-8,190,735	2,168,191
Have deficit,	0.410	0.492	0.000	1.000
Have capital spending	0.916	0.277	0.000	1.000
Have capital revenue	0.777	0.416	0.000	1.000
Shares of budget				
Tax revenue	0.565	0.221	0.000	0.996
Non-tax revenue	0.130	0.104	0.000	0.936
Capital revenue	0.049	0.093	0.000	0.975
Subsidy	0.255	0.229	0.000	0.990
Current spending	0.764	0.217	0.017	1.000
Capital spending	0.236	0.217	0.000	0.983
Current spending - shares of total spending				
Agriculture and forestry-	0.020	0.048	0.000	0.823
industry and economy	0.091	0.114	0.000	0.985
Services to inhabitants	0.280	0.150	0.000	0.986
Social affairs and employment policy	0.009	0.029	0.000	0.781
Security-	0.013	0.028	0.000	0.868
Public administration	0.351	0.180	0.005	0.993

On average, municipalities receive and spend 20,000 Czech crowns per inhabitant per year, and approximately 40% of municipalities show a yearly deficit (Table 2.2). 90% of municipalities have capital spending, and only 78% have capital revenue,

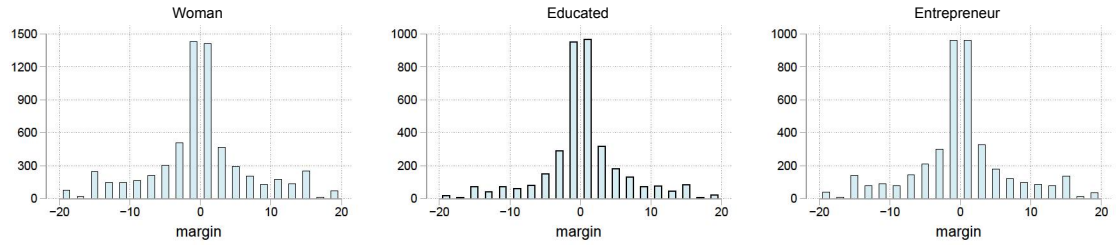
that on average makes 5% of budget revenues. 50% of the budget is supplied by taxes, 25% by subsidies, and 13% are non-tax revenues. Three quarters of an average budget are spent on current needs, and the remaining 25% are capital spending. Two main current spending categories are services to inhabitants and public administration. Services to inhabitants include education, culture, health care, utilities and other services. Public administration includes administration costs, financial operations, transfers to other budgets and transfers to own funds.

2.5 RDD assumptions check

There are two main RDD assumption checks that need to be performed.

First, it is necessary to verify that there is no manipulation of being treated or not by the subjects. In my case, I need to show that there is no manipulation of votes that would make the occurrence of having elected a particular candidate or not more likely around the election threshold. From the density of cases around the cut-off graphs (Figure 2.1) one can see that the distribution of municipalities around the cut-off follows a normal distribution with no clear concentration of observations around the 0 vote margin.

Figure 2.1: Density of cases



Next, I check whether the treated and control municipalities were not different from each other in the observable characteristics before the treatment. The variable of interest is the treatment indicator. I also control for a polynomial in the victory margin in the regressions corresponding to the DRDD and year fixed effects. I do not include municipality fixed effects in the regression because the purpose is to identify

whether the municipalities that become treated and those that do not consistently differ from each other. However, I do cluster standard errors at municipality level since I have several years of spending for each municipality in each electoral cycle. I estimate the following model:

$$Outcomei = a\, f\,(Treated\text{^} + /3\, g\,(Victory\ Mar\ girii)\text{-}\backslash\text{-} \quad 7\%\ ear_t + e; \tag{2-2}$$

where *Outcomei* is a municipality specific outcome before the election, */(Treated^* - treatment indicator, *g(VictoryMargirii)* - third or fourth order polynomial of the victory margin that is allowed to vary to the right and to the left sides of the cut-off, $Year_t$ - year fixed effects.

Comparing treated and control municipalities both globally (Panel A in Table 2.3) and locally (Panel A in Table 2.4) I find that the municipalities that marginally elected female candidates, as opposed to those that did not, received 20% higher subsidies per inhabitant. Other budget indicators, such as total and current spending, as well as probability of deficit, seem to be higher for the municipalities that marginally elected women. However, due to non-robust statistical significance in the difference, it can be treated as suggestive. In the same way, I observe suggestively lower capital spending and probability of reaching an annual deficit, as well as higher debt per inhabitant in the municipalities that marginally elected educated candidates. As for the municipalities that marginally elected entrepreneurs and were at the margin of electing entrepreneurs, they are balanced in all but one budgetary indicator: there is suggestive evidence that in the municipalities where an entrepreneur was marginally elected, current spending on fire fighting was higher.

I also test for the balance among candidates, among elected candidates (excluding the marginally elected candidate) and whether the marginal candidates are not different from one another in other characteristics - globally (Panel B in Table 2.3) and locally (Panel B in Table 2.4). I test the shares of other elected candidates because I want to see whether the council is balanced if I exclude the marginally

elected candidates. The municipalities with a female or educated candidate at the margin are overall balanced in electoral indicators, although the marginally elected women were more likely to be entrepreneurs, which seems to be characteristic for the Czech local candidates. Also, marginally elected educated candidates were more likely to be women and less likely to be entrepreneurs, and were on average 1.5 years younger. Marginally elected entrepreneurs were less likely to be women. In addition there is an indication that the municipalities that elected an entrepreneur marginally also elected fewer women to the council.

Although there is no reason to believe that the election outcomes were manipulated, treated and control municipalities seem to be not perfectly balanced after the marginal election of certain candidates. In the main outcome specification I employ municipality fixed effects that are going to address this issue. Since the marginally elected candidates can be different in other characteristics than the characteristic in question, I include the indicators for other characteristics as controls into main specification as well. It is useful to note that the results were not affected after the inclusion of these controls.

Table 2.3: Co-variate balance

Marginally elected candidate	Woman		Educated		Entrepreneur	
Polynomial	3rd order	4th order	3rd order	4th order	3rd order	4th order
			Panel A: Bitidget indicators			
	N=21 ,591		*N= 12,576*		7V= *13,504*	
Total revenue	0.048	0.039	-0.046	-0.034	-0.009	-0.001
	(0.029)	(0.035)	(0.04)	(0.048)	(0.037)	(0.045)
Tax revenue	0.004	-0.005	-0.011	-0.017	-0.004	-0.002
	(0.012)	(0.014)	(0.014)	(0.016)	(0.012)	(0.016)
Non-tax revenue	0.025	0.014	0.023	0.002	0.004	0.019
	(0.042)	(0.05)	(0.049)	(0.057)	(0.052)	(0.062)
Capital revenue	-0.003	-0.090	0.03	0.05	-0.140	-0.077
	(0.115)	(0.133)	(0.13)	(0-14)	(0.133)	(0.158)
Subsidy received	0.2***	0.2**	-0.029	-0.017	-0.005	0.033
	(0.075)	(0.089)	(0.093)	(0.11)	(0.093)	(0.11)
Total spending	0.065**	0.048	-0.048	-0.043	-0.012	0.001
	(0.031)	(0.037)	(0.042)	(0.05)	(0.039)	(0.047)
Current spending	0.058*	0.055	-0.015	-0.0045	-0.037	-0.025
	(0.032)	(0.039)	(0.045)	(0.055)	(0.041)	(0.05)
Current spending on fire fighting					0.099	0.078
					(0.095)	(0.11)
Capital spending	0.099	-0.072	-0.11	-0.16	-0.015	0.12
	(0.094)	(0.11)	(0.086)	(0.1)	(U-ll)	(0.13)
Have annual deficit	0.026*	0.018	-0.019	-0.025	0.010	0.022
	(0.013)	(0.016)	(0.016)	(0.019)	(0.016)	(0.019)
Total deficit	132	82	-14	-240	326	376
	(UH)	(135)	(144)	(180)	(263)	(340)
Have debt	0.021	0.024	0.026	0.018	0.004	0.004
	(0.022)	(0.027)	(0.026)	(0.031)	(0.028)	(0.033)
Total debt	-0.007	-0.011	0.05	0.058	-0.065	-0.054
	(0.040)	(0.047)	(0.049)	(0.058)	(0.049)	(0.058)
			Panel B: Elections indicators			
	N=6, 564		*N=3,851*		*N=4,169*	
Number of candidates	3.2	3.1	4.3	5.2	-1.5	-.41
	(3)	(3.7)	(4.7)	(5.0)	(4.2)	(5)
Share of women	0.003	0.002	0.006	0.003	-0.001	-0.003
	(0.005)	(0.006)	(0.006)	(0.007)	(0.007)	(0.008)
Share of elected women	-0.003	-0.006	0.008	0.001	0.001	0.003
	(0.008)	(0.009)	(0.008)	(0.009)	(0.009)	(0.011)
Share of educated candidates	0.011*	0.001	-0.008	-0.011	0.006	0.007
	(0.006)	(0.007)	(0.006)	(0.007)	(0.007)	(0.008)
Share of elected educated candidates	0.021*	0.010	-0.006	-0.015	0.011	0.012
	(0.011)	(0.013)	(0.013)	(0.016)	(0.013)	(0.016)
Share of entrepreneurs	-0.000	0.002	-0.001	-0.007	-0.008	-0.010
	(0.005)	(0.005)	(0.005)	(0.006)	(0.006)	(0.007)
Share of elected entrepreneurs	-0.001	0.001	-0.004	-0.013	-0.004	-0.001
	(0.007)	(0.008)	(0.007)	(0.008)	(0.009)	(0.010)
Age of marginal candidate	-0.532	-0.211	-1.525**	-1.011	-0.868	-0.935
	(0.553)	(0.640)	(0.648)	(0.761)	(0.642)	(0.752)
Marginally elected is woman			0.029	0.054*	-0.142***	-0.141***
			(0.026)	(0.031)	(0.024)	(0.028)
Marginally elected is educated	0.029	0.014			-0.043*	-0.039
	(0.020)	(0.024)			(0.023)	(0.028)
Marginally elected is entrepreneur	-0.092***	-0.094***	-0.054**	-0.054**		
	(0.016)	(0.018)	(0.021)	(0.024)		

Note: All budget indicators are natural logarithms per inhabitant and adjusted for inflation, except for total deficit which is not expressed in logarithmic terms. Shares of elected candidates exclude the marginally elected candidates.

Table 2.4: Co-variate balance: optimal bandwidth

Marginally elected candidate	Woman		Educated		Entrepreneur	
			Panel A: Budget indicators			
	N		N		N	
Total revenue	7,429	0.033	4,504	0.009	6,849	0.049
		(0.047)		(0.066)		(0.046)
Tax revenue	9,411	-0.013	5,544	0.017	7,391	-0.011
		(0.017)		(0.02)		(0.014)
Non-tax revenue	9,392	0.072	5,214	-0.000	6,453	0.1
		(0.053)		(0.07)		(0.067)
Capital revenue	8,815	-0.178	5,844	-0.11	6,263	0.066
		(0.156)		(0-17)		(0.170)
Subsidy received	8,760	0.2*	4,802	-0.02	7,055	0.093
		(0.11)		(0.15)		(U-ll)
Total spending	7,541	0.042	4,618	-0.016	6,771	0.04
		(0.049)		(0.068)		(0.049)
Current spending	6,513	0.021	4,298	0.083	6,001	0.03
		(0.056)		(0.08)		(0.058)
Current spending on fire fighting					6,669	0.22**
						(0.11)
Capital spending	10,592	0.034	6,684	-0.2**	7,449	0.18
		(0.11)		(0-1)		(0.13)
Have annual deficit	12,072	0.018	7,118	-0.036*	8,488	0.010
		(0.015)		(0.019)		(0.017)
Total deficit	11,512	124	6,694	-212	8,586	341
		(133)		(164)		(242)
Have debt	8,600	0.045	5,432	0.015	6,277	0.005
		(0.031)		(0.037)		(0.036)
Total debt	9,540	0.072	5,640	0.13*	7,075	-0.030
		(0.052)		(0.069)		(0.057)
			Panel B: Elections indicators			
	N		N		N	
Number of candidates	2,797	1.7	1,947	5.1	2,189	-.34
		(4.5)		(6.7)		(5)
Share of women	3,602	-0.000	2,298	0.006	2,588	-0.005
		(0.006)		(0.006)		(0.007)
Share of elected women	3,417	-0.007	2,437	0.004	2,271	- 0.119***
		(0.008)		(0.009)		(0.011)
Share of educated candidates	2,778	-0.013	1,999	-0.011	2,330	0.013*
		(0.009)		(0.008)		(0.008)
Share of elected educated candidates	2,805	0.001	1,901	-0.022	2,324	0.023
		(0.015)		(0.018)		(0.014)
Share of entrepreneurs	3,650	-0.001	2,304	-0.004	2,345	-0.009
		(0.005)		(0.005)		(0.006)
Share of elected entrepreneurs	3,850	-0.001	2,511	0.001	2,474	-0.003
		(0.006)		(0.007)		(0.008)
Age of marginal candidate	3,871	-0.420	2,562	-1.590**	2,585	-0.797
		(0.564)		(0.666)		(0.653)
Marginally elected is woman			2,278	0.065**	2,320	- 0.128***
				(0.007)		(0.026)
Marginally elected is educated	3,307	0.017			2,355	-0.029
		(0.024)				(0.026)
Marginally elected is entrepreneur	4,085	-0.084***	2,700	-0.057**		
		(0.016)		(0.021)		

Note: All budget indicators are natural logarithms per inhabitant and adjusted for inflation, except for total deficit which is not expressed in logarithmic terms. Shares of elected candidates exclude the marginally elected candidates.

2.6 Results

2.6.1 Correlations between elected councilors and budgetary indicators

Before proceeding to the analysis of the causal effect of personal characteristics of councilors on a municipal budget, I establish correlations between these characteristics and budget indicators in a naive estimation. I regress revenues, spending, debt and deficit per inhabitant on shares of elected women, educated councilors and entrepreneurs in the council. I control for municipality and year fixed-effects and use robust standard errors.

Having a higher share of women among council members is positively correlated with total revenues, current spending and two current spending categories in particular - services to inhabitants and public administration (Table 2.5). A higher share of entrepreneurs in a council is also associated with higher revenues due to subsidies received, which are also directed to current spending. The only current spending category that is clearly higher due to higher revenues is industry and economy. As for higher-educated candidates, a higher share of these politicians among councilors is correlated with lower tax and non-tax revenues, lower debt and lower current spending on agriculture/forestry, industry/economy and services to inhabitants.

Table 2.5: Personal characteristics of councilors and budget indicators: OLS

Municipality level regressions (N=74,734): share of elected				
	Mean	Female candidates	Educated candidates	Entrepreneurs
Total revenue	13,817	1,290*	-1,757	2,090*
		(775)	(1,592)	(1,263)
Tax revenue	6,956	279	-1,540*	520
		(229)	(928)	(424)
Non-tax revenue	1,914	4.4	-236*	-114
		(108)	(138)	(116)
Capital revenue	942	140	-613	121
		(133)	(401)	(239)
Subsidy received	6,407	852	278	1,950*
		(714)	(872)	(1,163)
Total spending	15,997	1,097	-1,569	2,030
		(919)	(1,619)	(1,393)
Current spending	11,352	1,234*	-829	1,984*
		(736)	(1,027)	(1,117)
Capital spending	4,645	-137	-740	46
		(456)	(762)	(614)
Have annual deficit	0.400	0.014	0.010	0.007
		(0.020)	(0.022)	(0.021)
Total deficit	-267	-187	536	-468
		(273)	(516)	(339)
Have debt	0.497	0.012	-0.002	0.007
		(0.021)	(0.024)	(0.021)
Total debt	1,986	15	-446*	140
		(220)	(246)	(266)
Agriculture and forestry	262	-35	-54*	15
		(28)	(28)	(28)
Industry and economy	1,213	-197	-245*	435*
		(156)	(130)	(260)
Services to inhabitants	3,543	239**	-442***	119
		(94)	(US)	(112)
Social affairs and employment policy	231	-23	2.5	-12
		(24)	(33)	(27)
Security	189	67	25	7.3
		(58)	(41)	(80)
Public administration	5,915	1,183*	-116	1,419
		(681)	(947)	(1,058)

2.6.2 Effect of personal characteristics of candidates on budget indicators

As the final step of my analysis, Tables 2.6 and 2.7 present the estimated effects of electing additional women, higher-educated candidates and entrepreneurs on the budgetary indicators during their tenure. Although I observe a correlation between shares of elected candidates with certain characteristics and budget indicators, I do not find any convincing evidence that any of the personal characteristics of the councilors in question have an extensive effect on budget spending, revenue, deficit or debt in the Czech municipalities. Female councilors seem to increase local debt by approximately 7%. The estimates lose statistical significance once a higher victory margin polynomial is controlled for, as well as within the optimal bandwidth. Local linear estimation on optimal bandwidth indicates that educated candidates increase capital revenues by 40%. However, since the point estimates are different and not statistically significant in the global estimation, I take this result with caution. Finally, entrepreneurs seem to reduce current spending on fire fighters by 18%, which is a small and not compulsory category in the local budget. As for main spending categories, due to low point estimates and standard errors, I can reject a larger than 15% influence of electing additional women on total and current spending, and on the likelihood of reaching an annual deficit. I can also reject a larger than 13% influence of additional educated councilors on total and current spending, likelihood of reaching an annual deficit and of having debt. Finally, I can reject a larger than 11% influence of electing entrepreneurs on total and current spending, likelihood of reaching an annual deficit, and likelihood and amount of debt.

Even though surveys indicate that, for example, women support different public spending than men (Alozie & McNamara 2010, Funk & Gathmann 2015), my findings of no effect on budget allocation are in line with the median voter theorem. Personal characteristics of candidates should not matter, and do not seem to matter for their policies in the Czech municipalities, since the candidates have the incentive to represent the needs of as many voters as possible.

My findings of no effect of electing more women to the council join the already

existing evidence from similar studies that employ gender quotas as the source of random variation in the share of elected women (Rigon & Tanzi 2012, Bagues & Campa 2017). The quota-induced increase in the number of competitively elected women might have had no influence on spending potentially because this type of increase of female representation is not entirely natural. Even though the electorate elected a higher number of women, the candidate pool was imposed on them. Although Baltrunaite et al (2016) show that electing more women as a result of a quota on voting can change spending composition. In my case, the additional women are elected competitively from a natural pool of candidates. The competitive election of additional women to a council from a normal pool of candidates makes my analysis an important addition to the existing literature.

With the first piece of evidence of likely no influence of electing more educated councilors on the budgetary indicators in municipalities I contribute to the scarce literature on the education of leaders. The documented evidence to date has concentrated exclusively on the education level of mayors (Gagliarducci & Nannicini 2013, Freier & Thomasius 2016) and politicians at higher governmental levels (Besley et al. 2011, Dreher et al. 2009, Gohlmann & Vaubel 2007, Jochimsen & Thomasius 2014, Moessinger 2014). To the best of my knowledge, I provide the first evidence on the effect of education levels of councilors on local politics.

Unlike the education of local politicians, their occupational background has not been studied in the literature to date. Greater experience of leaders seems to have a positive influence on such outcomes as inflation (Gohlmann & Vaubel 2007), budget deficit (Jochimsen & Thomasius 2014) and debt-to-GDP ratio (Moessinger 2014). However, having experience in the area does not always result in financial changes, as shown by the case of European higher education ministers whose greater experience in the area does not an have effect on spending (Jacqmin & Lefebvre 2016). The only evidence on the entrepreneurial experience of leaders comes from the analysis of cross-country heads of governments by Dreher et al. (2009). The authors find that with former entrepreneurs as heads of government reforms become more likely. I add to this literature by analysing for the first time the entrepreneurial experience

of municipal councilors and whether it has an effect on a local budget.

The setting of Czech local elections is such that it only allows me to study the effect of the marginally elected candidates. In the municipalities with 20 and more councilors, it is possible that a single councilor has too small of an input in the municipality management for it to be noticeable in the budgetary indicators. However, when I estimate the model with only small municipalities (fewer than 10 or 8 councilors), I do not observe any large influence of personal characteristics on budget either.[7] Therefore, it is unlikely that the absence of the personal characteristics' influence on local budget is due to the small input of a single candidate.

Table 2.6: Budget indicators in all municipalities

	Years after elections				
	1-4 pooled	1	2	3	4
Effect of additional female candidate in council: N=42,703					
Total revenue	0.017	0.015	0.014	0.035	0.010
	(0.019)	(0.021)	(0.022)	(0.028)	(0.029)
Tax revenue	0.005	0.004	0.008	0.005	0.004
	(0.007)	(0.007)	(0.007)	(0.010)	(0.010)
Non-tax revenue	0.025	0.034	0.033	0.019	0.000
	(0.025)	(0.027)	(0.029)	(0.038)	(0.041)
Capital revenue	0.073	0.081	0.153	-0.007	-0.005
	(0.108)	(0.130)	(0.134)	(0.164)	(0.173)
Subsidy received	-0.018	-0.031	-0.032	0.080	-0.069
	(0.057)	(0.065)	(0.065)	(0.089)	(0.087)
Total spending	0.002	0.011	-0.010	0.025	-0.016
	(0.023)	(0.025)	(0.027)	(0.033)	(0.035)
Current spending	-0.003	-0.004	0.006	-0.005	-0.012
	(0.018)	(0.019)	(0.020)	(0.025)	(0.027)
Capital spending	-0.049	0.016	-0.158	0.011	-0.026
	(0.101)	(0.114)	(0.125)	(0.146)	(0.158)
Have annual deficit	-0.026	0.003	-0.037	-0.021	-0.061*
	(0.021)	(0.028)	(0.028)	(0.035)	(0.035)
Total deficit	-127	-41	-285	182	-302
	(199)	(253)	(249)	(373)	(416)
Have debt	0.012	0.002	0.011	0.005	0.038
	(0.019)	(0.019)	(0.021)	(0.027)	(0.029)
Total debt	0.072**	0.055*	0.077**	0.057	0.106**
	(0.032)	(0.030)	(0.035)	(0.045)	(0.052)
Total debt	0.050	0.036	0.073*	0.043	0.038
(4^{tft} order polyn.)	(0.037)	(0.035)	(0.041)	(0.053)	(0.061)

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[7]The output is available upon request.

Table 2.6 — continued from the previous page

	Years after elections				
	1-4 pooled	1	2	3	4
Effect of additional higher-educated candidate in council: N=24,269					
Total revenue	0.010	-0.010	-0.001	0.018	0.067*
	(0.023)	(0.024)	(0.026)	(0.033)	(0.036)
Tax revenue	0.008	0.007	0.002	0.017	0.016
	(0.007)	(0.007)	(0.008)	(0.011)	(0.011)
Non-tax revenue	0.020	-0.012	0.021	0.045	0.063
	(0.029)	(0.029)	(0.033)	(0.044)	(0.047)
Capital revenue	0.002	-0.099	0.020	0.002	0.175
	(0.120)	(0.144)	(0.148)	(0.187)	(0.193)
Subsidy received	-0.019	-0.068	-0.027	-0.000	0.079
	(0.064)	(0.072)	(0.074)	(0.099)	(0.098)
Total spending	0.008	0.002	-0.005	0.022	0.032
	(0.026)	(0.029)	(0.031)	(0.039)	(0.042)
Current spending	-0.025	-0.029	-0.032	-0.012	-0.015
	(0.021)	(0.022)	(0.024)	(0.029)	(0.032)
Capital spending	0.024	-0.010	0.025	0.031	0.088
	(0.096)	(0.115)	(0.115)	(0.141)	(0.149)
Have annual deficit	0.003	0.028	0.001	-0.026	-0.014
	(0.027)	(0.035)	(0.036)	(0.046)	(0.045)
Total deficit	-183	11	35	-529	-695
	(300)	(348)	(323)	(472)	(591)
Have debt	-0.024	-0.028	-0.035	-0.034	0.020
	(0.024)	(0.024)	(0.026)	(0.032)	(0.036)
Total debt	-0.066*	-0.087**	-0.102**	-0.019	0.006
	(0.040)	(0.039)	(0.043)	(0.057)	(0.064)
Effect of additional entrepreneur in council: N=27,128					
Total revenue	-0.023	0.000	-0.038	-0.048	-0.015
	(0.023)	(0.025)	(0.026)	(0.032)	(0.037)
Tax revenue	-0.009	-0.004	-0.009	-0.014	-0.010
	(0.007)	(0.008)	(0.008)	(0.011)	(0.012)
Non-tax revenue	0.021	-0.020	0.044	0.039	0.037
	(0.031)	(0.034)	(0.035)	(0.046)	(0.048)
Capital revenue	0.065	-0.037	-0.017	-0.056	0.518***
	(0.125)	(0.153)	(0.159)	(0.194)	(0.194)
Subsidy received	-0.040	0.068	-0.115	-0.147	0.007
	(0.069)	(0.079)	(0.078)	(0.107)	(0.105)
Total spending	-0.018	0.003	-0.030	-0.054	0.001
	(0.027)	(0.029)	(0.032)	(0.041)	(0.042)
Current spending	-0.003	-0.002	-0.006	-0.016	0.014
	(0.022)	(0.023)	(0.025)	(0.031)	(0.033)
Current spending on fire fighting	-0.174***	-0.165**	-0.168**	-0.252***	-0.125
	(0.059)	(0.065)	(0.072)	(0.085)	(0.092)
Capital spending	-0.026	-0.043	-0.015	-0.149	0.110

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Table 2.6 — continued from the previous page

	Years after elections				
	1-4 pooled	1	2	3	4
	(0.108)	(0.131)	(0.136)	(0.163)	(0.179)
Have annual deficit	0.031	0.043	0.028	-0.036	0.081*
	(0.026)	(0.035)	(0.035)	(0.043)	(0.043)
Total deficit,	-405	-353	-250	-871	-313
	(388)	(430)	(399)	(620)	(579)
Have debt,	-0.014	-0.010	-0.018	-0.032	0.001
	(0.023)	(0.023)	(0.026)	(0.032)	(0.034)
Total debt,	0.007	0.002	-0.006	-0.000	0.045
	(0.040)	(0.038)	(0.043)	(0.056)	(0.064)

Note: All budget, indicators are natural logarithms per inhabitant and adjusted for inflation, except for total deficit, which is not, expressed in logarithmic terms.

Table 2.7: Budget indicators in all municipalities - optimal bandwidth

	Observations	Years after elections				
		1-4 pooled	12		3	4
	Effect, of additional female candidate in council					
Total revenue	11,851	-0.062*	-0.046	-0.042	-0.064	-0.124**
		(0.035)	(0.039)	(0.041)	(0.049)	(0.051)
Tax revenue	16,273	-0.004	-0.004	-0.009	-0.002	0.003
		(0.010)	(0.010)	(0.011)	(0.015)	(0.015)
Non-tax revenue	15,661	-0.040	0.012	-0.065	-0.036	-0.091
		(0.037)	(0.037)	(0.043)	(0.053)	(0.057)
Capital revenue	16,357	0.141	-0.030	0.494**	-0.012	-0.029
		(0.165)	(0.190)	(0.198)	(0.242)	(0.259)
Subsidy received	13,327	-0.181**	-0.105	-0.113	-0.148	-0.468**†
		(0.090)	(0.105)	(0.105)	(0.145)	(0.136)
Total spending	12,493	-0.066*	-0.047	-0.020	-0.096*	-0.149**†
		(0.039)	(0.045)	(0.049)	(0.054)	(0.057)
Current, spending	10,169	-0.033	-0.046	0.026	-0.090*	-0.059
		(0.036)	(0.043)	(0.040)	(0.048)	(0.049)
Capital spending	19,449	-0.016	-0.061	0.045	0.088	-0.150
		(0.130)	(0.146)	(0.161)	(0.188)	(0.203)
Have annual deficit,	24,422	-0.053**	-0.008	-0.059*	-0.059	-0.116**†
		(0.023)	(0.030)	(0.030)	(0.037)	(0.037)
Total deficit,	22,314	-66	200	-7.4	-311	-398
		(228)	(272)	(284)	(393)	(433)
Have debt,	13,727	-0.018	-0.016	-0.005	-0.038	-0.026
		(0.032)	(0.032)	(0.036)	(0.044)	(0.047)
Total debt,	14,241	-0.011	0.011	0.018	-0.042	-0.072

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Table 2.7 — continued from the previous page

	Observations	Years after elections			
		1-4 pooled	1	2	3	4
		(0.051)	(0.048)	(0.057)	(0.071)	(0.083)
E effect of additional higher-educated c andidate in council						
Total revenue	8,037	0.033	0.023	0.016	0.044	0.085
		(0.037)	(0.039)	(0.042)	(0.051)	(0.062)
Tax revenue	9,198	0.011	0.015	0.011	0.012	0.002
		(0.010)	(0.011)	(0.011)	(0.015)	(0.018)
Non-tax revenue	8,001	0.042	-0.005	-0.005	0.153**	0.135*
		(0.043)	(0.043)	(0.049)	(0.067)	(0.077)
Capital revenue	11,302	0.394**	0.374**	0.453**	0.464*	0.245
		(0.157)	(0.189)	(0.195)	(0.243)	(0.252)
Subsidy received	8,559	0.041	-0.028	0.019	0.068	0.208
		(0.103)	(0.112)	(0.118)	(0.151)	(0.152)
Total spending	7,961	0.048	0.043	0.036	0.065	0.071
		(0.043)	(0.045)	(0.051)	(0.060)	(0.069)
Current spending	6,038	-0.010	-0.038	-0.016	0.025	0.034
		(0.040)	(0.038)	(0.048)	(0.054)	(0.060)
Capital spending	11,560	0.239**	0.229	0.184	0.238	0.376**
		(0.122)	(0.143)	(0.148)	(0.178)	(0.181)
Have annual deficit	14,424	0.048	0.079**	0.045	0.001	0.036
		(0.031)	(0.040)	(0.042)	(0.052)	(0.051)
Total deficit,	14,288	406	634*	436	214	52
		(289)	(358)	(356)	(438)	(453)
Have debt	10,070	0.017	-0.006	0.010	0.000	0.100*
		(0.035)	(0.035)	(0.039)	(0.047)	(0.052)
Total debt	10,954	-0.076	-0.112**	-0.123**	-0.033	0.060
		(0.056)	(0.052)	(0.061)	(0.078)	(0.090)
Effect of additional entreprene,ur in council						
Total revenue	13,279	-0.032	-0.001	-0.038	-0.069*	-0.039
		(0.029)	(0.031)	(0.032)	(0.040)	(0.048)
Tax revenue	14,159	-0.016*	-0.010	-0.019**	-0.020*	-0.016
		(0.009)	(0.010)	(0.009)	(0.012)	(0.013)
Non-tax revenue	12,027	0.003	-0.050	0.025	0.020	0.041
		(0.040)	(0.044)	(0.045)	(0.058)	(0.063)
Capital revenue	12,349	0.049	0.078	-0.240	-0.026	0.601**
		(0.161)	(0.198)	(0.202)	(0.251)	(0.250)
Subsidy received	13,713	-0.016	0.091	-0.058	-0.143	-0.004
		(0.084)	(0.095)	(0.093)	(0.131)	(0.128)
Total spending	13,359	-0.026	-0.012	-0.025	-0.060	-0.018
		(0.034)	(0.036)	(0.039)	(0.051)	(0.054)
Current spending	10,761	-0.003	0.019	0.016	-0.054	-0.030
		(0.033)	(0.034)	(0.037)	(0.046)	(0.049)
Current spending on lire fig] hting	12,935	-0.180**	-0.172**	-0.138	-0.270***	-0.180*
		(0.072)	(0.080)	(0.089)	(0.101)	(0.109)

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Table 2.7 — continued from the previous page

	Observations	Years after elections				
		1-4 pooled	1	2	3	4
Capital spending	13,623	-0.142	-0.187	-0.013	-0.317	-0.121
		(0.136)	(0.156)	(0.166)	(0.200)	(0.225)
Have annual deficit,	16,523	0.042	0.035	0.050	-0.027	0.106**
		(0.028)	(0.037)	(0.038)	(0.045)	(0.045)
Total deficit,	16,417	-316	-584	47	-830	28
		(421)	(474)	(433)	(633)	(587)
Have debt,	9,755	-0.005	-0.012	-0.023	0.005	0.035
		(0.035)	(0.035)	(0.040)	(0.050)	(0.054)
Total debt,	13,005	0.003	-0.027	-0.032	0.015	0.109
		(0.050)	(0.047)	(0.054)	(0.070)	(0.081)

Note: All budget, indicators are natural logarithms per inhabitant and adjusted for inflation, except for total deficit, which is not, expressed in logarithmic terms.

2.7 Conclusions

Although the median voter theorem claims that the identity of elected officials should not matter for policy outcomes, the evidence in the literature is consistent with the citizen-candidate model and shows that such personal characteristics as education, gender and experience among others can influence the types of policies the politicians pursue. This study aims to contribute to the scarce literature on the local politicians' identity and the effect it may have on policies.

I analyse whether such characteristics as gender, education and occupation of the council members are correlated with budget allocation in the Czech municipalities. I use a dynamic regression discontinuity design and local linear estimation on optimal bandwidth to establish the causal effect of electing to council more candidates with a certain characteristic. I compare the budget indicators in municipalities that have marginally elected an additional council member with a certain characteristic to those where the candidate with the characteristic in question was not elected, also marginally. I thus study the influence of the candidates' identity on the budget after their competitive election.

I find a positive correlation between shares of female councilors and entrepreneurs and budget indicators and negative correlation between the share of higher-educated councilors and budget indicators. However, I do not observe any consistent, large and robust effect of any of the characteristics mentioned on the local budget revenue, spending and its composition, deficit or debt. I do find that entrepreneurs tend to reduce current spending on one small and not obligatory budget category - fire fighting. The low standard errors allow me to rule out the possibility of a large effect of women, educated councilors and entrepreneurs on total and current spending and the likelihood of reaching an annual deficit. Additionally, both entrepreneurs and educated candidates seem not to influence the likelihood of the municipality having debt, and I can also reject any large influence of entrepreneurs on the debt level.

It has been documented earlier that a quota induced increase in the number of women in councils does or does not result in any significant changes in the budget allocation (Baltrunaite et al 2016, Rigon & Tanzi 2012, Bagues & Campa 2017). With my analysis I add to this knowledge by showing that a competitive election of more women is not likely to influence budgetary indicators largely either.

Education of local officials has been studied to date with respect to mayors (Gagliarducci & Nannicini 2013, Freier & Thomasius 2016). The effect of entrepreneurs as council members on any economic outcomes has not been studied to date. My analysis is the first one to address education and entrepreneurship of additional regular council members and their influence on the local budget and debt.

My analysis shows that, as far as the financial situation is concerned, the Czech voters do not have reasons to hinder female voters in the municipal elections. Also, it does not seem that neither educated candidates, who the Czech voters favor, nor entrepreneurs bring any significant change to the budget.

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Chapter 3

Can a Natural Disaster Change Local Political Candidacy?

3.1 Introduction

Involvement of citizens is considered to be an important part of municipality governance (Hanssen 2010, Geys, Heinemann & Kalb 2010) and is promoted by international organizations among others. For example, the United Nations have established a 'Community Based Approach to Local Development Project' (Webpage F) which aims to introduce community members to local governance and involve them in creating an efficiently run and developing community. One channel through which citizens can contribute to local decision making where similar programs are not excercised is by running in local elections. Local parties can not only create a healthy political situation by opposing nation-wide parties and coalitions (Garritzmann 2017, Helms 2004), but they have also been shown to be more efficient in performing their political functions than nation-wide parties (Boogers & Voerman 2010). They can provide such public goods as electricity, sewage and education faster too (Diaz-Cayeros, Magaloni & Ruiz-Euler 2014). For those reasons, learn-

ing how a strong presence of local entities can be formed is an important step in advancing efficient municipality governance.

Understanding how candidates can be motivated to participate in local elections has been the focus of several recent papers. It has been shown that local leaders can be motivated to run for office with monetary (Gagliarducci, Nannicini & Naticchioni 2010, Gagliarducci & Nannicini 2013, Ferraz & Finan 2009), material, intrinsic (Dal Bo, Finan, Folke, Persson & Rickne 2017) and other (Berg(Lundqvist) 2011, Fox & Lawless 2005) incentives. In addition, the institutional setup needs to be right for the candidates to run (Voda, Svačinová, Šmolková & Balik 2017). Evidence also suggests that leaders can be driven to participate when they feel they can enact change (Foster-Fishman, Pierce & Van Egeren 2009) or they can be efficient (Fox & Lawless 2005). Efficacy and personal reasons to run for office can also change over time (Fox & Lawless 2011). With this paper, I add a different perspective to the literature. I show that expanding the decision making power of local councils can lead to a more independent participation of local politicians in municipal elections. The higher decision making power is reflected in temporary increase of responsibilities that require collaboration with the community, alongside a budget increase.

I frame my analysis around the flooding that happened in the Czech Republic in 2002. During the floods, 500 of over 6,000 municipalities in the Czech Republic were severely damaged. As a consequence, the local councils in the flooded municipalities had to work closely with their community members in order to reconstruct both communal infrastructure and help the residents with rebuilding their private properties. For that purpose the councils had received additional subsidies from higher levels of government. The flooding thus served as a trigger for the temporary increase in responsibilities and the budget of the councils in the damaged municipalities, as well as the need for collective action between residents and council members. Since the variation in responsibilities and social capital in the municipalities that were flooded and those that were not is exogenous, this setting is a rare opportunity to analyze how a different level of responsibility, and connection with the community, is reflected in the political participation of local candidates.

Combining coarsened exact matching and differences-in-differences techniques I compare the flooded municipalities to those not flooded, and estimate that in small municipalities one electoral cycle later, nation-wide parties were less likely to submit their slates[1] in local elections. While nation-wide parties were less likely to submit their slates in all small flooded municipalities, only in those municipalities that were damaged more severely were the independent candidates more likely to submit their own slates[2], the presence of which increased by 3%. I approximate the level of damage with the amount of subsidies received additionally from the central government. The independent candidates in the more damaged municipalities have migrated from the nation-wide to the independent slates. In the less damaged municipalities the independent candidates who were previously running on nation-wide slates have simply withdrawn from local politics after the exit of nation-wide parties. I thus observe an increase in the independence of local candidates from nation-wide parties in small municipalities that were more damaged. As for extensive margin of local candidacy, I only observe higher participation of new independent candidates in the elections that immediately followed the flooding. In large municipalities where the political scope of councils is wider, there was no change in political dynamics.

My results support two separate mechanisms behind local candidacy. First, I argue that the initial changes in political dynamics in the small highly damaged municipalities are consistent with the willingness of local politicians to help the community. The flooding happened several months before the local elections in 2002. In these elections immediately after the flooding I observe higher participation from new independent candidates. There likely was anticipation from the candidates of the additional subsidies that were about to be received from the higher levels of government to solve the flooding consequences. The higher participation of the new candidates is consistent with their willingness to directly influence the work done regarding rebuilding the community. I thus show that a natural disaster can

[X]A slate is a list of candidates submitted to the elections by a party or an independent entity.

[2] Independent slates are slates of candidates who do not identify with any political party. They can contain both independent candidates and representatives of other parties. Independent candidates are those who do not identify with any political party - nation-wide or other smaller party. They can run as part of independent slates or as part of any other slate.

influence extensive margin of local candidacy.

In addition, a separate story is behind the candidacy dynamics in the next electoral cycle. The likely explanation for the higher independence of local candidates in the 2006 elections is a combination of two factors. First, learning and the enriching of candidates' experience due to higher workload and budget during the years after the flooding. 40% of independent candidates on independent slates in 2006 were part of a council in 2003-2006, as well as 50% of independent slates' leaders. Second, the social bond with the community that was formed during the rebuilding works. When clearing out the flooding aftermath, local politicians had the chance to get to know their electorate better and vice-versa, which was likely useful for the politicians for the purpose of collecting signatures for their slate to be included on the ballot in the following elections in 2006. The higher independence of local politicians from nation-wide parties begins in the elections in 2006, when the subsidy level decreased to usual and the rebuilding works were likely finalized. The longer-term effect of the flooding-induced changes in council work on the local candidacy suggests that the local candidates became more independent due to their empowerment and social bond with the community. This is especially likely since the increase in the likelihood of independent slates comes from the municipalities that were more damaged.

I also rule out the possibility that the local candidates became more independent from nation-wide parties due to the electorate's preferences, which would be compatible with economic voting theory (Downs 1957). I show that the electorate did not indicate with their votes their different attitude toward politicians with different affiliation, nor did they punish or reward incumbents. I don't observe any changes in voting immediately after the floods or in later years. If the voters were not satisfied with how the incumbents or certain political entities handled the aftermath of the flooding, we would observe a change in their voting in the 2002 elections and could claim that the independent candidates who submitted their own slates in the following elections in fact reacted to voters' preferences. I conclude that the effect observed was likely initiated by the politicians themselves.

The questions of incumbent support after a natural disaster, other disaster or a positive exogenous shock have been studied extensively in the literature. It has been shown that natural disasters can reduce support for incumbent presidents and governors in the US (Gasper & Reeves 2011, Heersink, Peterson & Jenkins 2017). In Spain a terrorist attack a few days before elections also affected incumbents negatively (Montalvo 2011), and a positive shock of voters winning a lottery resulted in a higher incumbent support (Bagues & Esteve-Volart 2016). However, the incumbents did not suffer from negative exogenous events in all cases. Shark attacks in US do not seem to influence presidential elections (Fowler & Hall 2018). In Spain strong incumbents can become even stronger after wildfires (Ramos & Sanz 2018). The punishment from the electorate in terms of their votes can depend on the response of politicians to the disaster (Cole, Healy & Werker 2012, Healy & Malhotra 2010). In Germany the same flooding in 2002 that is at the core of my analysis helped the incumbent party in federal elections after they responded promptly with money transfers (Bechtel & Hainmueller 2011).

My findings of no effect of a negative exogenous event on incumbents join those of Bodet, Thomas & Tessier (2016), who study municipal elections several months after a natural disaster in Canada, and do not find any effect in their conservative estimation. Eriksson (2016) also studies municipal elections after a natural disaster. In the setting from Sweden the elections were held more than a year after the event and the incumbent party was punished for not handling the consequences of the disaster well. Unlike in the case of the Czech flooding, the voters in Sweden went to vote after sufficient time has passed since the disaster for the government to demonstrate their full response. In the case of the flooding in the Czech Republic in 2002, the government only had the opportunity to announce their response and make the initial steps before the elections. One electoral cycle later, even if the voters were overall not satisfied with the response from the government, their memory has likely faded on this particular matter and other factors were considered more important in their decisions when voting in 2006. I thus attribute the difference in my results and those from Eriksson (2016) to the time span between the natural disaster and the nearest elections.

This paper is also related to several other branches of literature. I contribute to the literature analysing how natural disasters and wars affect communities. Experiencing a disaster has been shown to influence people's behavior in a number of aspects. Inhabitants in the affected areas can be drawn into higher community involvement (Yamamura 2016, Lilley & Slonim 2016). Exposure to war, a yet greater disaster, has been shown to increase the likelihood of voting and becoming a community leader (Blattman 2009), increase altruism within a community (Bauer, Blattman, Chytilova, Henrich, Miguel & Mitts 2016, Bellows & Miguel 2009), egalitarian motivation toward their in-group (Bauer, Cassar, Chytilova & Henrich 2014) and involvement into discussion of local issues (De Luca & Verpoorten 2015). In a political context, the intentions of the electorate (Katz & Levin 2016) and political dynamics (Gasper & Reeves 2011, Eriksson 2016, Cole et al 2012, Bechtel & Hainmueller 2011) can change due to exposure to a natural disaster. Similarly to the studies mentioned, my analysis shows that a natural disaster can also lead to a more active local political candidacy.

A separate stream of literature studies voter turnout after a natural disaster or war. Exposure to war in Uganda (De Luca & Verpoorten 2015) and flooding in Canada (Bodet et al 2016) have been shown to have no effect on voter turnout in elections. In contrast, the individual voters in New Orleans, US, affected by a flooding were more likely to vote in elections than those not affected (Sinclair, Hall & Alvarez 2011). I find that in the Czech Republic, the flooding in 2002 did not affect the overall trend toward lower voter turnout.

Although the Czech local elections system is likely special in that candidates from different political entities can be represented in the same slate, I believe that my findings can be generalized. My results show that local politicians/activists who are present in municipalities in every country can be empowered with the means of giving them higher decision making capacity. Therefore, my findings could be useful to policy makers for they show how a temporary increase in council responsibilities can lead to long-term (at least 3 electoral cycles) changes in local political candidacy. Even in the Czech municipalities where independent candidates are very active, their

independence was enhanced by a common problem-solving. If it is indeed the case that local politicians reacted to higher responsibilities after the flooding and profited from the connection with the community, then it can be interpreted as an indication that giving more power to local government can motivate local candidates to be more active and independent from political parties. The increased responsibilities of councils after the flooding can be treated as an analogue to decentralization. Decentralization has been shown to positively correlate with efficiency and quality of government (Kyriacou & Roca-Sagales 2011a, Kyriacou & Roca-Sagales 2011b). While decentralization is a large undertaking, assigning a project to local councils is easier to implement. In addition, such projects as the UN 'Community Based Approach to Local Development Project' (Webpage F) could potentially have an unplanned positive influence on local politicians.

The remainder of the paper is organized in the following way. I first describe the flooding in the Czech Republic in 2002 and the institutional background in Sections 3.2 and 3.3 respectively, explain the empirical strategy and describe the data in Sections 3.4 and 3.5 respectively, and discuss the results in Section 3.6. Robustness check follows in Section 3.7.

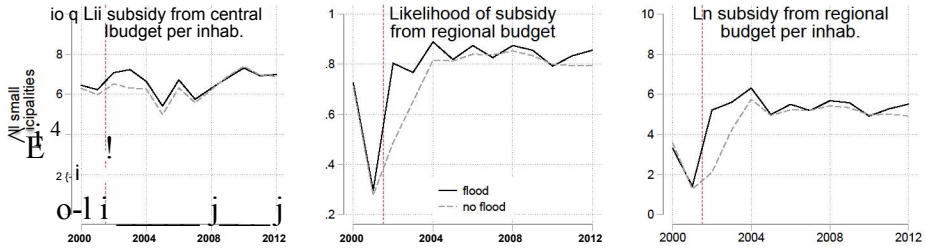
3.2 Flooding in the Czech Republic in 2002

The flooding in August (peeking in mid-August) of 2002 was the most devastating in the history of the Czech Republic. It was induced by intensive rain that lasted for several days. Not only the main river Vltava left its banks, but also smaller rivers as well as lakes. A large part of the centre and east of the country suffered from the water rise.

The flooding in 2002 significantly affected 499 of over 6 000 municipalities in the Czech Republic (Webpage A). The damage varied from less crucial, such as damage to roads in some municipalities, to significant losses such as destruction of residential houses in others. It was estimated that the total cost of repairs was over 70 billion Czech crowns (approximately 2.3 billion Euro, over 5% of state budget).

225 000 people had to be evacuated and 17 lost their lives. Following the flooding, both central and regional governments subsidised local budgets to help with the aftermath (Figure 3.1). The flooded municipalities received on average twice higher subsidies than usual from both central and regional budgets in 2002-2004. As a result, budget revenues increased by 25-30% in the 3 years after the flooding.

Figure 3.1: Subsidies received by flooded and non flooded municipalities



In 1997 there was another large flooding, which covered the region of Moravia in the east of the Czech Republic. Unfortunately, I do not have the full list of municipalities that were flooded in 1997. From the available materials (Webpage B, Webpage C), I do not find any overlap between the municipalities flooded in 1997 and 2002. I argue that the flood in 1997 does not influence either the identification or the findings of this study. In the case that the materials I possess are not complete and the set of the municipalities flooded in 2002 partly does overlap with the set of those flooded in 1997, the overlap cannot be large based on the geographic information about the two floods. Thus, the findings of the current paper are not likely to be biased. In the case that a subset of municipalities flooded in 1997 is included as a control to those flooded in 2002, the estimated effect is biased downwards, which also does not harm identification.

3.3 Institutional background

Municipal elections are held every 4 years in all municipalities on the same weekend in late October - early November. In 2002, the elections were held without delay, 3

months after the flooding, as scheduled. Slates for the elections can be submitted by political parties, coalitions of two or more parties and also by candidates who do not belong to any political party - the independent candidates[3]. Slates usually contain as many candidates as there are mandates to be allocated, although they can be as short as containing only one candidate.

In the Czech political system there are several nation-wide parties that are represented in the national government. For my analysis, I define a nation-wide (major) party as one that participated in at least 1 000 municipalities during the local elections throughout the 1990s and 2000s. Defined this way, the nation-wide parties are the Christian and Democratic union (KDU-CSL[4]), the Social Democratic party (CSSD), the Communist Party of Bohemia and Moravia (KSCM), the Civic Democratic Party (ODS) and in 1990s the Liberal Democratic Party (LDS) and the Communist Party of Czechoslovakia (KSC). This definition excludes two nation-wide parties that won seats in all recent parliamentary elections - The Green Party (SZ) and TOP 09. Both are not active on a local level, and the latter, in addition, is relatively new.

The independent candidates are those who choose to run without any party affiliation. Before the flooding, 15% of all municipalities did not have a single independent slate, 30% had one such slate, 24% had two and 30% had 3 and more independent slates. I argue that, as in Poland (Gendzwill 2012), in the Czech Republic these candidates are different in the message they send to the electorate: they do not aim for politics per se. Instead, their objective is to participate in the administration of their local community.

The party of affiliation (or no party affiliation in the case of independent candidates) is a party a given candidate belongs to. In local elections the party of affiliation does not necessarily coincide with the slate affiliation. Any party can submit a slate that will contain not only candidates that are affiliated with the party,

[3]TO be able to participate in elections, independent candidates have to form an association of independent candidates and collect a sufficient number of signatures in their support no later than two months prior to the elections.

[4]Czech abbreviation.

but also representatives of other parties as well as independent candidates. The same is true for the slates that do not belong to any party - the independent slates - they can contain both candidates who identify with a particular party and those who do not identify with any party. Parties can also create pre-elections coalitions and submit slates that are identified as coalitions and that contain candidates from both parties. For the purpose of this study I will be referring to candidates who are affiliated with a nation-wide party and are nominated by a nation-wide party as nation-wide party candidates on nation-wide party slates; I will refer to candidates who do not belong to any party and are nominated by a nation-wide party on their slate as independent candidates on nation-wide party slates; I will refer to candidates who identify with a nation-wide party and are nominated by a slate that does not identify with any party or coalition as nation-wide party candidates on independent slates; and I will refer to candidates who do not identify with any party and who are nominated by a slate that does not identify with any party or coalition as independent candidates on independent slates.

3.4 Empirical strategy

In this section I describe how I combine differences-in-differences estimation technique with coarsened exact matching.

In my analysis I differentiate between the size of municipalities and divide all Czech municipalities into two groups - small and large. The reason for such a division is the difference in local political life between that in small villages and towns, and in large towns and cities (Balik 2009, Bernard 2012). The scope and nature of the issues that need to be solved regularly are wider in cities and solving them is more likely to involve professional political experience. In villages, the council affairs are mostly related to running the municipality and providing basic services. I define small municipalities as those that had 10 or fewer council members at the moment of flooding. These municipalities include villages and towns with up to approximately

2,000 inhabitants.[5] The larger municipalities, with more than 10 councilors at the moment of flooding are the bigger towns and cities.

Although flooding as a natural disaster presents an exogenous shock, selection into treatment might be a concern. One might argue that the flooded municipalities are those close to water and people self-select into living there, potentially taking the risk of flooding into account and being less risk-averse to it. In addition, the municipalities damaged by flood might have been damaged because they were not prepared for flooding, whereas those not damaged were prepared. To argue against self-selection, in the data description section (Section 5) I show that the small municipalities flooded are not very different from the non-flooded municipalities in terms of most observable characteristics, although the large municipalities are comparable only after matching. The robustness check (Section 7) also shows that in 1998 the to-be-flooded municipalities were not different from those that were not. Moreover, I compare the flooded municipalities to the non-flooded ones over time, thus accounting for the unobserved municipality-specific characteristics.

As well as comparing all flooded municipalities to all those that were not flooded over time (Samples 1 and 3 in Table 3.1), I also perform the comparison based on coarsened exact matching (Samples 2 and 4 in Table 3.1). For each flooded municipality I find two non-flooded municipalities that exactly match in terms of council size in the 1994 and 1998 elections, and that in addition are in the same strata of coarsened average budget per inhabitant in 2000-2001. Further, I match on the pre-treatment values of the main outcome variable - the presence of an independent slate in the elections in 1994 and 1998. In the cases where this matching leaves more than two control municipalities for each treated, I solve the ties using the number of inhabitants in 1994 and 1998 by choosing those control municipalities that are closest to the treated ones. In the cases where the matching on the number of inhabitants still left more than two control municipalities for each treated, I use the average age of population in 1994 and 1998 to solve the remaining ties. I choose not to match on the variables available from 1990, because in that year the Czech

[5]Although council size and population size are correlated, council size and status of town, that implies more responsibilities for the council, are not defined solely by the number of inhabitants.

Republic was part of Czechoslovakia, and the political situation was different.

Table 3.1: Samples description

	Samples			
	1	2	3	4
Matched on:	All small	Matched small	All large	Matched large
Council size: 1994 & 1998		+		+
Budget per inhabitant: 2000-2001		+		+
Presence of independent slate: 1994 & 1998		+		+
Number of inhabitants: 1994 & 1998		+		+
Average age of population: 1994 & 1998		+		+
Treated observations	270	263	213	191
Control observations	4,198	520	1,382	363

I estimate the difference-in-differences model corresponding to Equation 3.1 using Samples 1 and 3. I control for the municipality-fixed-effects and year-fixed-effects to account for trends and municipality specific dynamics. The explanatory variables are the indicator of the flooded municipality in 2002 and the indicator of the flooded municipality in the later years. I divide the conventional indicator of a treated subject in the years after the treatment into two indicators, because the flooding occurred several months before the elections in 2002, and thus the response in the 2002 elections might be different than the long run response in 2006 and later.

$$Outcome\hat{} = aFlooded * Year2002_{it} + (3Flooded * YearsAfter2002_{it} + yYear\ t + 9\ Municipalityi + \epsilon_{it} \quad (3.1)$$

where *Outcome*^ is a municipality-time-specific outcome, $Flooded * Year2002_{it}$ - interaction between the treatment indicator (flooded municipality) and the year 2002, $Flooded * YearsAfter2002_{it}$ - indicator of treated municipalities after 2002 (2006, 2010 and 2014), $Year_t$ - year fixed effects, *Municipalityi* - municipality fixed effects.

I estimate the differences-in-differences model corresponding to Equation 3.2

using Samples 2 and 4. This model is different from that corresponding to Equation 3.1 in one dimension. Since it is used for the matched samples, instead of controlling for municipality-fixed-effects, I control for group-fixed-effects. Each group contains one treated municipality and up to two control municipalities.

$$Outcome\hat{} = \hat{}Flooded, + aFlooded * Year2002_{it} + (3Flooded * YearsAfter2002_{it}$$
$$\text{TyK } ear_t + dGroupi + e_{it} \quad (3.2)$$

where *Outcome*^ is a municipality-time-specific outcome, *Floodedi* - an indicator that the municipality was flooded, *Flooded* * $Yea/r2002_{it}$ - interaction between the treatment indicator (flooded municipality) and the year 2002, *Flooded* * $YearsAfter2002_{it}$ - indicator of treated municipalities after 2002 (2006, 2010 and 2014), $Year_t$ - year fixed effects, *Groups* - matched group fixed effects (2 controls for each treated).

The identifying assumption of differences-in-differences strategy is the common trend before the treatment. I demonstrate the trend before the flooding together with the trend after the flooding in the figures in the Section 3.6.1.

3.5 Data description and co-variate balance

Data on local elections, as well as voter turnout and number of inhabitants are available from the Czech Statistical Office website (Webpage D) starting in 1990 (and earlier for a number of inhabitants); the average age of inhabitants started in 1994, and the number of economic agents in 2001. The 1990 local elections data are available at the slate level only, whereas the data on the later elections are candidate level. Budget indicators on the local level are available from the non-profit organization Rozpočet Verejne that provides the municipal budget data for 2000-2012 (Webpage E).

First of all, I excluded the municipalities that had an unusually high spending on voluntary fire fighters. Spending on voluntary fire fighters is potentially an indicator of how well a given municipality is prepared for an emergency situation. Voluntary fire fighters are a group of men who have day jobs and who are not directly paid for being fire fighters, but who are on permanent alert, i.e. ready to provide help if it is needed. They receive a small share of the municipal budget to cover the expenses of keeping the equipment in order. Having voluntary fire-fighters is not obligatory, but if they exist, they must comply with a number of nation-wide requirements. Flooding is a good example of an event where the voluntary fire fighters, together with the professional fire fighters, help the community. The higher spending on the fire fighters in the to-be-flooded municipalities before the flooding is a weak indicator that the flooded municipalities knew the risks and made an attempt to prepare for it. In the data there were several municipalities, especially among the flooded ones, that had an unusually high spending on this category. Matching on the spending directed to voluntary fire fighters does not help to achieve balance in this spending category between the treated and control samples. I therefore exclude the municipalities with high spending on voluntary fire fighters from the final sample to avoid any estimation bias. Overall, these are 16 out of 499 municipalities.

Out of the remaining 483 flooded municipalities, 270 are small, i.e. had fewer than 10 council members at the time of the flooding. During matching I only lose 7 treated municipalities for which no control municipality is found. Even without matching, the flooded small municipalities are different from the control ones mainly in the higher number of inhabitants (Panels A and B in Table 3.2). The average age of inhabitants is statistically, but not quantitatively, higher - by 1 year. There are also more economic agents in the flooded municipalities, but the difference is again not quantitatively significant. With the matching on the number and average age of inhabitants as well as the budget per inhabitant and the pre-treatment value of the main outcome variable - the presence of an independent slate in 1994 and 1998, the control and treated samples are also balanced in terms of the number of inhabitants. The average age, despite being matched on in some cases, and the number of economic agents remain different. Larger municipalities (Panels C and

D) are less well balanced without matching, but with the matching, the control and the treated samples of large municipalities are comparable as well.

In addition to co-variate balance, I also demonstrate that the classic differences-in-differences assumption of common pre-trend holds. The pre-trend, together with the trend after the flooding is plotted on the Figures 3.2 and 3.3 for the small municipalities and Figures 3.4 and 3.5 for the large municipalities. In the small municipalities the assumption holds. In the large municipalities the pre-trend of shares of different types of candidates holds, whereas the likelihood of the presence of nation-wide parties and independent slates seems less convincing. Although the matching and fixed effects that I use in the estimation allow me to analyze comparable municipalities, I avoid making conclusions about the effect the flooding had on large municipalities.

Table 3.2: Summary statistics and co-variate balance check

	1990[a]			1994			1998[b]		
	Flood	No flood	Diff	Flood	No flood	Diff	Flood	No flood	Diff
				Panel A					
				All small municipalities					
Observations			3,953			4,372			4,184
Number of inhabitants	420 (340)	366 (419)	54* (28)	377 (311)	341 (402)	37 (25)	379 (317)	338 (299)	4!** (19)
Voter turnout	0.878 (0.068)	0.876 (0.096)	0.002 (0.006)	0.799 (0.090)	0.808 (0.097)	-0.009 (0.006)	0.694 (0.118)	0.708 (0.121)	-0.014* (0.008)
Likelihood of nation-wide party on ballot	0.826 (0.380)	0.767 (0.423)	0.059** (0.028)	0.444 (0.498)	0.441 (0.497)	0.003 (0.032)	0.410 (0.493)	0.424 (0.494)	-0.014 (0.031)
Seats won by nation-wide parties	4.285 (3.261)	3.611 (3.088)	0.675*** (0.208)	1.464 (2.097)	1.514 (2.218)	-0.050 (0.141)	1.278 (1.994)	1.328 (2.030)	-0.049 (0.128)
Likelihood of indep.slate on ballot	0.647 (0.479)	0.671 (0.470)	-0.024 (0.032)	0.877 (0.329)	0.867 (0.340)	0.011 (0.022)	0.902 (0.298)	0.906 (0.293)	-0.003 (0.019)
Seats won by indep.slates	3.468 (3.823)	3.615 (3.736)	-0.147 (0.252)	3.705 (2.559)	3.289 (2.508)	0.416*** (0.160)	3.613 (2.504)	3.321 (2.440)	0.292* (0.155)
Number of candidates				12.996 (6.338)	12.736 (6.402)	0.260 (0.408)	13.459 (6.869)	13.076 (6.852)	0.383 (0.434)
Share of indep.cand.				0.831 (0.184)	0.836 (0.196)	-0.005 (0.012)	0.858 (0.215)	0.861 (0.206)	-0.003 (0.013)
Share of women				0.166 (0.130)	0.189 (0.137)	-0.023*** (0.009)	0.211 (0.146)	0.219 (0.144)	-0.009 (0.009)
Average age of cand.				44.2 (4-4)	43.3 (4-3)	0.9*** (0-3)	44.9 (4-6)	43.9 (4-6)	1.0*** (0.3)

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Table 3.2 — continued from the previous page

	1990[a]			1994			1998[b]		
	Flood	No flood	Diff	Flood	No flood	Diff	Flood	No flood	Diff
Share of women among elected				0.158 (0.143)	0.172 (0.148)	-0.015 (0.009)	0.189 (0.149)	0.205 (0.161)	-0.015 (0.010)
Share of educated among elected				0.084 (0.121)	0.077 (0.115)	0.007 (0.007)	0.109 (0.145)	0.099 (0.131)	0.010 (0.008)
Average age of inhabitants				40.2 (3-5)	39.2 (3-7)	1.0*** (0-2)	40.9 (3-5)	39.9 (3-7)	1.0*** (0-2)
Budget per inhabitant							12,811 (9,049)	12,783 (26,696)	28 (1,643)
Subsidy per inhabitant							3,160 (6,475)	3,424 (17,057)	-264 (1,051)
Spending on voluntary fire fighters per inhab.							91 (113)	77 (107)	14** (7)
Number of economic agents per inhabitant							0.196 (0.082)	0.182 (0.061)	0.014*** (0.004)
				Panel B					
Matched small: Council size	(1994,1998), budget per		inhabitant	(2000,2001),	presence of	indep.slate (1994,1998) and population			(1994,1998)
Observations			681			762			783
Number of inhabitants	420 (339)	388 (301)	32 (25)	374 (310)	368 (298)	6 (23)	379 (316)	373 (299)	6 (23)
Voter turnout	0.878 (0.068)	0.872 (0.103)	0.006 (0.008)	0.799 (0.090)	0.799 (0.106)	0.000 (0.008)	0.695 (0.117)	0.701 (0.121)	-0.007 (0.009)
Likelihood of nation-wide party on ballot	0.821 (0.384)	0.808 (0.395)	0.013 (0.032)	0.445 (0.498)	0.462 (0.499)	-0.017 (0.038)	0.407 (0.492)	0.448 (0.498)	-0.041 (0.038)
Seats won by nation-wide parties	4.284 (3.284)	3.923 (3.138)	0.361 (0.259)	1.473 (2.109)	1.593 (2.234)	-0.120 (0.168)	1.251 (1.969)	1.413 (2.070)	-0.163 (0.154)
Likelihood of indep.slate on ballot	0.646 (0.479)	0.675 (0.469)	-0.028 (0.038)	0.875 (0.331)	0.883 (0.321)	-0.008 (0.025)	0.905 (0.294)	0.908 (0.290)	-0.003 (0.022)
Seats won by indep.slates	3.450 (3.828)	3.336 (3.400)	0.113 (0.288)	3.645 (2.518)	3.385 (2.491)	0.259 (0.192)	3.627 (2.498)	3.398 (2.406)	0.229 (0.184)
Number of candidates				12.996 (6.293)	13.093 (5.932)	-0.097 (0.464)	13.521 (6.872)	13.596 (6.994)	-0.075 (0.526)
Share of indep.cand.				0.831 (0.186)	0.823 (0.198)	0.008 (0.015)	0.861 (0.210)	0.864 (0.193)	-0.003 (0.015)
Share of women				0.167 (0.131)	0.182 (0.135)	-0.015 (0.010)	0.210 (0.146)	0.214 (0.142)	-0.004 (0.011)
Average age of cand.				44.2 (4-4)	43.7 (4-1)	0.6* (0-3)	44.9 (4-6)	44.1 (4-5)	0.8** (0-3)
Share of women among elected				0.159 (0.144)	0.166 (0.146)	-0.007 (0.011)	0.188 (0.149)	0.194 (0.161)	-0.006 (0.012)
Share of educated among elected				0.085 (0.122)	0.081 (0.112)	0.004 (0.009)	0.110 (0.146)	0.109 (0.123)	0.001 (0.010)

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Table 3.2 — continued from the previous page

	1990[a]			1994			1998[b]		
	Flood	No flood	Diff	Flood	No flood	Diff	Flood	No flood	Diff
Average age of inhabitants				40.3 (3.6)	39.0 (3.4)	1.2*** (0-3)	40.9 (3.5)	39.6 (3.5)	1.3*** (0-3)
Budget per inhabitant							12,887 (9,071)	14,292 (17,905)	-1,406 (1,174)
Subsidy per inhabitant							3,183 (6,506)	4,354 (15,044)	-1,171 (971)
Spending on voluntary fire fighters per inhab.							91 (113)	83 (130)	7 (9)
Number of economic agents per inhabitant							0.196 (0.082)	0.183 (0.069)	0.012** (0.006)
Panel C									
All large municipalities									
Observations			1,567			1,581			1,595
Number of inhabitants	5,837 (14,198)	3,848 (15,229)	1,989* (1,122)	5,712 (14,011)	3,713 (15,007)	2,000* (1,096)	5,689 (13,768)	3,764 (14,893)	1,925* (1,086)
Voter turnout	0.817 (0.069)	0.812 (0.127)	0.005 (0.009)	0.696 (0.093)	0.721 (0.097)	-0.024*** (0.007)	0.556 (0.111)	0.585 (0.113)	-0.028*** (0.008)
Likelihood of nation-wide party on ballot	1.000 (0.000)	0.985 (0.123)	0.015* (0.009)	0.887 (0.317)	0.870 (0.337)	0.017 (0.025)	0.925 (0.264)	0.876 (0.329)	0.049** (0.024)
Seats won by nation-wide parties	7.938 (3.435)	6.699 (3.075)	1.239*** (0.232)	5.488 (3.326)	4.892 (3.231)	0.596** (0.239)	4.761 (2.675)	4.559 (3.137)	0.202 (0.227)
Likelihood of indep.slate on ballot	0.699 (0.460)	0.661 (0.473)	0.037 (0.035)	0.606 (0.490)	0.651 (0.477)	-0.046 (0.035)	0.718 (0.451)	0.740 (0.439)	-0.021 (0.032)
Seats won by indep.slates	1.622 (2.315)	2.099 (2.903)	-0.477** (0.210)	2.563 (3.452)	3.235 (3.700)	-0.671** (0.270)	3.343 (3.387)	3.917 (3.790)	-0.574** (0.275)
Number of candidates				60.587 (60.961)	48.420 (54.837)	12.167*** (4.103)	75.507 (69.949)	57.633 (63.138)	17.874*** (4.717)
Share of indep.cand.				0.594 (0.183)	0.630 (0.196)	-0.036** (0.014)	0.664 (0.193)	0.710 (0.183)	-0.046*** (0.014)
Share of women				0.218 (0.082)	0.221 (0.091)	-0.003 (0.007)	0.250 (0.084)	0.252 (0.093)	-0.002 (0.007)
Average age of cand.				45.6 (2-9)	44.5 (3-2)	Í.Í*** (0-2)	46.0 (3-0)	45.1 (3-2)	0.9*** (0-2)
Share of women among elected				0.184 (0.103)	0.187 (0.109)	-0.003 (0.008)	0.199 (0.099)	0.215 (0.118)	-0.016* (0.009)
Share of educated among elected				0.261 (0.198)	0.224 (0.183)	0.038*** (0.014)	0.329 (0.205)	0.276 (0.188)	0.053*** (0.014)
Average age of inhabitants				37.0 (2-3)	36.9 (2-2)	0.1 (0-2)	38.0 (2-0)	37.8 (2-0)	0.1 (o.i)
Budget per inhabitant							31,806 (80,380)	20,878 (22,975)	10,928*** (2,672)

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Table 3.2 — continued from the previous page

	1990[a]			1994			1998[b]		
	Flood	No flood	Diff	Flood	No flood	Diff	Flood	No flood	Diff
Subsidy per inhabitant							19,917 (79,437)	10,783 (21,563)	9,134*** (2,595)
Spending on voluntary fire fighters per inhab.							84 (93)	73 (74)	11* (6)
Number of economic agents per inhabitant							0.190 (0.039)	0.177 (0.039)	0.013*** (0.003)
Matched large: Council size (1994,1998), budget per inhabitant (2000,2001), Panel D presence of indep.slate (1994,1998) and population (1994,1998)									
Observations			543			554			554
Number of inhabitants	4,275 (5,792)	3,914 (4,779)	361 (465)	4,189 (5,758)	3,824 (4,699)	364 (455)	4,195 (5,723)	3,819 (4,646)	376 (451)
Voter turnout	0.819 (0.069)	0.794 (0.127)	0.024** (0.010)	0.699 (0.090)	0.698 (0.102)	0.000 (0.009)	0.559 (0.105)	0.561 (0.114)	-0.002 (0.010)
Likelihood of nation-wide party on ballot	1.000 (0.000)	0.994 (0.075)	0.006 (0.005)	0.880 (0.326)	0.882 (0.324)	-0.002 (0.029)	0.916 (0.278)	0.906 (0.292)	0.010 (0.026)
Seats won by nation-wide parties	7.829 (3.317)	6.874 (3.019)	0.955*** (0.282)	5.225 (3.148)	4.865 (2.974)	0.360 (0.271)	4.613 (2.579)	4.565 (2.824)	0.048 (0.245)
Likelihood of indep.slate on ballot	0.695 (0.462)	0.694 (0.462)	0.001 (0.042)	0.634 (0.483)	0.636 (0.482)	-0.003 (0.043)	0.738 (0.441)	0.738 (0.440)	-0.000 (0.039)
Seats won by indep.slates	1.701 (2.375)	1.994 (2.769)	-0.294 (0.238)	2.749 (3.538)	3.129 (3.660)	-0.381 (0.323)	3.492 (3.423)	3.711 (3.617)	-0.219 (0.317)
Number of candidates				55.948 (45.284)	55.149 (39.632)	0.799 (3.724)	70.246 (53.961)	65.394 (48.507)	4.852 (4.510)
Share of indep.cand.				0.606 (0.177)	0.604 (0.188)	0.002 (0.017)	0.668 (0.196)	0.662 (0.179)	0.006 (0.017)
Share of women				0.220 (0.082)	0.229 (0.080)	-0.008 (0.007)	0.250 (0.083)	0.255 (0.078)	-0.005 (0.007)
Average age of cand.				45.6 (3-0)	44.8 (3-2)	0.8*** (0-3)	45.9 (3-0)	45.7 (3-3)	0.3 (0-3)
Share of women among elected				0.188 (0.106)	0.182 (0.104)	0.006 (0.009)	0.205 (0.099)	0.213 (0.102)	-0.008 (0.009)
Share of educated among elected				0.262 (0.190)	0.265 (0.199)	-0.003 (0.017)	0.328 (0.197)	0.308 (0.195)	0.020 (0.017)
Average age of inhabitants				37.1 (2-3)	36.7 (1-9)	0.4** (0-2)	38.0 (2-0)	37.7 (1-8)	0.3* (0-2)
Budget per inhabitant							26,090 (19,033)	24,799 (17,151)	1,291 (1,593)
Subsidy per inhabitant							14,275 (17,460)	14,456 (16,004)	-181 (1,477)
Spending on voluntary fire fighters per inhab.							S) (96)	so (98)	7 (9)

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Table 3.2 — continued from the previous page

	1990[a]			1994			1998[b]		
	Flood	No flood	Diff	Flood	No flood	Diff	Flood	No flood	Diff
Number of economic agents per inhabitant							0.190	0.179	0.011***
							(0.039)	(0.037)	(0.003)

Note: [a] 1991 for Number of inhabitants. & Average between 2000 and 2001 for Subsidy per inhabitant, Budget per inhabitant and Spending of voluntary fire fighters per inhab.; 2001 for economic agents.

3.6 Results and Discussion

3.6.1 More independent slates and fewer nation-wide parties' slates

Comparing the flooded municipalities to those that were not flooded in two samples - all small municipalities and the matched small municipalities - I find that the presence of nation-wide parties' slates (likelihood of at least one nation-wide party slate) on ballot decreased following the overall trend (Figures 3.2), but more so in the flooded municipalities than in the non-flooded ones. The likelihood of the presence of at least one independent slate has increased by 3% after the 2002 disaster in the flooded municipalities - not immediately, but with the delay of one electoral cycle (Figures 3.2). The reason for the quantitatively small effect is the rather high presence of the independent slates in municipal elections.

The main finding seems to be driven by the municipalities that had higher shock to their budget, as well as likely higher damage after the flooding (Table 3.4). I divide the treated municipalities into those that had received a higher than median additional subsidy per inhabitant and those that received a lower than median amount. I observe that in the municipalities that were more damaged the independent candidates were more likely to submit their own slates, and run as part of those slates instead of nation-wide slates. In the municipalities that were less damaged the independent candidates who were on nation-wide party slates seemed to have simply exited the elections altogether.

Another change that I observe in the highly damaged municipalities is related to the extensive margin of local candidacy. In the more damaged municipalities in the elections a few months after the flooding there were more new independent candidates running for the office.

The two responses of the local candidates are suggestive of two mechanisms behind the flooding's influence on local politics in the Czech Republic. First, the increase in the extensive margin of local political candidacy right after the flooding suggests that the local candidates have likely anticipated that following the flooding the amount of work that the council will have to complete will increase. Rebuilding the community will require important decisions to be taken. They have also likely anticipated that the municipality was about to receive higher subsidies from the regional and central governments for that purpose. They have thus realized that the council's responsibilities and importance are about to increase, and wanted to either help the community, or make sure that the clearing the flooding's aftermath will be completed properly.

The change in the local candidacy one electoral cycle later cannot be driven by the willingness to help the community, since by then the additional subsidies were over and the rebuilding works finalized. It is thus suggestive of a different story. The local candidates became more independent from nation-wide parties due to the experience they gained when solving the flooding aftermath, as well as due to a stronger bond with the community. The local politicians were exposed to the higher council's responsibilities; they had to take more decisions and do it fast. They likely learned from the challenge and gained confidence, which resulted in their higher independence from nation-wide parties. At the same time, solving the new issues required working closely with the community, which meant the community had a chance to better familiarize themselves with the local politicians, which in turn could have facilitated the signature collection challenge for the independent candidates. This potential mechanism is even more likely given that the higher likelihood of independent slates is more characteristic to the municipalities that were more damaged and received higher additional subsidies.

Figure 3.2: Likelihood of presence of slates by type in small municipalities

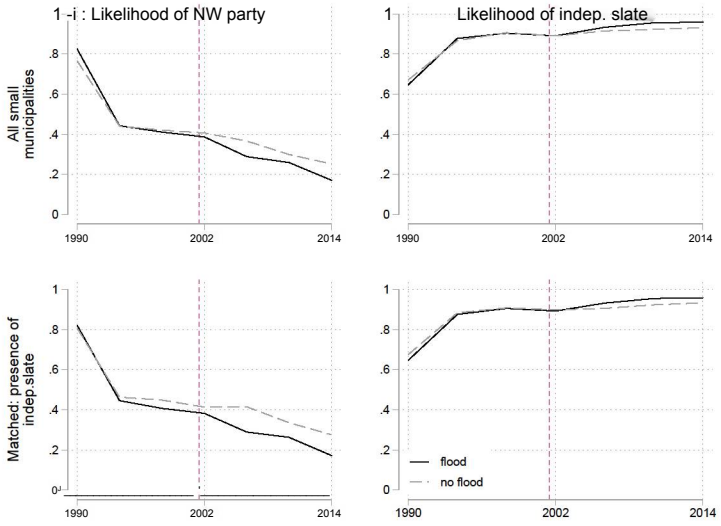


Figure 3.3: Share of independent candidates in small municipalities

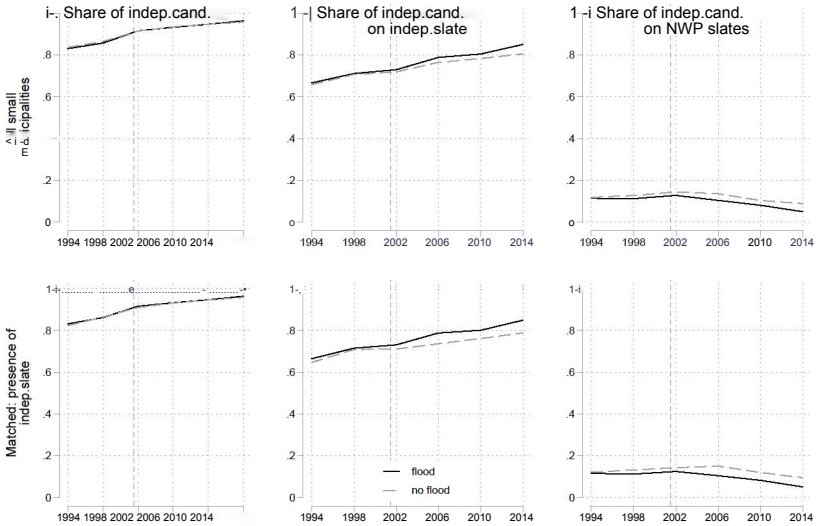


Figure 3.4: Likelihood of slates presence by type in large municipalities

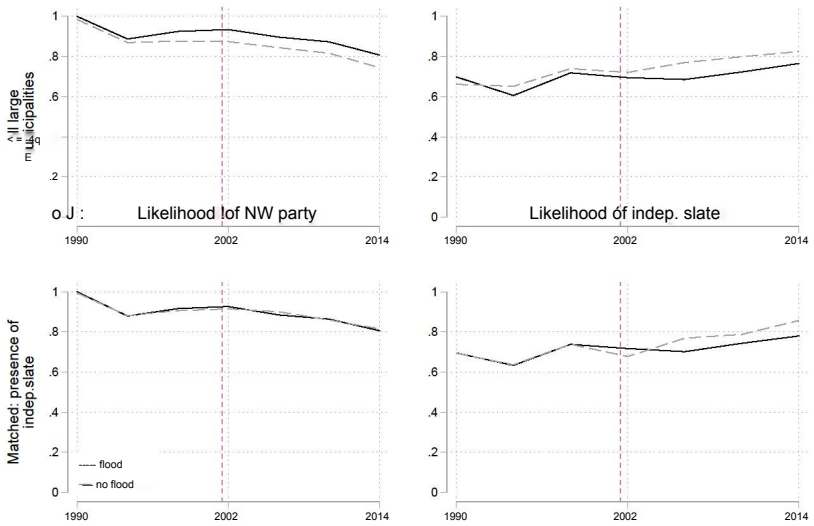


Figure 3.5: Share of independent candidates in large municipalities

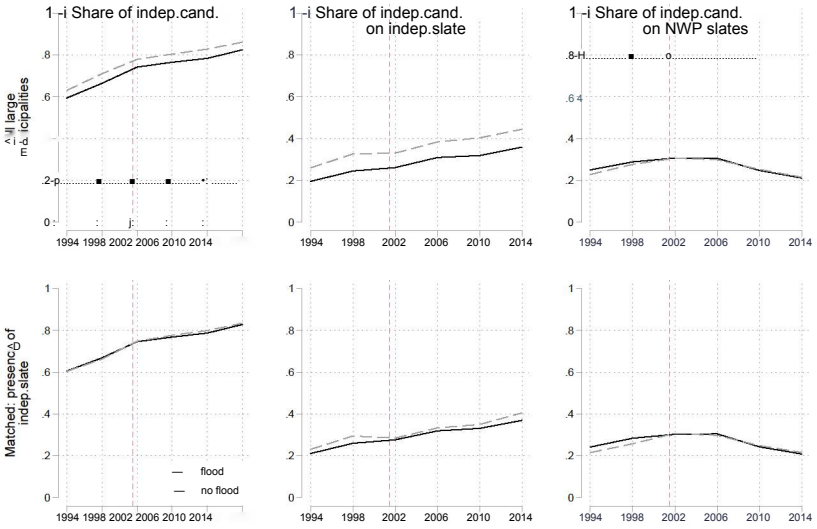


Table 3.3: Effect of flooding

	Likelihood of NWP slate	1 slate	Share of 1C overall	on 1 slates	on NWP slates
			Panel A		
			All small municipalities		
Effect in 2002	-0.016	-0.003	0.007	0.004	-0.007
	(0.024)	(0.019)	(0.008)	(0.017)	(0.011)
Effect later	-0.060***	0.022+	0.008	0.023*	-0.021**
	(0.019)	(0.014)	(0.007)	(0.013)	(0.008)
Observations	26,630	26,630	26,630	26,630	26,630
Mean after	0.328	0.916	0.939	0.770	0.116
			Panel B		
Matched small	municipalities:	Council size,	budget per inhabitant,	presence of i	ndep.slate, population
Effect in 2002	-0.002	0.001	0.003	0.009	-0.006
	(0.035)	(0.024)	(0.012)	(0.023)	(0.015)
Effect later	-0.071***	0.033**	0.000	0.038**	-0.030***
	(0.026)	(0.016)	(0.010)	(0.017)	(0.011)
Observations	4,664	4,664	4,664	4,664	4,664
Mean after	0.332	0.921	0.937	0.764	0.115
			Panel C		
			All large municipalities		
Effect, in 2002	0.026	0.008	0.004	0.005	-0.017
	(0.018)	(0.034)	(0.008)	(0.015)	(0.011)
Effect, later	0.023	-0.040	0.001	-0.007	-0.018*
	(0.015)	(0.026)	(0.007)	(0.012)	(0.009)
Observations	9,556	9,556	9,556	9,556	9,556
Mean after	0.828	0.770	0.813	0.380	0.268
			Panel D		
Matched large	municipalities:	Council size,	budget, per inh	abitant, presence of ini	dep.slate, population
Effect, in 2002	0.008	0.041	-0.006	0.019	-0.031*
	(0.026)	(0.042)	(0.013)	(0.021)	(0.017)
Effect, later	-0.011	-0.061**	-0.013	0.004	-0.029**
	(0.022)	(0.030)	(0.010)	(0.016)	(0.013)
Observations	3,324	3,324	3,324	3,324	3,324
Mean after	0.872	0.760	0.787	0.337	0.267

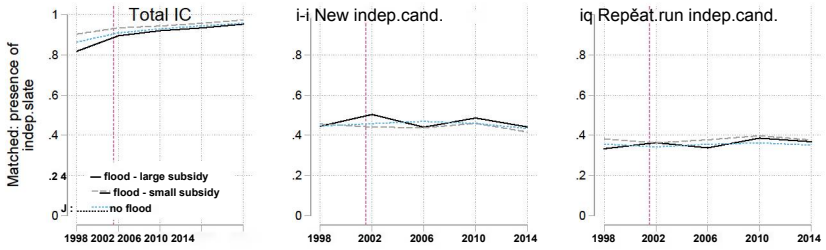
Note: matching is 1:2, includes exact, matching on council size in 1994 and 1998 elections, budget, per inhabitant, as average between 2000 & 2001, presence of independent slate is from 1994 & 1998 elections, ties are solved taking municipality closest, in the number of inhabitants as average between 1994 & 1998 and average age of inhabitants in some cases. NWP-nation-wide party. 1—independent. 1C—independent candidates. + P-value—0.104.

Table 3.4: Effect of flooding, by damage/subsidy received

	Likelihood of NW1> slate	1 slate	Share of 1C overall	on 1 slates	on NWP slates
Matched small	municipalities:	Council size, budget per inhabita		nt, presence of 1	udep.slate, population
Effect in 2002	-0.004	-0.020	-0.014	-0.006	-0.006
small subsidy	(0.046)	(0.027)	(0.013)	(0.028)	(0.020)
Effect later	-0.078**	0.003	-0.026**	0.013	-0.031**
small subsidy	(0.033)	(0.018)	(0.010)	(0.020)	(0.014)
Effect in 2002	-0.000	0.021	0.020	0.024	-0.006
large subsidy	(0.044)	(0.034)	(0.017)	(0.032)	(0.020)
Effect, later	-0.063*	0.064***	0.027*	0.064***	-0.028*
large subsidy	(0.035)	(0.022)	(0.014)	(0.023)	(0.015)
Observations	4,664	4,664	4,664	4,664	4,664
Mean after	0.332	0.921	0.937	0.764	0.115

Note: matching is 1:2, includes exact matching on council size in 1994 and 1998 elections, budget per inhabitant as average between 2000 & 2001, presence of independent slate is from 1994 & 1998 elections, ties are solved taking municipality closest in the number of inhabitants as average between 1994 & 1998 and average age of inhabitants in some cases. Subsidy received is the change in subsidy per inhabitant in 2002-2004 compared to 2000-2001. NWP—nation-wide party. I—independent. 1C—independent candidates.

Figure 3.6: Independent candidates: total, new and repeatedly running



Contrary to the small municipalities, in the large ones the flooding did not result in any change. Although the regression estimates show a statistically significant reduction in the likelihood of the independent slate presence in the flooded municipalities (Panel D in Table 3.3), as well as in the share of independent candidates on nation-wide party slates, this is not a causal effect of the flooding. The likelihood of an independent slate remained stable in the flooded municipalities after the flooding and increased in those not flooded (Figure 3.4). The share of independent

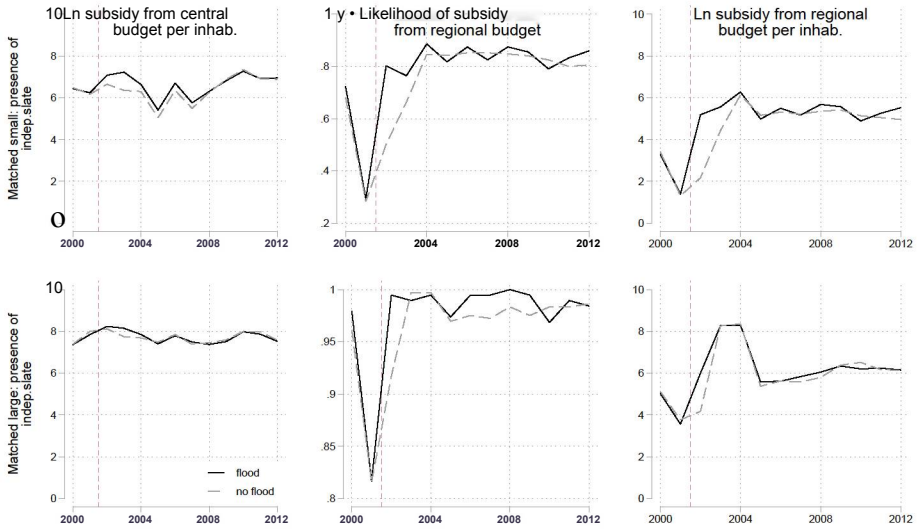
Table 3.5: New and repeatedly running independent candidates

	New IC	Repeatedly running IC
Effect in 2002 small subsidy	-0.028 (0.027)	-0.006 (0.028)
Effect in 2006 small subsidy	-0.043 (0.026)	-0.006 (0.028)
Effect in 2010 small subsidy	-0.012 (0.026)	0.007 (0.028)
Effect in 2014 small subsidy	-0.028 (0.025)	-0.002 (0.027)
Effect in 2002 large subsidy	0.049* (0.027)	0.049* (0.029)
Effect in 2006 large subsidy	-0.027 (0.027)	0.005 (0.028)
Effect in 2010 large subsidy	0.027 (0.025)	0.046* (0.027)
Effect in 2014 large subsidy	0.009 (0.025)	0.040 (0.028)
Mean after	0.454	0.358
Observations	3,902	

candidates on the nation-wide party slates was higher in the flooded municipalities before the flooding and decreased to the level of the not flooded municipalities after the flooding (Figure 3.5).

The flooding was likely not a strong enough shock to the larger communities. This is reflected in Figure 3.7: the increase in the subsidies from the central budget in the large municipalities is hardly noticeable, unlike in the small ones. The increase in the subsidies from the regional budget is also smaller. First of all, the large municipalities are more politically dynamic than the small ones, to result in any change in local candidacy. In addition, the large councils are likely more politically prepared for any type of shock as they face them more often. Finally, working together with closest neighbours could have created new social bonds. However, if in the small municipalities these bonds were sufficient to create competitive independent slates, in the large municipalities the inhabitants likely remained clustered with little interaction between the clusters, such that the new social bonds were not wide enough to support the creation of a competitive independent slate.

Figure 3.7: Subsidies received by flooded and non flooded municipalities - small vs large

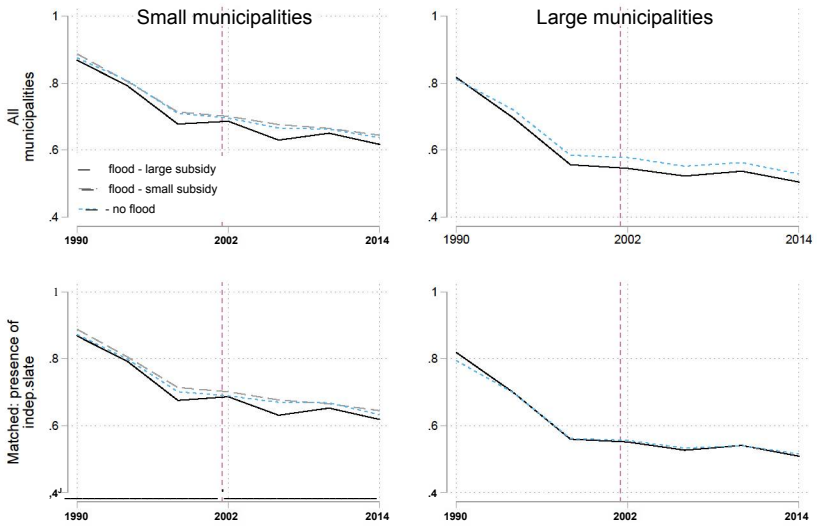


Note: Natural logarithm of subsidies per inhabitant.

3.6.2 No response from electorate

As in other studies (De Luca & Verpoorten 2015, Bodet et al. 2017), I observe no effect of flooding on voter turnout (Figure 3.8). The 2002 elections can be seen as more important than other elections since in those elections the community had to choose the council that would deal with the flooding aftermath, receive and allocate the additional subsidies from the regional and state budgets. The responsibility of the council and the work needed to be done by the newly elected councilors were higher than before. Nevertheless, neither in small nor large municipalities were the voters' decisions to cast their votes affected. Since groups of inhabitants were evacuated for several months after the flooding and likely could not participate in elections, it is possible that voter turnout of the non-evacuated inhabitants increased, but the overall turnout was balanced back to the usual level due to the absence of the evacuated voters.

Figure 3.8: Voter turnout



In addition, the electorate did not indicate in any way their potential change in preferences towards nation-wide parties or independent slates immediately after the flooding in 2002, or in 2006 (Figure 3.9). Neither did the electorate show their dissatisfaction with the incumbents and their response to the disaster, since the incumbents were neither punished nor rewarded in 2002 (Figure 3.10, Table 3.6).

An important question in this light is whether the change in the independence of local candidates from nation-wide parties was influenced by the electorate. Since the electorate did not express any change in their preferences with their votes, I conclude that the local politicians were not likely to run as part of independent slates because the voters indicated this to be their preference. It therefore must have been the decision of the local politicians themselves to be more ideologically independent from their colleagues who are affiliated with nation-wide parties.

Figure 3.9: Vote share to NWP and IS in small municipalities

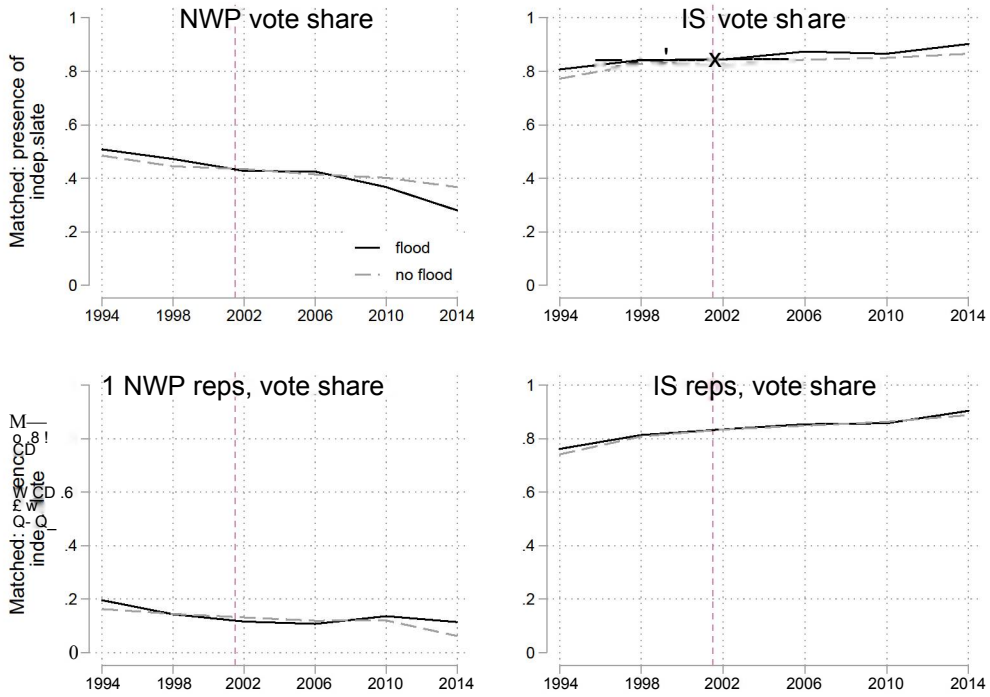
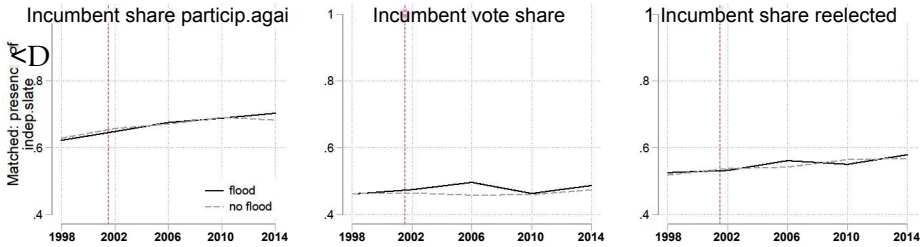


Table 3.6: Incumbent participation, vote share and reelection

	Share of incumbents who run again	Incumbent vote share	Share of council reelected
Effect in 2002	-0.002	0.010	-0.013
	(0.023)	(0.020)	(0.022)
Effect in 2006	0.012	0.038*	0.012
	(0.022)	(0.020)	(0.022)
Effect in 2010&2014	0.016	0.008	-0.009
	(0.020)	(0.018)	(0.019)
Observations	3,823	3,823	3,823

Figure 3.10: Incumbent participation, vote share and reelection



3.7 Robustness check

To strengthen the legitimacy of the results I demonstrate that there was no other shock before 2002 that could have effected the flooded municipalities alongside the flooding. I show that in 1998 the flooded and non-flooded municipalities were not different from each other in the outcome variables. For this I run the usual model using the pre-treatment years (1994 and 1998), pretending that the flooding happened in 1998. If the municipalities were different already before the flooding in 2002, the difference would be reflected in the coefficient of the placebo treatment in 1998. From Table 3.7 one can see that the latter concern is invalid. There was no other shock than the floods in the to-be-flooded municipalities that could be influencing the local candidacy in 2006 and later years.

Table 3.7: Robustness check: pretending the flooding happened in 1998

	Voter turnout	Likelihood of NWP slate	1 slate	Share of 1C overall	on 1 slates	on NWP slates
			All Czech municipalities			
Placebo effect in 1998	-0.005	-0.009	-0.012	-0.001	-0.006	-0.008
	(0.006)	(0.026)	(0.022)	(0.012)	(0.018)	(0.011)
Observations	8,844	8,844	8,844	8,844	8,844	8,844
Mean in 1998	0.709	0.420	0.906	0.864	0.707	0.126
Matched municipalities: Council size, budget per inhabitant, presence of indep.slate and population						
Placebo effect, in 1998	-0.007	-0.024	0.006	-0.011	-0.012	-0.015
	(0.010)	(0.042)	(0.020)	(0.018)	(0.025)	(0.016)
Observations	1,545	1,545	1,545	1,545	1,545	1,545
Mean in 1998	0.699	0.434	0.907	0.863	0.711	0.126

Note: matching is 1:2, includes exact matching on council size in 1994 and 1998 elections, budget per inhabitant as average between 2000 & 2001, presence of independent slate is from 1994 & 1998 elections, ties are solved taking municipality closest in the number of inhabitants as average between 1994 & 1998 and average age of inhabitants in some cases. +P-value—0.107. NWP-nation-wide party. 1—independent. 1C—independent candidates.

3.8 Conclusions

Political involvement of locals in their municipality governance is considered vital for a healthy and efficient functioning of the society. Literature to date has concentrated on the reasons that could be attracting candidates, potentially of better quality, into local politics. An important question of what could make those politicians more active in their political candidacy, to the best of my knowledge, has not been addressed yet.

In this paper I show how independence of local candidates from nation-wide parties can be enhanced by giving more power to councils. The flooding in the Czech Republic in 2002 generated an increase in the issues the councils in the flooded communities had to solve, as well as an increase in the subsidies received for that purpose, thus providing an exogenous shock to the level of responsibilities of councils in the flooded municipalities. At the same time, fulfilling those responsibilities required working closely with the community. Applying Coarsened Exact Matching and Differences-in-Differences techniques to the Czech local elections data I find that in the elections that were held several month after the flooding more new candidates

were running. I also find that one electoral cycle later, when the additional subsidies were over and the rebuilding works likely finalized, the local candidates were more likely to submit their own slates instead of running as part of nation-wide parties' or coalitions' slates. I thus provide the first piece of evidence on how a combination of higher responsibilities of a council and their close work with the community can have a positive effect on the independence of local candidates from the nation-wide slates. The immediate response of the new political candidates is an evidence of how a natural disaster can affect political candidacy.

With the available data I am not able to explore the mechanism behind the higher independence of local candidates. I only provide suggestive evidence that the likely reason is the learning the councilors experienced while dealing with the flooding aftermath. It is highly likely that the social bond that was build during the flooding aftermath had strong influence on the observed changes as well. The understanding by the independent candidates that the community needs more help can be ruled out since the change in local candidates' independence happened one electoral cycle later and not in the elections when the council that would take the main flooding aftermath decisions was being elected. Moreover, I can rule out the electorate as the potential trigger for the effect since the voters in the flooded municipalities did not vote differently than in the not flooded municipalities. To conclude on the actual mechanism reliably, further research is needed.

The system of the Czech local politics is special in that candidates from different parties, including local movements, can run in elections on slates of different parties. However, I argue that it does not harm the generalizability of my results. I find that giving more power to local politicians can make them more involved, which is view as a goal in political settings in many countries. If the additional issues to be solved resulted in a more independent local candidacy that persisted in the long run (at least 3 electoral cycles), a potential policy recommendation for the governments that want to achieve active involvement of locals could be to assign temporary projects to local councils. This could motivate local candidates to be more seriously involved in local politics and potentially lead to a more efficient community management.

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