Sorting of Candidates: Evidence from 20,000 Electoral Ballots*

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Abstract

Using over 20,000 electoral ballots from proportional representation elections, we document that political parties systematically sort candidates on the ballots according to their valence and *intra* party value. Valence, measured by education level, captures the public value of the candidates, while *intra* party value, measured by political donations and membership, represents the value of the candidate to the party. The patterns we observe are consistent with market mechanisms between candidates and party leaders where the party leaders benefit from the valence and *intra* party value of candidates and offer ballot positions (i.e. the probability of winning a seat) in exchange. We show that candidates with high valence and those who possess *intra* party value are placed in higher level positions, despite the fact that candidates with *intra* party value tend to receive relatively fewer votes than their counterparts with the same characteristics in the same position on the ballot. We also show that as a party expects to hold more council seats and thus has more bargaining power, the share of their candidates with *intra* party value increases. Overall, we provide strong evidence that political parties skew political representation based on a quid pro quo relationship with the candidates.

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1 Introduction

Politicians matter to economic outcomes and the quality of lives. In many electoral systems, including the European Parliament, politicians are selected through elections that feature strong gate-keeping power by political parties. Political parties thus substantially influence who becomes a politician. Importantly, political parties and party leaders are also believed to pursue their own goals, e.g. rewarding candidates' loyalty (e.g. Galasso and Nannicini, 2017) or defending their own leadership positions within the party (e.g. Besley et al., 2017). These motives for political selection may be in conflict with the public interest of electing high valence candidates. Overall, political parties therefore contribute both positively and negatively to political processes. On the one hand, political parties improve political selection by partially overcoming information asymmetry between candidates and voters (e.g. Caillaud and Tirole, 2008), on the other hand, parties create a principal-agent problem, in which voters cannot fully control the pre-selection process of candidates.[1]

We study how political parties select and rank candidates on electoral ballots in proportional representation systems[2] (henceforth PR), where a ballot position is highly informative about the likely electoral success of candidates. We categorize candidates in terms of two characteristics: valence, measured by education, and *intra* party value, i.e. the value of the candidates to the party, measured by membership status and/or political donations. Using data from over 20,000 electoral ballots from Czech municipal elections, we find that: (i) high valence candidates are placed on better ranked positions than low valence candidates; (ii) candidates with *intra* party value are placed in better ranked positions than candidates with no *intra* party value; (iii) conditional on observables including rank and valence, candidates with *intra* party value tend to receive significantly fewer votes than their counterparts; (iv) an increase in party popularity is associated with a weak increase in the share of high valence candidates and a sizeable increase in the share of candidates with high *intra* party value.

To explain these observations, we propose a simple model of the market of candidates. A party leader, the demand side, who selects and ranks candidates on a ballot benefits from: (i) *intra* party value of candidates (provision of scarce resources for the party, e.g. donations

[1]For example, Casey et al. (2019) conducted an experiment in Sierra Leone and argue that delegating candidate selection to party officials distorts choices away from voter preferences.

[2]PR systems usually entail multiple representatives being elected, and mandates are allocated proportionally or close to proportionally to party vote shares.

or voluntary labor) and; (ii) candidates' valence, as it attracts swing (quality sensitive) voters. Potential candidates, the supply side, are either of high or low valence, which entails different opportunity costs of running in the election, and they decide on costly actions that can increase their *intra* party value (e.g. to become members or to donate money). As a result, in an environment where the party holds strong gate-keeping power, the party leader trades ballot ranks which embody the probabilities of winning seats in exchange for candidates' valence and *intra* party value. Candidates accept the party offer of a ballot rank if it satisfies their participation constraints. The model yields two main implications. First, candidates who are more valuable to the party are rewarded by better ranked positions. Second, stronger parties can attract more valuable candidates, both in terms of valence and *intra* party value, as they can offer more ballot positions with high probability of winning. Consequently, political parties skew the selection of political representation towards candidates who have, or are willing to provide, *intra* party value.

We contribute to the existing literature by revising three main aspects of the candidate selection problem.[3] First, parties not only control the selection of candidates, but also their positions on a ballot, thereby influencing their probability of winning a seat.[4] Findings (i) and (ii) demonstrate that sorting of candidates on ballots is statistically and economically significant. Theoretical models that neglect the ballot rank and assume a constant share of high-valence candidates may therefore reach misleading conclusions about the average quality of elected politicians, especially in closed list electoral systems. Second, we explicitly consider candidates' participation constraints and thus effectively add the supply side of the candidates market to the framework. The supply side helps us to explain that, after a popularity shock, parties can often attract more valuable candidates, as documented in finding (iv). Third, we relax the assumption of mutual exclusivity between high valence and *intra* party value. Specifically, we allow the *intra* party value to be a candidate control vari-

[3]Dal Bó and Finan (2018) provide a useful summary of recent progress in the literature of political selection.

[4]Very recently, scholars have paid attention to the sorting of candidates (safe vs. hopeless positions) on the ballot. For example, Fiva and Røhr (2018) showed that, in party-list systems, the incumbency advantage of candidates is driven by better ballot positions, as incumbents are placed in better positions. Similarly, Cirone et al. (2019) link candidates' positions in a party (and thus on the ballot) with their seniority, and Cox et al. (2019) introduce a model of ballot sorting of candidates in which parties motivate candidates to exert campaign effort by allocating higher offices monotonically with the ballot rank, if the party enters the government. Studying different aspects of ballot sorting, Buisseret et al. (2019) provide robust evidence that in the PR system (similar to the one used in this study), candidates are ranked according to their quality in descending order.

able. This allows the possibility that low valence candidates can be well ranked and likely to be elected due to their *intra* party value despite their weaker electoral performance, as documented by finding (iii). We thus diverge from previous literature on the role of political parties in the selection of candidates that typically features one of the following situations: (i) a party chooses which candidate to nominate in which (one-candidate) district (e.g. Galasso and Nannicini, 2011); or (ii) a party chooses the shares of high-valence (experts) and loyal candidates on the ballot, where the two are mutually exclusive, ignoring the ballot ranking (Galasso and Nannicini, 2017; Besley et al., 2017). Additionally, we relax the assumption that candidates are passive players who cannot reject the party's offer, commonly adopted by previous literature studying the roles of political parties in political selection.[5]

Furthermore, abandoning the assumption of mutual exclusivity between high valence and *intra* party value allows us to address an apparent controversy in the previous literature. In a study by Galasso and Nannicini (2015), a party leader ranks two mutually exclusive types of candidates on the ballot: loyal and expert candidates. The authors show that safe positions tend to be occupied by loyal candidates (party officials and incumbent members of the parliament). On the contrary, Buisseret et al. (2019), using Swedish administrative data, show that candidates are ranked in descending order according to their quality.[6] This paper attributes both characteristics to each candidate: (i) quality (expertise or valence); and (ii) loyalty (*intra* party value) and thus allows us to reconcile both observations through the possibility of having high valence candidates with *intra* party value in the top positions.

More broadly, this paper builds on the literature that places political parties and their interests on the center stage of the candidate selection process. Researchers have proposed different reasons for why political parties may not strictly prefer high valence candidates. In Besley et al. (2017), a party leader balances the potential threat of being overthrown by high quality party members against voters' preference for competent candidates. Mattozzi and Merlo (2015) present a model in which having a strong candidate may discourage other

[5]Considering candidate participation constraints is standard in models of political selection with a focus on the self-selection decisions of candidates. See Dal Bó and Finan (2018) for an overview.

[6]Buisseret et al. (2019) reject the hypothesis that strong candidates (those who are likely to attract voters) are placed in marginal ballot positions. Although it is not the focus of this study, we do see some evidence supporting the marginal ranks hypothesis. For example, Figure 9 shows a peak in relative votes around one fifth of the ballot. Additionally, most candidates elected due to their preferential votes were elected from close-to-marginal positions. Specifically, one third of the candidates who jumped up because they received enough preferential votes were only one position below the threshold of being elected given the original ranking.

candidates from joining the party, therefore, it may be optimal to recruit only mediocre candidates. Alternatively, Galasso and Nannicini (2011) and Galasso and Nannicini (2017) proposed that leaders may prefer loyal candidates who, in their model, cannot be of high valence. While these models proposed different underlying motives for political selection, their design does not allow them to address findings such as those we establish.

The Czech Republic is a convenient case study due to the availability of data, large number of municipalities, the legal option to make political donations and duty to declare them, and the presence of the PR system in which independent candidates (non-members) are allowed to run on party ballots.[7] However, we believe our results are generalizable to many national elections and to European Parliament elections.[8]

In Section 2, we introduce the Czech institutional background and the data that we use. We continue in Section 3 by providing descriptive evidence about the ballot structure and three additional empirical exercises. In Section 4, we build a simple model and form the intuition for our empirical findings. Section 5 follows with a discussion of the results and conclusion.

2 Institutional Background and Data

In the Czech Republic, public administration is organized into three levels: central, regional, and municipal. There are more than 6,000 municipalities, and each has its own council and representatives, who are elected every four years in municipal elections. The number of seats in a municipal council depends on the number of citizens in the municipality and varies from 5 in the smallest municipalities to 70 in the capital city of Prague. The number of residents in municipalities varies, averaging around 1,600. Municipalities are responsible for delivering public goods including schooling, municipal infrastructure, and waste management. Czech municipal elections are characterized by large numbers of candidates and parties. When municipal elections are held, there are around 200,000 candidates nationwide running for local seats. Roughly one third of them will win a council seat. Generally, about

[7]There are other recent studies (e.g. Jurajda and Münich (2015), Palguta and Pertold (2018), Palguta (2015), and Titl and Geys (2019)) that have used the advantage of the empirically convenient environment of municipal and/or regional elections in the Czech Republic.

[8]The power of political parties over electoral results in European Parliament elections varies from country to country.

half of the candidates run on the ballot of a local branch of a national party, while the rest run on a ballot of one of the purely local parties[9]. Local branches of national parties, the focus of this study, are more professionally organized, whereas local parties, the majority of which are active only in one municipality, often lack effective structural internal organization.

Municipal elections in the Czech Republic are classified as open list elections, which means that parties rank candidates on the ballots but voters are allowed to cast preferential votes for their desired candidates. Each voter has as many votes as there are seats to be allocated. Voters can follow one of three voting strategies. First, they can cast all their votes for one party. Second, they can distribute votes preferentially to different candidates regardless of the ballot they are listed on. Third, they can combine the two approaches, i.e. some of their votes can be allocated directly to preferred candidates and the remaining votes to a party. No one can give more than one vote to any candidate. The number of candidates on the ballot of a party is limited to, at most, the number of seats in the municipal council. The allocation of seats to parties is determined using the D'Hondt method based on all votes the party received, including those allocated to individual candidates as preferential votes.[10] If a candidate receives at least 110% of the votes of the party average per candidate, then he automatically jumps up to the top of the ballot. Over the past five municipal elections, 15% of seats were assigned to candidates who received enough preferential votes to jump higher up in the ranking, and who would not have won the seat otherwise. The number is not insignificant, but it is clear that the initial party ranking substantially shapes the final electoral outcome, as the remaining 85% of seats were assigned to the candidates at the top of the ballot - i.e. those pre-selected by the party. In fact, well ranked candidates can be elected even when there are other not elected candidates in lower positions on the ballot who receive more votes, but not enough to jump up to the top.

The Czech legal system allows both individuals and firms to make donations to political parties. A complete list of political donors, including additional individual information is required to be published by the political parties annually. We collect the data on donations made by individuals and firms between 1995[11] and 2018 and match it with a dataset of all

[9]The exact shares of candidates running on the ballots of national parties varies by election and depends on the classification of national parties and election coalitions of parties.

[10]Note that there is also a threshold share of all valid votes that the party has to exceed, otherwise it is not given a mandate. The default threshold is 5%, and it can be lower for parties that have fewer candidates than there are council seats in the municipality.

[11]Prior to 1999, parties did not have to publish donations of less than 100,000 CZK.

candidates in all elections since 2002. This allows us to identify candidates who donated money to the party on whose ballot they ran and to classify them as candidates-donors.[12]

The available data consists of a universe of individual candidates for each election from 1998 to 2018. We observe each candidates' name, age, academic degrees, place of residence, occupation, political membership, the party they run for, position on the ballot, the number of votes received, and elected status.[13] To create a panel structure, we match candidates across different types of elections (municipal, regional, parliamentary) and different election years. Unfortunately, the candidates do not have individual unique identifiers, so instead, we match them using their individual characteristics including name, surname, year of birth, education level and where possible, place of residence. Since name is one of the main characteristics that we use for matching, it is more complicated to correctly match female candidates, as their surnames may change after marriage. We perform robustness checks by matching female candidates using all the usual characteristics except for surname, and none of the analysis changes. The initial dataset consists of 735,393 unique individuals who have run in at least one election since 1998. We restrict the dataset to candidates who have run in at least one municipal election for one of the six largest national parties (KDUCSL, CSSD, KSCM, ODS, TOP09, ANO)[14] in one of the last 5 municipal elections (2002, 2006, 2010, 2014, and 2018)[15]. Additionally, in order to ensure comparability across ballots, we drop all candidates who ran on incomplete ballots, i.e. ballots that list fewer than the maximum possible number of candidates.[16] We end up with a dataset consisting of 214,580 individuals, Table 6 in Appendix A summarizes the numbers of candidates running for different national parties.

[12]We link the donations of firms to their owners, executive directors, or board members who run for office.

[13]Occupation and place of residence are self-reported.

[14]Note that TOP09 only participated in the last three elections and ANO in the last two elections.

[15]We do not consider candidates who run on a joint ballot for two or more parties in a coalition, as we do not observe which party nominated which candidate.

[16]The maximum possible number of candidates on a ballot equals the number of council seats in a municipality.

3 Empirical Evidence

3.1 Types of Candidates

The order of candidates on the ballot is determined by many aspects including the characteristics of the candidates (e.g. political experience and ability), internal party organization (who bears responsibility for ballot formation and their preferences), municipality and voter characteristics, and political competition. We explore the roles of candidates' valence and their *intra* party value, and document that both play a major role in explaining the observed ranking of candidates on ballots. Intuitively, valence represents the public value of candidates, i.e. it is the characteristic that voters care about, while *intra* party value is any characteristic that the party itself appreciates. We measure both valence and *intra* party value as binary variables.

We classify the valence of politicians by their education level. Specifically, we consider candidates as being of high valence if they have obtained at least a college degree and as low valence otherwise. This approach is standard in the literature of political selection (e.g., Dal Bó et al. (2009) and Ferraz and Finan (2008)).[17] Importantly, Buisseret et al. (2019) show that education displays similar patterns on ballots as other (likely better) measures of quality of politicians such as perceived leadership ability, cognitive scores and labor market income, providing some support for our use of the measure. Nevertheless, we acknowledge that there is little evidence and consensus among the general public and researchers on what characteristics qualify politicians as high valence and even less so when restricting the discussion to measurable and commonly available characteristics.

We use two distinct measures to quantify the *intra* party value of candidates: (i) membership status; and (ii) political donations. Candidates in any election can be nominated by a party and may run on the party's ballot even if they are not formal members of the party. On the ballot, such candidates are labeled "without political affiliation". Candidates who are members of any political party are labeled with the party name. Being a member of a political party often comes with costs. At the very least, all members usually have to pay a membership fee. Further, they can take on other duties and work for the party, they may provide voluntary labor and help with fundraising, organization, and campaign

[17] Dal Bó et al. (2017) argued that while education is correlated with ability, it may also reflect luck or social class.

activities. The share of candidates in municipal elections who are recorded as members of their nominating party is typically between 30% and 50%, but this differs across parties and over time (see Table 7 in Appendix A). The typical ballot in our study consists of 10% of high valence members; 14.5% of high valence non-members; 28.5% of low valence members; and 47% of low valence non-members.

A candidate is classified as a donor if: (i) he or a firm that he owns or represents is listed as a donor by the party he runs for; (ii) the timing of the donation is close to the election, specifically in the year prior to municipal elections, the election year, and one year following.[18] The typical ballot in our study consists of 1.6% of high valence donors; 22.9% of high valence non-donors; 1.2% of low valence donors; and 74.4% of low valence non-donors. There are dramatically fewer donors than there are members. We interpret that as a consequence of donations being a more costly form of *intra* party value for candidates compared to active membership status. We discuss the difference in more detail in Section 4.

3.2 Ballot Structure

The number of candidates on ballots differs across municipalities, parties, and election years. In order to compare the ranking of candidates across different ballots, we define *Rank* as the position on the ballot: (i) conditional on other observable characteristics, e.g. political experience, age, and nominating party; and (ii) normalized to be within the [0,1] interval, where 0 is the top position on the ballot and 1 is the bottom. We use this conditional normalized measure of rank throughout this section.[19]

3.2.1 Members

We first document that candidates classified according to their valence and membership status are systematically sorted on the ballot. High valence candidates and members, i.e. candidates with *intra* party value are over-represented in better ranked positions, i.e. positions with a higher probability of being elected, and are under-represented in worse ranked positions. Observation 1 summarizes the pattern in terms of the average *rank* of different groups.

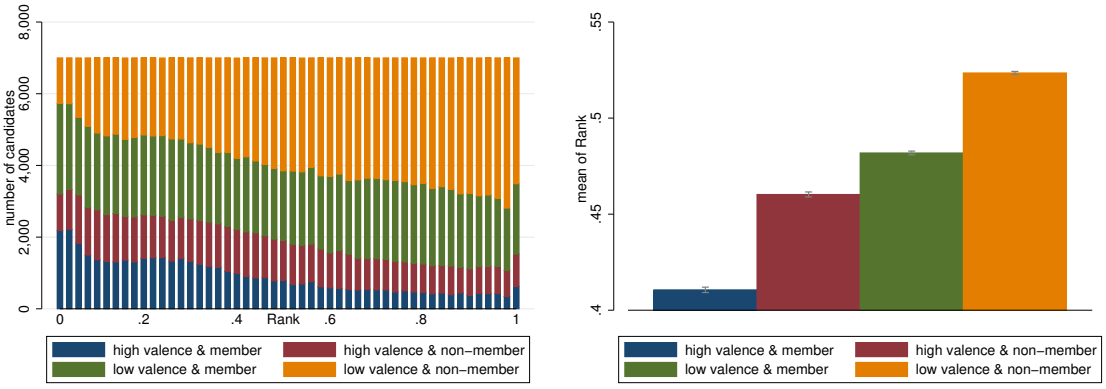
[18] The results are robust to different specifications of the time window.

[19] For more details about *rank*, see Appendix A. Appendix A also provides several exercises to demonstrate that our results are robust to different measures.

Observation 1 (Ballot Structure - Members)**.** *Members are systematically sorted on the ballot. In terms of average rank, the groups are ranked as follows: (i) high valence members at the top; followed by (ii) high valence non-members; (iii) low valence members; and (iv) low valence non-members at the bottom of the ballot.*

Figure 1a graphically represents the sorting of different groups on the ballot and shows a clear pattern. Each bar represents 2% of candidates ordered according to their *rank* and shows the shares of the four groups of candidates in that rank. The x-axis shows the *rank* that ranges from 0 on the left (best *rank*) to 1 on the right (worst *rank*). For example, the first bar implies that the share of high valence members in the 2% of the best ranked candidates is around 31%, while low valence non-members make up only 18%. As we move from the top ranked positions to the tail of the ballot, high valence candidates (sum of HM and HN) are gradually replaced by low valence candidates (sum of LM and LN). The same is apparent for members (HM and LM), who are over-represented among the better ranked positions. Figure 1b summarizes average rank and confidence intervals of the four groups and confirms Observation 1. Appendix A presents two robustness exercises that confirm the same sorting pattern among candidates with no previous political experience and for candidates running on specific ballots that list at least one candidate of each type.

Figure 1: Ballot Structure for Members



(a) Ballot Rank (Members)

(b) Average Rank by Groups (Members)

Interestingly, the tail of the ballot shows a peak of high valence members. There are two possible explanations. First, it can be that some popular politicians from national parliament, local celebrities or respected residents with no interest in being elected in municipal

elections are voluntarily placed at the bottom in order to attract voters' attention to the party. If elected, they often refuse the council seat, as their main motivation for running is not to be elected, but rather to support the party. Second, voters may pay more attention to the candidates at the bottom of the ballot than to those around the middle of the list. Some candidates may consider the bottom position more visible and thus more likely to attract preferential votes. As we discuss in Appendix A, candidates in the bottom positions also differ in terms of their political experience and shares of votes.

3.2.2 Donors

Instead of membership status, we next use political donations as a measure of the *intra* party value of candidates. This leads to a new classification of the four groups: high valence donors; high valence non-donors; low valence donors; low valence non-donors. The main sorting pattern using this new classification resembles the pattern for members. Donors are, on average, ranked better than non-donors, as is summarized in Observation 2.

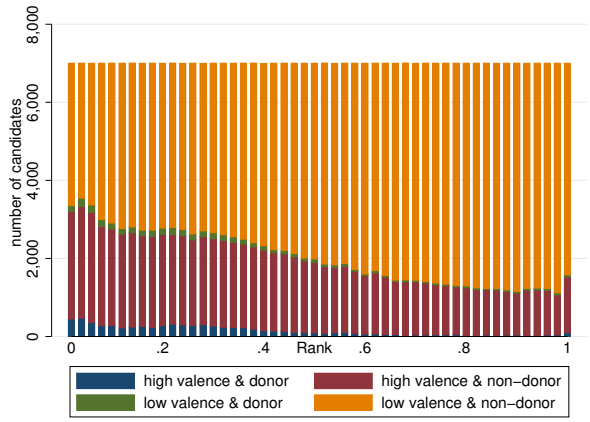
Observation 2 (Ballot Structure - Donors)**.** *Donors are systematically sorted on the ballot. In terms of average rank, the groups are ranked as follows: (i) high valence donors; (ii) low valence donors; (iii) high valence non-donors; (iv) low valence non-donors.*

The sorting pattern persists with one notable exception. As expected, high valence donors are over-represented in the best ranked positions and under-represented in the worst ranked positions, while the opposite is true for low valence non-donors. However, the two middle groups switch their positions; low valence donors are ranked better than high valence non-donors. Applying an alternative, arguably more costly, measure of *intra* party value leads to a switch between the two groups; low valence candidates with *intra* party value tend to be in better positions than high valence candidates with no *intra* party value. Figure 2b provides a graphical representation of Observation 2. Similarly to Figure 1a, Figure 2a shows a spike in valence and donations at the bottom of the ballot. As a robustness check, we perform the same exercise for parliamentary elections, where there is a significantly higher proportion of donors among candidates. The results of the robustness exercise are presented in Appendix A and confirm the same sorting pattern documented in Observation 2.

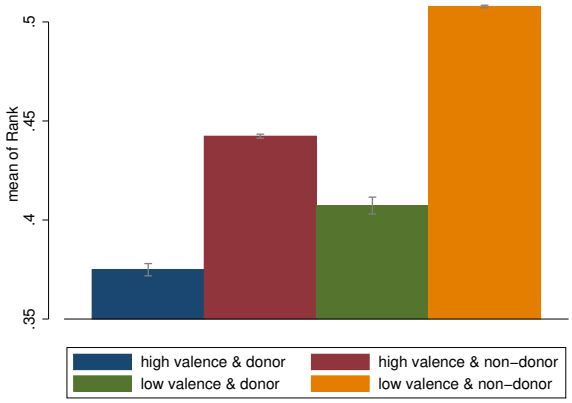
3.3 Effect of the *Intra* Party Value of Candidates

We next use a fixed effect model that controls for all time invariant unobservable characteristics of candidates and provides stronger evidence that donations and membership status

Figure 2: Ballot Structure for Donors



(a) Ballot Structure (Donors)



(b) Average Rank by Groups (Donors)

are positively linked with candidate rankings. To show that the *intra* party value of candidates is economically significant and has implications for election outcomes, we exploit two potentially different measures: (i) ballot positions; and (ii) the probability of being placed in electable positions. Observation 3 summarizes that both measures are positively associated with the *intra* party value of candidates.

Observation 3 (*Intra* Party Value of Candidates)**.** *Becoming a member and/or a donor is associated with a shift towards better ranked positions and an increase in the probability of being placed in an electable position.*

The data is organized in an unbalanced panel with an individual candidate in a given election year being the unit of observation. Since we exploit time variation in individual candidates' membership and donation status, the effect is identified on candidates who switch their status (and the amount donated). Formally, we run the following regression:

$$y_{i\tau} = \alpha_i + \delta_\tau + \eta_p + \zeta_{p\tau} + \gamma_1 Membership_{i\tau} + \gamma_2 Donation\ Dummy_{i\tau} + \gamma_3 Donation\ Size_{i\tau} + \beta X_{i\tau} + \epsilon_{i\tau}, \quad (1)$$

in which $y_{i\tau}$ stands either for $Unconditional\ Rank_{i\tau}$ which is the unconditional ballot position of individual candidate i at time (election) τ, normalized to be between 0 and 1[20], or for $Electable\ Position_{i\tau}$ an indicator that equals 1 if the candidate's ballot position would win

[20]We use the transformation Rank = (Ballot position-1)/(Total number of candidates-1), so that the first position on the ballot is always ranked 0, and the last position ranks 1.

a seat if the party received as many seats as it did in the previous election; and 0 otherwise. Additionally, α_i, δ_τ, η_p, and $\zeta_{p\tau}$ stand for individual, time, party, and party-time fixed effects, respectively. We assign a particular donation to election τ if it was made in the year prior to the elections, the year of the elections, or the year after. $Donation\ Dummy_{i\tau}$ indicates whether candidate i made a donation in election τ, while $Donation\ Size_{i\tau}$ is the amount donated (measured in millions of CZK). Vector $X_{i\tau}$ captures fixed effects for the age of the candidate and his previous political experience in municipal, regional, parliamentary, and senate elections. We remove the candidates who simultaneously run for other offices during the political cycle τ, because their donation could be related to different elections.

Table 1: Individual fixed effects

	(1) Unconditional Rank	(2) Unconditional Rank	(3) Electable Position	(4) Electable Position
Donation Dummy	-0.056***	-0.057***	0.103***	0.101***
	(0.004)	(0.004)	(0.008)	(0.008)
Donation Size (in millions CZK)	-0.011*	-0.011*	0.055***	0.050***
	(0.006)	(0.006)	(0.018)	(0.018)
Membership	-0.107***	-0.106***	0.076***	0.077***
	(0.003)	(0.004)	(0.005)	(0.006)
Age FE	Yes	Yes	Yes	Yes
Political experience FE	Yes	Yes	Yes	Yes
Party and year FE	Yes	Yes	Yes	Yes
Gender	All	Men	All	Men
N	345,701	236,059	345,701	236,059

Standard errors in parentheses
Party and year fixed effects include their interactions.
Previous political experience includes running and getting a mandate in municipal elections, regional elections, parliamentary elections and senate.
* $p < .10$, ** $p < .05$, *** $p < .01$

Table 1 presents the results. The first two columns show that donations and membership are associated with better positions (with lower rank). Similarly, columns (3) a (4) show that membership and donations are associated with a higher probability of being placed in electable positions. All four specifications control for all time invariant individual character-

istics, including motivation, ability, and local popularity. We cannot, however, rule out that the results are driven by some time varying characteristics, such as an increased interest in a political career, which would place the candidate in better positions on the ballot and at the same time increase his likelihood of becoming a member and donor.

Columns (1) and (2) show that the coefficient on *Donation Dummy* is negative and significant and suggest that the act of donating money to the party is associated with jumping 5.6 percentage points up the ballot. On a ballot of a median length, i.e. 21 candidates, this effect amounts to moving roughly 1 position upwards. Similarly, becoming a member of the party is associated with a 10.7 percentage point shift up the ballot, which corresponds to a shift of a little more than 2 places upward on a ballot with 21 candidates. The coefficient *Donation Size*, though significant and negative as expected, is of very low magnitude.[21] Donating 1 million CZK (approx. 40,000 EUR) to a party is associated with a shift of only 6.7 percentage points upwards, relative to not donating anything at all.

Columns (3) and (4) show the same results for *Electable Position*. Becoming a member seems to be associated with a 7.6 percentage points higher likelihood of being listed in one of the electable positions. Donating money to the party increases the likelihood by 10.3 percentage points and donating 1 million CZK is associated with 15.8 percentage points higher likelihood of of being placed in an electable position compared to not donating. The results for both *Unconditional Rank* and *Electable Position* suggest the same story. The coefficients on *Electable Position* are slightly higher. Intuitively, this may be because they capture the relationship between *intra* party value and the outcome of the direct interest of candidates, i.e. whether they are placed in an electable position or not. Since we are more confident about correctly matching male candidates across different elections, we estimate the effect on only male candidates in columns (2) and (4). The coefficients remain very stable in both specifications.

3.4 Electoral Performance of Candidates

We next provide evidence that candidates with *intra* party value receive relatively fewer votes than their counterparts with the same observable characteristics. The results suggest that candidates who are valued by the party for their *intra* party value may not be equally

[21] The reason is, we suspect, that the coefficient estimates an intensive margin of the treatment effect on a group of candidates who would be more likely to be placed in better positions even without the treatment.

popular among voters. Observation 4 thus provides evidence of a potential trade-off between the *intra* party value and the public value of candidates.

Observation 4 (Electoral Performance of Candidates)**.** *Conditional on ballot rank and other characteristics of candidates and the party, candidates with intra party value receive fewer votes.*

When assessing and comparing the performance of different candidates, we are not interested in the absolute numbers of votes[22] but rather in the ratios of the party's votes that the candidates received. We therefore define a variable $Relative\,Votes_i$ as a ratio of votes a candidate i received and the ballot's average number of votes per candidate (a candidates who receives the average number of votes has $Relative\,Votes_i$=1). To compare the relative performance of candidates during the election we: (i) do matching; and (ii) run a pooled OLS regression. We argue that donations and memberships are unlikely to have direct effects on voters' preferences. Therefore, it is more plausible that donors and members are negatively selected on some characteristics that are unobservable to us, but observable to voters at the time of the election, e.g. ability, reputation, political scandals, charisma or effort spent in the campaign. We perform both empirical strategies on the whole ballot and separately on only the electable positions.

We present the results of the matching exercise and from pooled OLS regression in two separate tables. First, Table 2 shows the results from matching. Each column represents a different comparison between two groups of candidates. In particular, in column (1) we compare the relative performance of all candidates divided into donors and non-donors; ; in column (2) we compare the relative performance of candidates placed in electable positions between donors and non-donors; in column (3) the relative performance of all candidates divided into two groups according to their party membership status; and finally in column (4) the relative performance of candidates placed in electable positions between members and non-members. The first row in the table represents unconditional comparisons between the corresponding groups, while the second row provides results from the matching exercise. The unconditional comparisons suggest that donors compared to non-donors and party members compared to non-members receive relatively more votes. However, once we control for other characteristics that are likely to affect the number of votes received such as ballot position, valence, and political experience, the sign of the effect reverses and the candidates with *intra*

[22]The absolute number of votes will naturally differ across political parties and especially across municipalities, as the number of inhabitants and thus voters varies significantly.

party value receive relatively fewer votes. The point estimates of the effects are statistically and economically significant. Furthermore, the effects of membership and donations estimated for candidates placed in electable ballot positions are systematically larger than on all candidates. The difference is consistent with two potential mechanisms: (i) voters are more sensitive to negatively selected candidates in the electable positions; and (ii) negatively selected candidates are over-represented in electable positions.

Table 2: Under-performance of *Intra* Party Valued Candidates - Matching

	(1) Relative Votes	(2) Relative Votes	(3) Relative Votes	(4) Relative Votes
Unconditional	0.180***	-0.011*	0.030***	0.001
	(0.003)	(0.006)	(0.001)	(0.003)
Matching	-0.072***	-0.111***	-0.060***	-0.146***
	(0.005)	(0.009)	(0.002)	(0.007)
N	348,962	53,190	349,504	53,108
Sample	Whole Ballot	Electable Positions	Whole Ballot	Electable Positions
Treatment	Donations	Donations	Membership	Membership

Standard errors in parentheses

Electable positions: number of seats won in last election.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Second, we run the pooled OLS specified in regression 2, where the vector X_i represents gender, flexible functions of previous political experience, age of candidates, party-year fixed effects, and three dummy variables: (i) for the last position on a ballot; (ii) interaction of the last position and donor dummy; and (iii) interaction of the last position and membership[23]. The first column in Table 3 shows the results from regression 2 on a sample of all candidates, while the second column shows only the results of candidates in electable positions. Controlling for all characteristics available, both membership status and donations are associated with fewer relative votes. Specifically, given a particular position and the same observable characteristics, a donor tends to receive on average 7.8 percentage points fewer votes than a non-donor, and a member 4.6 percentage points fewer votes than a non-member. The

[23]We only include the last three fixed effects to ensure that the results for the lowest ballot position do not affect our main results for the rest of the ballot, since we have already mentioned that the last position may be exceptional.

coefficients are even larger for electable ballot positions. The fact that the point estimates of the effects from matching and pooled OLS regression look similar suggests that the results are robust to different specifications.

$$Relative\,Votes_i = \sum_{k=0}^{5} \theta_k Unconditional\ Rank_i^k + \omega Donation\ Dummy_i + \zeta Membership_i + \delta X_i + \varepsilon_i \quad (2)$$

Table 3: Under-Performance of *Intra* Party Valued Candidates - OLS

	(1) Relative Votes	(2) Relative Votes
Membership	-0.046***	-0.113***
	(0.001)	(0.003)
Donation Dummy	-0.078***	-0.088***
	(0.003)	(0.005)
Degree	0.074***	0.035***
	(0.001)	(0.003)
Unconditional Rank	Yes	Yes
N	349,558	53,252
Sample	Whole Ballot	Electable Positions

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

There are two possible explanations for why party members and donors receive relatively fewer votes conditional on other observed characteristics. First, voters may dislike members and donors and second, candidates with *intra* party value are negatively selected on characteristics that we do not observe, but voters do. While we cannot rule out either explanation, we consider the latter much more plausible. The main argument against the former explanation is that the list of political donors is only made publicly available one year after the election. Donors are thus rarely known at the time of the election. Additionally, since we compare party members and non-members who both run on the same ballot, i.e. the same party in the same municipality, we view it as unlikely that voters would punish a more formal link to the party. We thus consider the unobservable characteristics explanation more

credible. Party donors and members tend to be negatively selected and differ in some, for us unobserved, characteristics such as individual quality and credibility which which are observable to voters. Similarly, party donors and members may be less motivated and exert less effort during the electoral campaign. Regardless of the channel through which the negative selection of donors and members operates, from the party leader's perspective it is important that candidates with *intra* party value tend to under-perform and receive fewer votes than their counterparts.

3.5 Strength of Parties

We next ask how a party's strength or popularity shapes the ballot structure and specifically, whether popular parties have more or fewer candidates with *intra* party value. Suppose there is a popularity index for each party at the municipal level. This variable is, at least to some extent, visible to the voters, but it remains latent to us. Our only observable realization is through the shares of votes during elections. As the popularity of the party increases, so does its share of votes. We measure a party's popularity by the share of votes the party received in the most recent parliamentary election at the municipal level. We show that, after a party becomes more popular, which implies that it can expect to gain more council seats, it places weakly more high valence candidates and significantly more candidates with *intra* party value on the ballot. Observation 5 is thus consistent with the interpretation that a more powerful party can attract more high valence candidates and prompt them to increase their *intra* party value (i.e. become a member or donate money to the party).

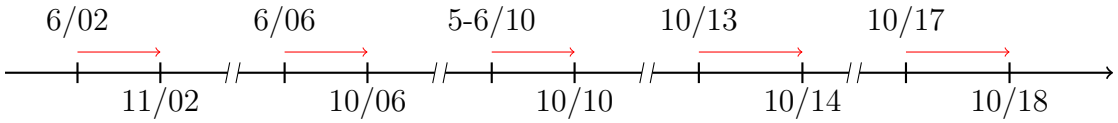
Observation 5 (Strength of Parties)**.** *After a local popularity shock, there are weakly more high valence candidates and significantly more candidates with intra party value on the ballot. In particular, the share of high valence candidates with intra party value increases, while the share of low valence candidates with no intra party value decreases. This is the case for both of our measures: membership status and political donations.*

We use parliamentary election results as a measure of the popularity of the party at the municipal level because party vote shares are available at the municipal level and because parliamentary elections conveniently take place from 4 to 12 months prior to municipal elections. Figure 3 shows the sequence of parliamentary and municipal elections in different years. Our specification (Equation 3) controls for time-party and municipality-party fixed effects, and the identification is thus based on the time variation in municipal political preferences that is orthogonal to changes in national political preferences and to long-term

geographical variation in political preferences. For example, the local perception of national or regional policies promoted by a given political party generates such variation.[24] Furthermore, we control for time-varying ballot structures at the regional level, so any within-party organizational changes (e.g. party level demand for donors) in ballot formation are filtered out.

Figure 3: Sequence of Elections

National Elections:



Municipal Elections:

For both of our measures of *intra* party value we run the following regression.

$$Share^{g}_{pj\tau} = \alpha^{g} + \beta^{g} PE\ ShareVotes_{pj\tau} + \sum_{k \in \{HM,HN,LM\}} \delta^{k} PE\ Share^{k}_{p\tilde{j}\tau} + \gamma^{g}_{pj} + \gamma^{g}_{p\tau} + \epsilon^{g}_{pj\tau} \tag{3}$$

where p denotes political party, j municipality, τ is a political cycle, i.e. a sequence of parliamentary and municipal elections, and k is a group of candidates: high valence with *intra* party value (HM,HD), low valence with *intra* party value (LM,LD), high valence with no *intra* party value (HN), and low valence with no *intra* party value (LN). $PEShareVotes_{pj\tau}$ is the share of votes that a party p received in municipality j in the parliamentary elections during a political cycle τ, and finally $PE\,Share^{k}_{p\tilde{j}\tau}$ captures the share of candidates of group k on the ballot of party p in the parliamentary elections in the electoral region $\tilde{j}$ and political cycle τ. We include these terms in order to control for the effect of the structure of the ballot in the particular region - i.e. to control for the possibility that a party receives more votes in a given municipality not because it gained popularity, but because it formed a particularly good ballot in the parliamentary elections.

[24] National policies promoted by a given political party may affect different municipalities differently depending on their local demographic and economic conditions.

3.5.1 Party Membership

We first discuss results for party membership status as a measure of the *intra* party value of candidates. An increase in a party's share of votes in parliamentary election is associated with an increase in the number of party members on the ballot in the subsequent municipal election. Formally, for each of the following groups g: (i) high valence members (HM); (ii) high valence non-members (HN); (iii) low valence members (LM); (iv) and low valence non-members (LN) we run Regression 3 separately.

Table 4: Changes in Party Popularity and Shares of Members

	(1) Share of HM	(2) Share of HN	(3) Share of LM	(4) Share of LN
PE Share Votes	0.080***	-0.033	0.352***	-0.400***
	(0.017)	(0.024)	(0.033)	(0.036)
N	21,442	21,442	21,442	21,442
Party Year FE	Yes	Yes	Yes	Yes
Party Municipality FE	Yes	Yes	Yes	Yes
PE Share of HM, HN, and LM	Yes	Yes	Yes	Yes

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Each column of Table 4 represents a regression for one group of candidates. The first row captures estimates of β^g from Equation 3. A one percentage point increase in the vote share in a parliamentary election in a given municipality is associated with an increase of 0.08 percentage points of the share of high valence members in the subsequent municipal election. Since the average share of high valence members is roughly 10 percent of a ballot, the effect represents a 0.8% increase. The results further show that the share of low valence members increases by 0.35 percentage points and the share of low valence non-members decreases by 0.40 percentage points. These effects represent a 1.2% increase in low valence members and a 0.85% decrease in low valence non-members, respectively. Overall, low valence non-members, who are arguably the least valuable to the party leader, are squeezed out and replaced by more valuable types of candidates, as the party strengthens. An increase in the vote share in a parliamentary election is followed by a municipal election ballot that includes more high valence candidates and strictly more party members. Considering a ballot of a

median length, i.e. 21 candidates, receiving an additional 10 percentage points of votes in parliamentary elections implies one additional member in the subsequent municipal election.

3.5.2 Party Donors

The effects for party donors are qualitatively equivalent but of a lower magnitude. An increase in the vote share in a parliamentary election of a party is connected to an increase in the shares of high and low valence donors, while the share of the least valuable candidates, low valence non-donors, decreases. That implies an increase in both the share of donors and the share of high valence candidates. Formally, we run regression (3) for g: (i) high valence donors (HD); (ii) high valence non-donors (HN); (iii) low valence donors (LD); (iv) low valence non-donors (LN). Table 5 shows the results.

Table 5: Changes in Party Popularity and Shares of Donors

	(1) Share of HD	(2) Share of HN	(3) Share of LD	(4) Share of LN
PE Share Votes	0.019**	0.029	0.028***	-0.076***
	(0.009)	(0.027)	(0.009)	(0.027)
N	21,442	21,442	21,442	21,442
Party Year FE	Yes	Yes	Yes	Yes
Party Municipality FE	Yes	Yes	Yes	Yes
PE Share of HD, HN, LD	Yes	Yes	Yes	Yes

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Receiving 10 additional percentage points in a parliamentary election is related to a 0.19 percentage point increase in high valence donors on the ballots. Taking the average ballot structure as a baseline case, i.e. including only 1.4% of high valence donors, this is equivalent to a 1.3% increase in the number of high valence donors. The most pronounced positive effect is among low valence donors, as an increase of 10 percentage points in parliamentary elections implies 0.28 percentage points, or a 2.8% increase in the share of low valence donors on average. The increase in the share of donors is offset by the share of low valence non-donors, whose share falls by 0.76 percentage points after a 10 percentage point popularity shock. The coefficients seem low, but that is due to the very low numbers of donors on ballots.

4 Interpreting the Results

4.1 Theoretical Framework

In this section we build a highly stylized model of the selection process of candidates and use it to formalize the intuition for the sorting patterns observed on ballots. We think of the selection process as a market of candidates on which a party leader (she) demands candidates' valence and *intra* party value in exchange for ballot positions, while candidates offer their valence and costly *intra* party value in exchange for the probability of winning a seat. The party leader forms the ballot and decides what types of candidates will be placed at what positions on the ballot. Her objective is twofold. First, to attract swing voters and thus increase the chances of success in elections, she needs high valence candidates on the ballot. Second, as for her *intra* party objective, she maximizes the number of candidates with *intra* party value. We will consider the problem of a single political party and omit interactions among different parties.

For convenience, we normalize the ballot length to an interval [0,1] and denote a ballot rank as $t \in [0,1]$, such that $t = 0$ is the top rank and $t = 1$ the bottom. Any candidate placed on a ballot rank t has two indicator characteristics: (i) valence v; (ii) *intra* party value m. If a candidate placed on t rank is of high valence, then $v(t) = 1$, otherwise $v(t) = 0$. Similarly, if a candidate placed on t rank has *intra* party value, then $m(t) = 1$, otherwise $m(t) = 0$. The key object of our framework is a ballot characterized by $(v(t), m(t))$, where $v(t) : [0,1] \mapsto \{0,1\}$ and $m(t) : [0,1] \mapsto \{0,1\}$, so it maps each ballot rank t into a space of the characteristics of the candidates placed in that position.

Voters For tractability, we highly simplify voters' behavior. As is common in the literature, we assume there are two types of voters: (i) party core voters; and (ii) swing voters. Core voters always vote for their preferred party and thus the party receives α votes from its core voters. The decisions of swing voters depend on the overall valence of the ballot. We assume that voters are more sensitive to the valence of the top ranked candidates than to that of those at the bottom of the ballot.[25] Specifically, swing voters care about an aggregate

[25]There are two reasons to support this assumption. First, even under an open-list electoral system, top ranked candidates are more likely to be elected due to mechanical reasons, as seats are allocated from the top down. Hence, being more sensitive to the top ranked candidates follows from maximizing the expected valence of elected candidates. Second, if voters are inattentive, they are likely to pay attention to the more pronounced or salient candidates, i.e. the candidates at the top of the list. This assumption has been empirically supported by Buisseret et al. (2019) using Swedish data. They argued that ballots are formed

measure (weighted average) of the valence of the ballot $\bar{v} = \int_0^1 g(t)v(t)dt$, where $g(t)$ is a weighting function satisfying $g'(t) < 0$ and $g(1) > 0$. The party receives $\delta\bar{v} + \epsilon$ votes from swing voters, where ϵ is random noise with a mean of zero. The behaviour of voters therefore yields the following probability of winning a seat.

$$P(\text{winning a seat}|\alpha, t, \bar{v}) = P(\alpha + \delta\bar{v} + \epsilon \geq \omega_t) \tag{4}$$

where ω_t is a unique threshold for a rank t. The probability is increasing in α and $\bar{v}$, but decreasing in t, as ω_t is increasing in t. Any model of voting behavior with these characteristics is consistent with our framework. Importantly, the individual candidate's probability of winning a seat is a function of the party's popularity (α), the candidate's ballot rank (t), and the overall aggregate valence of the ballot ($\bar{v}$). A crucial aspect of our setup is, therefore, that voters do not care about *intra* party value, only about valence.[26]

Candidates There are two infinitely large pools of candidates: high valence candidates (with $v = 1$) and low valence candidates ($v = 0$), who differ in their opportunity cost of running; $c^h > c^l = 0$, so that candidacy is more costly for high valence candidates. We set the cost of running for low valence candidates to zero.[27] In order to ensure a better ballot position, candidates can perform a costly action a, pay cost c^a and become *intra* party valuable ($m = 1$). This can take the form of an active party membership status ($a = M$) or a financial donation to the party ($a = D$). Candidates value a seat that brings them a benefit b, and they maximize their expected payoff (expected benefit minus cost).

Party leader Party leader forms a ballot and seeks to maximize her value function

$$V(\bar{v}, \bar{m}) = \bar{v} + \gamma^a \bar{m},$$

where $\bar{v} = \int_0^1 g(t)v(t)dt$ is the measure of overall valence of the ballot that follows from the electoral success motive. As $\bar{v}$ increases, so does the expected number of seats. Additionally, the party value function is increasing in the share of candidates on the ballot with *intra* party value, $\bar{m} = \int_0^1 m(t)dt$. The coefficient γ^a captures the relative importance of $\bar{m}$ compared to

according to the *rank-order hierarchy*.

[26] In our setup, this assumption is easier to justify in the case of political donations, which are not visible to voters at the time of the elections, but we find no reason for it to not be true for membership.

[27] This ensures that some candidates are willing to run even in the bottom positions with zero probability of being elected. $c^l > 0$ could lead to incomplete ballots.

$\bar{v}$, and may depend on the particular form of *intra* party value we use. A crucial property of the party leader's objective is that it is strictly increasing with every additional high valence candidate and with every additional candidate with *intra* party value, holding the rest of the ballot constant.[28]

At time $s = 1$, candidates receive an offer from the party leader to run in a particular position on the ballot conditional on having a certain *intra* party value, and they must decide whether to accept or reject the offer. When making the decision, candidates compare the expected payoff $P(\alpha, \bar{z}, t)b$ with the cost of running and, if required, the cost of becoming *intra* party valuable. For the party leader, the offer is binding, and she cannot change it once it is accepted by a candidate. Importantly, at the time of the decision, candidates do not know the realized valence $\bar{v}$ of the ballot. Instead, they base their decisions on an exogenous prior belief $\bar{z}$. We impose the exogeneity of the candidates' beliefs in order to keep the model as tractable as possible. At time $s = 2$, the party leader assigns positions to candidates given their valence and their affiliation status, and the aggregate valence of the ballot $\bar{v}$ is revealed. At time $s = 3$, the election takes place, votes are realized and seats are assigned to elected candidates.

4.2 Characterization of Solution

There are four thresholds that fully characterize the optimal ballot. Three of the thresholds (t_1, t_2, and t_3) represent the supply side of the market and are defined by the participation constraints of candidates, defined by Equations (5) - (7).

$$P(\alpha, \bar{z}, t_1)b = c^h + c^a \tag{5}$$

$$P(\alpha, \bar{z}, t_2)b = c^a \tag{6}$$

$$P(\alpha, \bar{z}, t_3)b = c^h \tag{7}$$

Each threshold represents the worst ballot rank for which the corresponding type of candidates is willing to run. For example, for a high valence candidate with no *intra* party value (Equation 7) the cost of running is c^h; the worst position that ensures that the expected

[28] We assume a very simple value function which is additively separable in valence and *intra* party value and where the value of each candidate with *intra* party value is constant. We could also assume that the value of each candidate with *intra* party value is decreasing in his rank, t, as we do for valence. If instead of $\gamma\bar{m}$ we had $\tilde{m} = \int_0^1 \tilde{\gamma}(t)m(t)dt$, where $\tilde{\gamma}'(t) < 0$ and $\tilde{\gamma}(1) \geq 0$, as long as $g(0) > \tilde{\gamma}(0)$ and $\tilde{\gamma}'(t) > g'(t)$ for $\forall t$, the results would be unchanged.

benefit will be at least equal to the cost of running is rank t_3. As a result, this candidate accepts an offer of ballot rank t_3 or lower (i.e., better position). Similarly, the threshold for high valence candidates with *intra* party value is t_1 (Equation 5) and for low valence candidates with *intra* party value t_2 (Equation 6).

The fourth condition follows from the party leader's preferences and represents the demand side of the market of candidates. Her objective function implies two dominant strategies: (i) she always prefers high valence candidates with *intra* party value over anyone else; (ii) she always prefers anyone else over low valence candidates with no *intra* party value. The only trade-off occurs between high valence candidates with no *intra* party value and low valence candidates with *intra* party value in the domain of the ballot where both types are willing to run. Holding the rest of the ballot constant, the marginal value of the valence of a candidate is $g(t)$. Since voters are more sensitive to the valence of the top ranked candidates, $g(t)$ is decreasing in the ballot rank. On the other hand, the marginal value of the *intra* party value of a candidate is γ^a, which is constant across all ballot ranks, *ceteris paribus*. Therefore, there is a unique rank, which we denote t_4, for which the party leader is indifferent between high valence candidates with no *intra* party value and low valence candidates with *intra* party value. Formally,

$$g(t_4) = \gamma^a. \tag{8}$$

For all ballot ranks lower than t_4 the party leader prefers high valence candidates with no *intra* party value, while for all higher ballot ranks she prefers low valence candidates with *intra* party value.

The thresholds might not fall within the [0,1] interval and in that case one or more of the candidate types will not be on the ballot at all. We are interested in the general case in which all types are present, so we assume the interior solution (all thresholds are within the [0,1] interval). Appendix B proves that t_4 as defined in Equation 8 maximizes the party leader's value function.

4.3 Explaining the Observations

We next link the predictions of our theoretical framework with the established empirical observations. The framework introduced here predicts that the ranking of candidates depends

on how the thresholds are ordered. The observed ranking of party members is summarized in Observation 1 which states that, on average, high valence members (HM) tend to be placed at the top of the ballot, followed by high valence non-members (HN), low valence members (LM) and lastly low valence non-members (LN). Proposition 1 introduces an equivalence relation between threshold ordering and the patterns observed for party members.

Proposition 1 (Membership)**.** *Consider membership as a measure of intra party value. If and only if* $t_1^M < t_3^M < t_2^M$ & $t_1^M < t_4^M$*, the group ordering is as follows: (i) HM; (ii) HN; (iii) LM; and (iv) LN.*

Proof appears in Appendix B. Depending on exactly where t_4 lies, there are three different combinations of the thresholds that support the observed data.[29]

Similarly, Observation 2 establishes the sorting among party donors which differs from members in one fundamental aspect: low valence donors are placed, on average, in better ranked positions than high valence non-donors; the opposite is true for party members. The following proposition argues that there is only one order of the thresholds that can generate the observed sorting among donors. Proof appears in Appendix B.

Proposition 2 (Donations)**.** *Consider political donations as a measure of intra party value. If and only if* $t_4^D < t_1^D < t_2^D < t_3^D$*, the group ordering is as follows: (i) HD; (ii) LD; (iii) HND; and (iv) LND.*

The model used here enables us to understand the sorting differences between members and donors. First, note that among donors $t_2^D < t_3^D$, while the opposite is true among members $t_3^M < t_2^M$. Since t_3 is the threshold below which high valence candidates are willing to run, it is the same in both cases, so $t_3^M = t_3^D = t_3$, which implies that $t_2^D < t_3 < t_2^M$. Therefore, donors must be rewarded with better ballot positions than members in order to meet their participation constraints. In other words, donation is more costly than membership ($c^D > c^M$). Second, the value of donors to the party leader exceeds the value of being a party member. That follows from the fact, that for members $t_1^M < t_4^M$, whereas for donors $t_4^D < t_1^D$. These two facts along with the cost differences described earlier, $c^D > c^M$, yield that $t_4^D < t_1^D < t_1^M < t_4^M$ implying that $\gamma^D > \gamma^M$. Proposition 3 summarizes both implications.

[29]These are: $t_1^M < t_3^M < t_2^M < t_4^M$, $t_1^M < t_3^M < t_4^M < t_2^M$, and $t_1^M < t_4^M < t_3^M < t_2^M$. We are not able to distinguish among the three cases without making additional assumptions or without more detailed data, as they all imply the same ordering.

Proposition 3 (Comparison)**.** *Suppose the ballot is sorted as proposed in Observations 1 and 2. Then, our theoretical framework predicts that for candidates, becoming a donor is more costly than becoming a member,* $c^D > c^M$*, and for party leaders, donors are more valuable than members of the same valence,* $\gamma^D > \gamma^M$*.*

The model can therefore rationalize the reversal in ordering between party donors and members by donations being more costly for candidates and more valuable for political parties, which we view as reasonable and intuitive. Finally, the model is also consistent with Observation 5. In particular, the model predicts that an increase in popularity leads to a higher share of high valence candidates with *intra* party value and a decrease in low valence candidates without *intra* party value, which is what we find in the data for both members and donors.

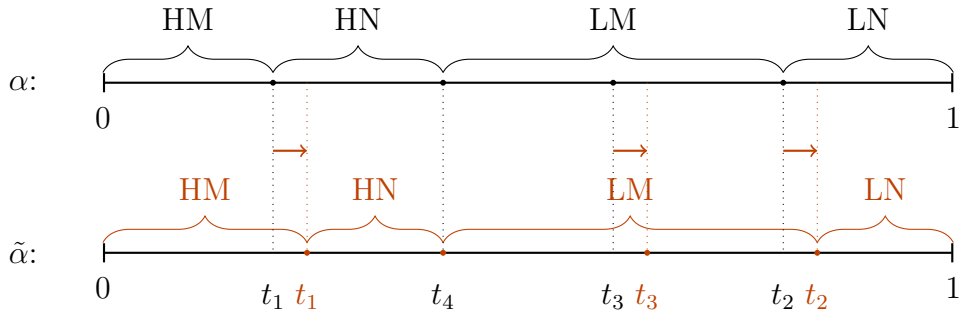
Proposition 4 (Strength of Parties)**.** *An increase in the popularity of a party represented by an increase in* α *leads to a higher share of high valence candidates with intra party value and a lower share of low valence candidates with no intra party value on the ballot.*

Proposition 4 follows from relaxing the participation constraints of all candidates. As α increases, so does the probability of being elected at any ballot rank, *ceteris paribus*. The changes in the shares of the two remaining types of candidates are generally ambiguous and depend on the relative shifts of different thresholds. The thresholds are complex to characterize, as they depend on several features including the slope of the probability function, and the relative shifts are therefore not easy to calculate. The suggested ordering for donors stated in Proposition 2 additionally implies that the overall share of donors, both with and without *intra* party value, always rises when α increases. For members, since there are several possible combinations, not much more can be said about the two middle groups of candidates.

To provide intuition, consider one particular combination of thresholds: $t_1 < t_4 < t_3 < t_2$.[30] As a party experiences a positive popularity shock, an increase in α to $\tilde{\alpha} > \alpha$, the participation constraints relax for all types of candidates. This shifts t_1, t_2, and t_3 towards the bottom of the ballot as displayed in Figure 4. Since t_4 does not change, the shares of high and low valence candidates remain unchanged, but the share of members (of both high and low valence) increases.

[30]This is our preferred combination as it unambiguously predicts an increase in members in response to a positive party shock which is the most pronounced effect that we found in the data.

Figure 4: Explaining Membership Data



5 Concluding Remarks

We approach the process of the selection of political candidates in PR systems as a market. On the one hand, a party leader (the demand side) demands valence and *intra* party value in exchange for ballot positions that embody probabilities of winning seats. On the other hand, candidates (the supply side) decide on their *intra* party value, as they strive to win a seat on a municipal council. This interaction resembles typical market forces. We support the market-like interpretation by empirical evidence. First, candidates are sorted as predicted by market mechanisms in which the top positions tend to be occupied by candidates with both public and *intra* party value, whereas the bottom positions tend to be occupied by the candidates that are the least valuable. Second, party leaders seem to voluntarily sacrifice some votes for *intra* party value of candidates. Third, with increasing popularity and strength of the party, the party leader takes advantage of her position to form a ballot with a higher *intra* party value, as she has more to offer candidates in exchange for their value. Fourth, higher *intra* party value tends to be rewarded by better ballot positions. That follows from: (i) a comparison between party membership and, arguably more costly, party donations; and (ii) the positive link between the size of donations and better ballot position. Systematic sorting of candidates has one important methodological implication. The fact that high valence candidates and candidates with *intra* party value are over-represented in positions with higher probability of being elected casts doubt on the frequently used approach that evaluates a ballot by considering the simple shares of different groups of candidates on the ballot rather than considering their distribution on the ballot. In fact, this approach may easily lead to misleading results, even in (semi-) open list electoral systems.

The gate-keeping power of parties is likely to give rise to a principal-agent problem in which

party leaders may pursue their private goals in political selection. Swing voters incentivize the party leader to care about valence, which mitigates the problem, assuming that voters' concern is candidates' valence. The interests of the party leader and voters are aligned at the top positions where high valence candidates are willing to increase their *intra* party value. The conflict between a party leader's interests and the interests of the public tend to appear at the worse ballot positions where the party leader has the opportunity to skew the selection and ranking of the candidates in her favor, by prioritizing low valence candidates with *intra* party value rather than high valence candidates without *intra* party value.

Relaxing the mutual exclusivity of valence and *intra* party value which is prevalent in the literature mitigates the principal agent problem, but may intensify other problems such as rent seeking. If being of high valence does not guarantee that candidates will be placed in well ranked ballot positions, everyone is incentivized to acquire *intra* party value, which may take different forms and may not be limited to membership status and political donations. Instead, we consider *intra* party value to be a very broad concept that can include a wide variety of attributes. For example, employees of the party, public proponents or anyone providing services of any kind to the party may be considered of high *intra* party value, regardless of whether they are also members or donors. More importantly, any rent seeking activity that a candidate engages in for the benefit of the political party may be seen by the party leader as increasing his value to the party.

While this paper describes the process of selecting and ordering candidates on a ballot as a trade between party leaders and candidates, it is mute about the exact mechanisms. It does not address the structure of the market, nor the forms of contracts between candidates and parties. As candidates and party leaders interact in highly uncertain environments and contracts between them are potentially dynamic, there are other possible research questions to study. For example, who bears the cost of uncertainty? Do candidates in marginal positions make donations prior to an election or only after being elected? Do party leaders enforce party affiliation after the election and does such enforcement depend on the valence of candidates? Furthermore, this paper has not addressed interactions among different political parties within a municipality, but future research may shed light on the influence of political competition on the interaction of parties and candidates.

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Appendix A

Appendix A is structured so it matches the structure of the empirical part of the paper. First, it provides additional descriptive statistics regarding about database. Second, it defines rank and unconditional rank; third, it provides additional robustness exercises with respect to ballot structure for parliamentary elections, candidates with no previous political experience... As for the results how the strength of the party affects the ballot structure, Appendix A adds graphical representation of the main results discussed in the paper and a decomposition of the effect party by party.

Appendix A: Section 3.1

Data Description Table 6 shows a distribution of candidates according to the parties which the run for. As we describe in the Section 2, only candidates running on ballots of one of the six main political parties are kept in the data; our main results are based on 5 years of municipal election: 2002, 2006, 2010, 2014, and 2018. Data from election in 1998 are used only to control previous political experience of candidates. Note that two parties TOP 09 and ANO participated only in three and two elections, respectively. The drop in number of candidates running on a ballot of TOP 09 in 2018 is because we exclude candidates and ballots if it was a joint ballot of more parties, which was the approach of TOP 09 in most of the municipalities in 2018. Table 7 shows shares of formal members on parties' ballots. There is a significant variation both in time and among parties. Recently established parties, TOP 09 and ANO tend to have fewer members on the ballots.

Table 6: Number of Candidates

Political Party	2002	2006	2010	2014	2018	Total
KDUCSL	17,717	17,930	14,940	14,603	12,238	77,428
CSSD	16,095	16,111	16,884	16,336	11,752	77,178
KSCM	20,717	19,074	17,375	16,083	12,704	85,953
ODS	16,168	19,042	18,757	11,667	10,615	76,249
TOP 09	0	0	9,703	6,363	1,338	17,404
ANO	0	0	0	7,906	7,927	15,833
Total	70,697	72,157	77,659	72,958	56,574	350,045

Table 7: Share of Affiliated

Political Party	2002	2006	2010	2014	2018
KDUCSL	37 %	34 %	31 %	27 %	27 %
CSSD	43 %	41 %	48 %	50 %	50 %
KSCM	60 %	55 %	52 %	48 %	48 %
ODS	48 %	51 %	51 %	50 %	43 %
TOP 09	.	.	27 %	29 %	35 %
ANO	.	.	.	18 %	27 %

Appendix A: Section 3.2

Definition of Rank Instead of using a raw ballot positions, which is barely comparable across different ballots, we use two different normalized measures of ballot positions: (i) unconditional rank; (ii) rank. First, the unconditional rank is a relative position of candidates on the ballot, normalized such that the very top one position has unconditional rank 0 and the unconditional rank of the very bottom position equals 1. The interior ballots positions map to different unconditional rank value depending on the number of candidates on the ballot.

Suppose a candidate i placed on a k-th position on a ballot with n candidates. Then the unconditional rank is defined as follows:

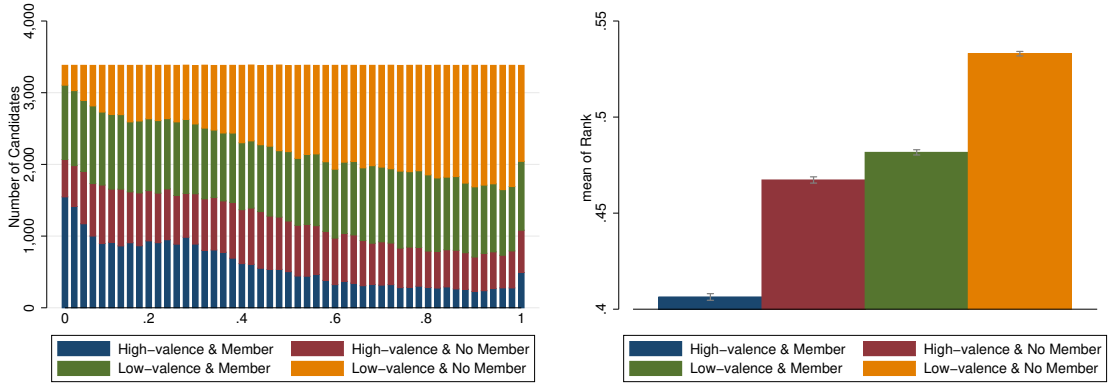
$$Unconditional\ Rank = \frac{k-1}{n-1}. \tag{9}$$

To derive Observation 1 and 2, we adjust the rank by controlling for other observed characteristics that are likely to play a role in ballot structure, political experience from municipal, regional and national election, fixed effects of party, municipality and elections, age, and gender of candidates. To do so, we regress the *Unconditional Rank* on a flexible function and then normalized the residuals, so they fall into [0,1] interval. The rank converges to 0 as we approach the top ranked candidates and to 1 as we approach the bottom.

$$\begin{aligned} \frac{k_{it}-1}{n_{it}-1} &= f(X_{it}, \gamma_{it}) + \eta_{it} \\ rank_{it} &= \frac{\eta_{it} - min(\eta_{it})}{max(\eta_{it}) - min(\eta_{it})}, \end{aligned} \tag{10}$$

Ballot Structure - Full Ballots We next provide additional exercises to demonstrate that the Observation 1 and 2 persist under different circumstances. First, we study only candidates that run on ballots that consist of all four groups. In other words, for some of the groups (HM, HN, LM, LN) is missing on the ballot, every candidates running on the ballots is excluded from our analysis. Figure 5a and 5b show that sorting patters remain valid. Comparing to the baseline figures, the number of candidates drops to roughly a half. Interestingly, the share of low valence non-members placed on well-ranked positions dropped significantly, as a sizable portion of low valence non-member were well-place on ballots that do not consist of all four groups of candidates.

Figure 5: Ballots with all Four Groups of Candidates



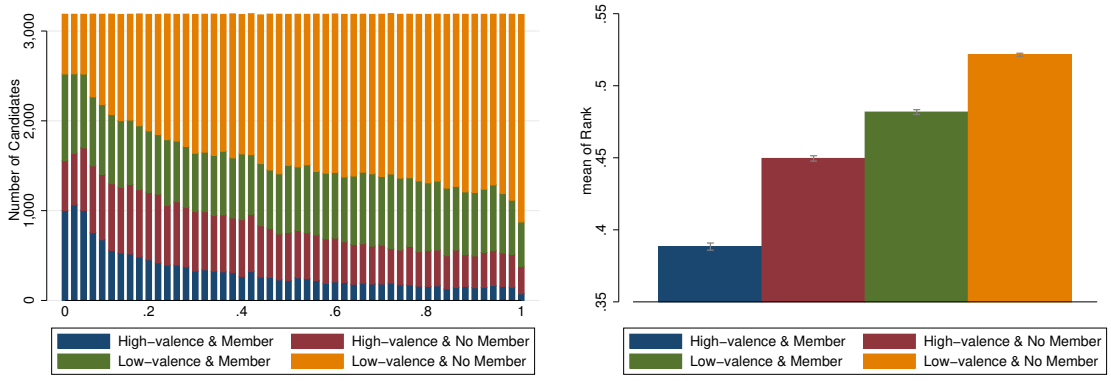
(a) Structure Ballots (Members)

(b) Average Rank by Groups (Members)

Ballot Structure - Novice Second, we study only a subset of candidates who run in the municipality for the first time as thus have no previous experience with municipal elections. This specification is likely robust against different forms of historical relationships between candidates and party. Figure 6a and 6b show that the sorting patterns hold among political novices, too. Interestingly, there is no peak at the bottom of the ballot, suggesting that the peak is indeed driven by politically experienced candidates. See the following paragraphs for the discussion.

Ballot Structure: Donors in Parliamentary Election Third, we provide additional evidence from parliamentary elections. The share of donors among candidates in municipal elections is relatively small, so does the variation among candidates in different subgroups.

Figure 6: Only Candidates Without Political Experience



(a) Structure Ballots (Members)

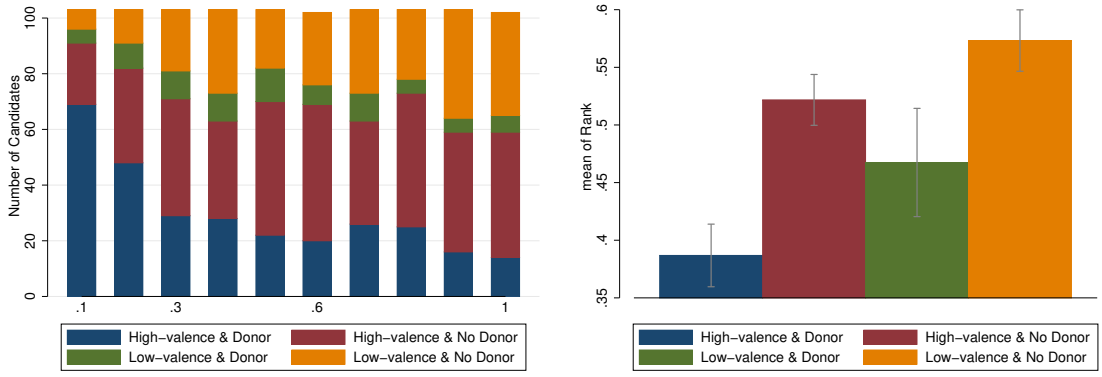
(b) Average Rank by Groups (Members)

Therefore, to provide additional evidence of sorting on the ballot among donors, we study ballots in parliamentary elections. While the number of candidates from one of the six main parties in the last 5 parliamentary elections is *only* around 8,500, roughly a third of them are classified as donors. For the first exercise a candidate is classified as a donor if his or her donation was any positive number, including negligible amounts. We create *rank* as before, normalizing the ballot position into the [0,1] interval.

Figure 7a collapses candidates according to their rank by 10%. The share of high valence donors is decreasing rapidly as one goes to worse ranked positions on ballot. While there are almost two thirds of high valence donors among the 10% best ranked positions, there are only around 15% among the worst ranked candidates. Importantly, similarly to municipal election, in parliamentary elections, low valence donors are ranked better than high valence non-donors. We thus obtain qualitatively the same observation for both municipal election ballots and parliamentary election ballots.

Next, we reclassify the group of donors to those who donate at least 50,000 CZK (approx. 2,000 EUR). Figures 8a and 8b show the ballot structure for more generous donors. In line with the presented model, as the *intra* party value is more costly to the candidates and more valuable to the party, the share of donors shrinks, while the their ballot rank improved. In fact, as the threshold for donors increases, the different in rank between high and low valence donors disappears.

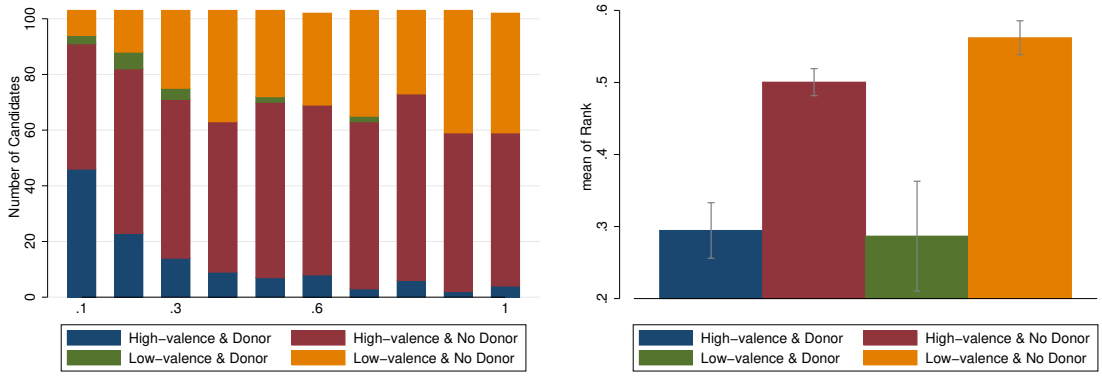
Figure 7: Ballots in Parliamentary Election (Donors)



(a) Ballot Structure

(b) Average Rank by Groups

Figure 8: Ballots in Parliamentary Election (Generous Donors)



(a) Structure Ballots

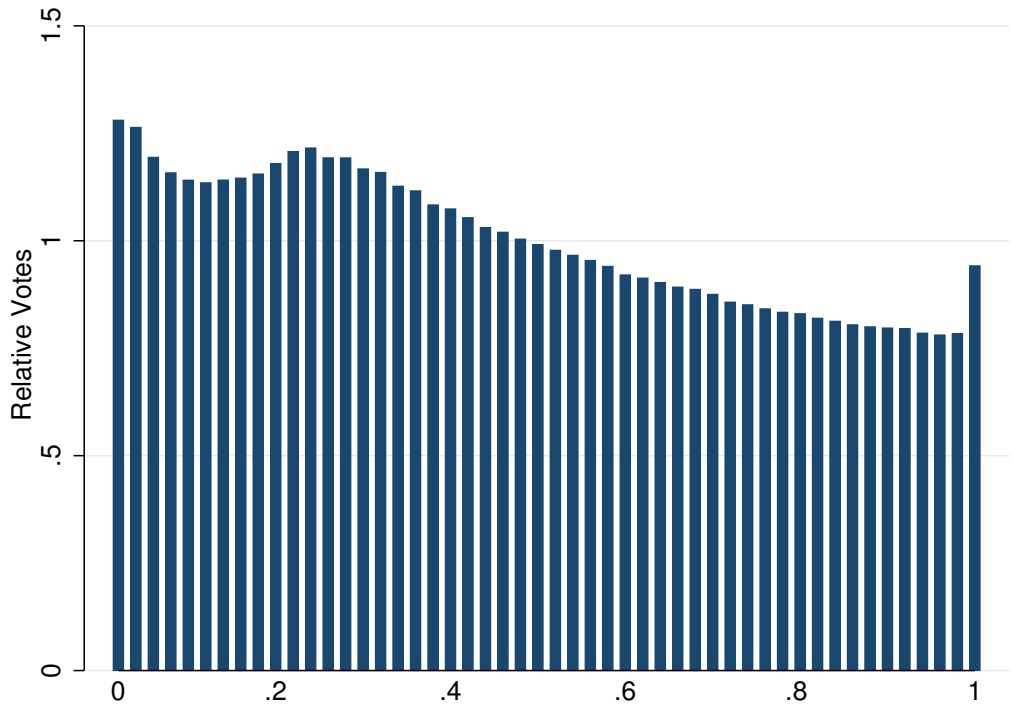
(b) Average Rank by Groups

Candidates on the Last Positions As we discuss in 3, there is a disproportionately high share of high valued candidates at the last position on the ballots. We argue that there are two potential explanations that are consistent with a selection of more politically experienced candidates with *intra* party value and relative more votes. Note that there is not peak for candidates with no previous experience, as presented by Figure 6a. The local peak of relative votes is documented by Figure 9).

Appendix A: Section 3.5

Party Heterogeneity Figure 10 shows changes in ballot structure after a popularity shock decomposed for all six parties. In particular, it shows that a positive popularity shock is

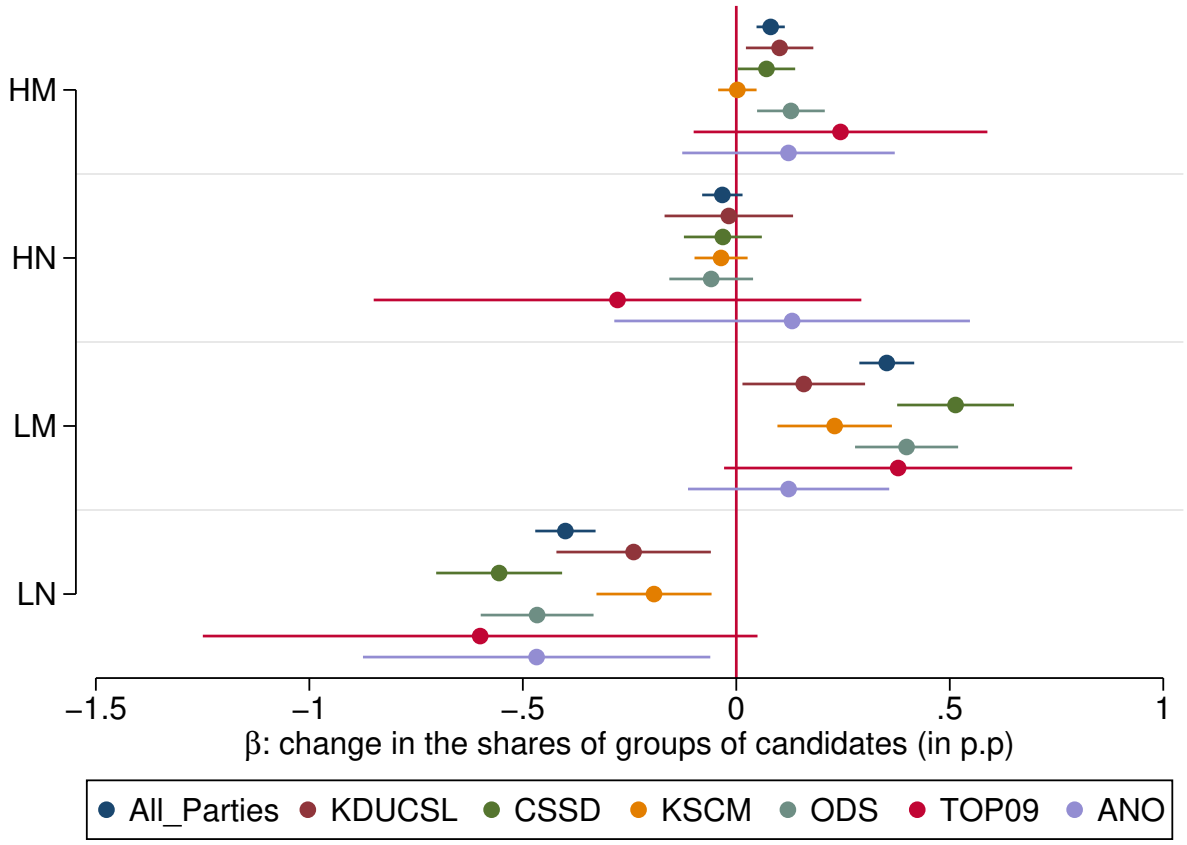
Figure 9: Average Relative Share of Votes by Ballot Position



followed by an weak increase of high valence members in all parties. Similarly, the share of low valence members increases as well. The predicted drop in a share of low valence non-members also prevalent among all parties. Note that for both TOP09 and ANO, the coefficients have relatively large confidence intervals, as the parties have participated only in three and two elections, respectively and thus the estimates are based on fewer observations.

Different Source of Variation To provide additional evidence supporting our narrative, we explore different source of variation of party power. Specifically, comparing to the baseline specification as in Regression 3, we employ two different fixed effects: (i) party-municipality (γ_{pj}) as before; and (ii) election (γ_{τ}) as captured in regression 11. Therefore, we do not control for variation caused by a change a party popularity at the national level. Suppose a party A becomes more popular, then this popularity shocks increases both the share of votes in national election in the municipality and the electoral potential in the next municipal

Figure 10: Changes in Groups Share (Members) by Party

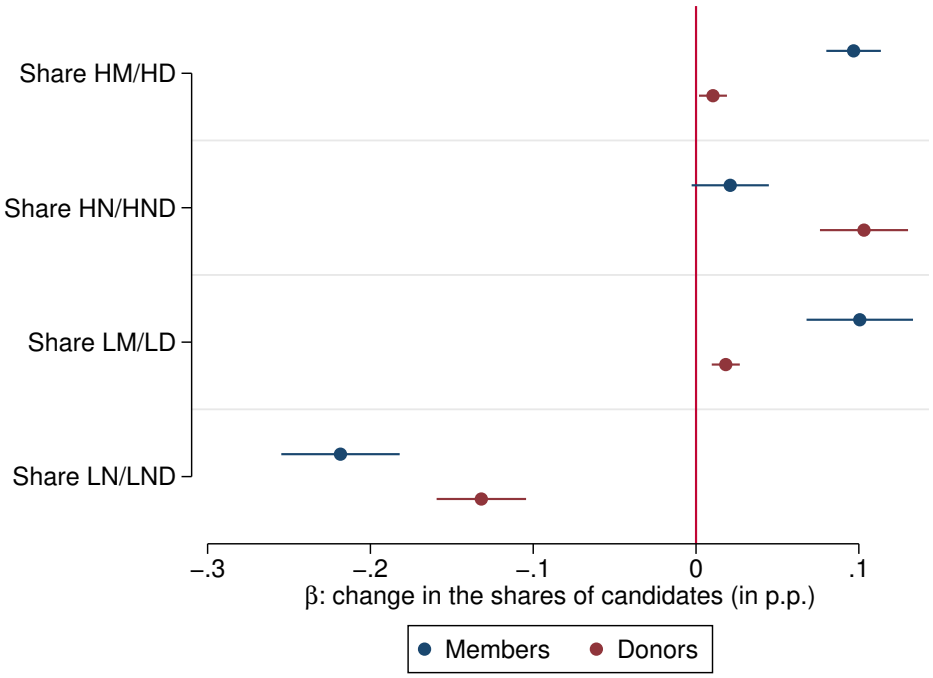


election.

$$Share^{g}_{pj\tau} = \alpha^{g} + \beta^{g} PE\ ShareVotes_{pj\tau} + \sum_{k \in \{HM,HN,LM\}} \delta^{k} PE\ Share^{k}_{p\tilde{j}\tau} + \gamma^{g}_{pj} + \gamma^{g}_{\tau} + \epsilon^{g}_{pj\tau} \tag{11}$$

Figure 11 graphically shows coefficients β^{g} for both measures of *intra* party values. Despite some of the coefficient being insignificant, the main narratives hold. As party is more popular and thus its bargaining power increases, there are more high valence candidates and more candidates with *intra* party value on the ballot. Consequently, the least valuable group low valence candidates with low *intra* party value are forced out.

Figure 11: Changes in Group Shares (Robustness)



Appendix B

Optimal t_4

Lemma 1. *Suppose t_1, t_2, and t_3. Then t_4 implicitly defined as $g(t_4) = \gamma^a$ is a solution to the party leader's problem. Formally,*

$$t_4 \in \underset{\tilde{t}}{\text{argmax}} \; V(\bar{v}, \bar{m}|t_1, t_2, t_3) \tag{12}$$

If $t_4 < min(t_2, t_3)$ then t_4 is a unique solution of the party leader's problem.

$$t_4 = \underset{\tilde{t}}{\text{argmax}} \; V(\bar{v}, \bar{m}|t_1, t_2, t_3) \tag{13}$$

Proof. To see this, we will solve the party leader's problem. To fix the notation, we consider the membership notation for the measure of the *intra* party value. The party leader chooses a threshold $\tilde{t}$, such it maximizes her objective function $V(\bar{v}, \bar{m})$:

$$\max_{\tilde{t}} V(\bar{v}, \bar{m}) = \int_{HM} g(t)dt + \int_{HM} \gamma^a dt + \int_{HN} g(t)dt + \int_{LM} \gamma^a dt \tag{14}$$

The first two terms of the objective function represent the valence and *intra* party value of high valence members and are independent of the party leader's choice of $\tilde{t}$. That simplifies the problem into a sum of two integrals.

$$\max_{\tilde{t}} \tilde{V} = \int_{HN} g(t)dt + \int_{LM} \gamma^a dt \tag{15}$$

Remember that t_2 and t_3 are the worst positions from which LM and HN are willing to run, respectively. And the only trade-off for the party leader occurs for positions at which both these groups of candidates are willing to run. Therefore, for $\tilde{t} > \min t_2, t_3$ there is no trade-off and any choice of $\tilde{t}$ maximizes the objective function.

If $\tilde{t} < \min t_2, t_3$ then the problem pins down as follows

$$\max_{\tilde{t}} \tilde{V} = \int_{t_1}^{\tilde{t}} g(t)dt + \int_{\tilde{t}}^{\min(t_2,t_3)} \gamma^a dt, \tag{16}$$

Deriving the first order conditions and denoting the solution as t_4 yields

$$g(t_4) = \gamma^a. \tag{17}$$

□

Proofs of Propositions

We prove both Proposition 1 and 2 simultaneously by considering all possible combinations of thresholds and the associated orders of groups of candidates.

As there are four different thresholds t_1, t_2, t_3, and t_4 ordered on continuous interval $[0, 1]$, there are 24 different combinations in which they may be ordered. First, note that it must be the case that $t_1 < t_3$, otherwise *intra* party value would imposed negative cost, i.e. $c^a < 0$. Similarly, it must be the case that $t_1 < t_2$, otherwise running would imposed negative cost for high valence candidates, i.e. $c^h < 0$. That leaves us with 8 possible cases.

Second, note that if all four groups are represented on the ballot, it must be the case that $t_2 > \min\{t_3, t_4\}$. Suppose the opposite is true and $t_2 < t_4$ & $t_2 < t_3$, then low valence candidates with *intra* party value (LM candidates) are willing to run only from positions for which high valence candidates with no *intra* party value are preferable and willing to run. Therefore, LM would not be represented on the ballot. That excludes additional two combinations.

We are left with six combinations of thresholds. Note that four thresholds divide the ballot into five intervals. We next describe which types of candidates (using a notation for membership status) will be in which intervals.

(a) $t_1 < t_3 < t_2 < t_4$ implies the following intervals {HM, HN, LM, LN, LN}

(b) $t_1 < t_3 < t_4 < t_2$ implies the following intervals {HM, HN, LM, LN, LN}

(c) $t_1 < t_4 < t_2 < t_3$ implies the following intervals {HM, HN, LM, HN, LM}

(d) $t_1 < t_4 < t_3 < t_2$ implies the following intervals {HM, HN, LM, LM, LN}

(e) $t_4 < t_1 < t_2 < t_3$ implies the following intervals {HM, HM, LM, HN, LN}

(f) $t_4 < t_1 < t_3 < t_2$ implies the following intervals {HM, HM, LM, LM, LN}

Note that HN are missing in (f). Case (c) is a special case, as HN occupy two disconnected intervals. If this was true, we should observe high variance in HN candidates' positions, which is not the case. Therefore, we rule the case (c) out as not representing the data.

Finally, the case (e) is the only possible case that implies that the average position of low valence candidates with *intra* party value is *better* than position of high valence candidates with no *intra* party values. That proves Proposition 2. Cases (a), (b), and (d) are the only three cases that: (i) satisfy the conditions from Proposition 1 ($t_1 < t_3 < t_2$ & $t_1 < t_4$); and at the same time: (ii) imply the sorting of candidates observed in data. This proves Proposition 1.

Proposition 4 follows by looking at the threshold orderings and shifting t_1, t_2 and t_3 to the right. However much they shift, the HM interval always increases and the LN interval is always reduced. We omitted cases where $t_1 < 0$ or does not exist and HM are not present. In that case, the share of the group at the top of the ballot increases instead.