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Abstract

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The Grass Is Not Greener on the Other Side: The Role of Attention in Voting Behaviour*

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The *effect of ranking* and the *effect of attention* both increase the chances that candidates running in the top positions of electoral lists will win voters' support. We exploit a variation in ballot layout (the location of the break between the first and second sides of the ballot) in the 2006–2017 Czech parliamentary elections to disentangle these effects and identify the effect of attention. We show that being listed on the reverse side of the ballot paper decreases electoral support by at least 50%.

Keywords: voting behavior; attention; preferential voting; Czech parliamentary elections

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1 Introduction

Who do voters vote for? The empirical literature shows that candidates whose names are listed in the top positions on the ballot paper are more likely to win voters' support (see, e.g., Geys and Heyndels 2003; Lutz 2010; Chen et al. 2014; Kim et al. 2015; Marcinkiewicz and Stegmaier 2015; Blom-Hansen et al. 2016; Däubler and Rudolph 2020). The literature provides two complementary hypotheses to explain this phenomenon: the *e ect of ranking* and the *e ect of attention*. As both these e□ects work in the same direction it is challenging to disentangle them. In this paper we estimate the local e□ect of attention by exploiting an exogenous variation in ballot layout in Czech parliamentary elections.

The e□ect of ranking refers to a spatial phenomenon which can be explained as *up means good* (Tourangeau et al. 2013), i.e. that people use the position of an item as a simplifying cue for assessing its quality, with higher positions indicating higher quality. In the same vein, voters may perceive the order of candidates on the electoral list as a signal from the party about the candidate's abilities and tend to support those who are listed in top positions (Lutz 2010; Marcinkiewicz and Stegmaier 2015; Jurajda and Münich 2015; Blom-Hansen et al. 2016; Söderlund et al. 2021).

However, the fact that front-runner candidates receive more votes may also be due to the e□ect of attention, which suggests that reading electoral lists poses great cognitive demands on voters and makes the decision-making process enormously complex (for instance Kim et al. 2015; Augenblick and Nicholson 2016; Seib 2016). When reading a list, people tend to remember and process the information presented at the start of the list better than information in the middle or at the end. This cognitive bias extends to voting behavior (Kim et al. 2015). Voters' mental abilities and cognitive e□ort are limited and so the lower down the list they read, the less attention they pay to the candidates and the less likely they are to support them (Miller and Krosnick 1998; Lutz 2010). This mental fatigue e□ect depends to a large extent on the length of the ballot paper (Seib 2016; Augenblick and Nicholson 2016). For example, Augenblick and Nicholson (2016) show that as the number of decisions increases, voters tend to rely more heavily on simplifying cues or directly abstain. Kim et al. (2015) find that the magnitude of the top ballot position e□ect is moderated by several factors, such as the information available to the voter, the ambivalence of the choice, the voter's cognitive skills and the e□ort he or she devotes to the election, etc.

In this paper we exploit variation in the ballot layout in Czech parliamentary elections to identify the e□ect of attention on electoral support for individual candidates. In parliamentary elections, voters in the Czech Republic cast a ballot for to a single political party, but they can also give preferential votes to up to four of the candidates listed on that ballot. The ranking of candidates on the ballot is not random but the electoral list is

often (in 34% of cases in 2006–2017) too long to fit on one side of the ballot paper. As we demonstrate in Section 2 the exact location of the break in the electoral list between candidates listed on the front and reverse sides of the ballot could be considered as good as random. Checking the other side of the ballot for potentially more suitable candidates requires additional e□ort—i.e. additional use of cognitive abilities (attention)—while the voter is already su□ering from mental fatigue. By comparing the number of preferential votes received by candidates listed in positions close to the page break, we show that being listed on the reverse side of the ballot decreases electoral support by at least 50%.

As we concentrate on the cut between the first and second pages of the ballot paper, we also add to the literature on ballot layout (Geys and Heyndels 2003; Ho and Imai 2006; Blom-Hansen et al. 2016). In the paper closest to ours, Ho and Imai (2006) use data on a 2003 California recall election where the ordering of candidates was (imperfectly) randomized across a ballot with multiple pages. They find that being listed on the first page brings over 40% increase in vote shares for minor candidates. Our setting enables us to estimate the e□ect of attention within party and constituency and therefore to take into account ideological and other di□erences among parties and their supporters.

Moreover, our contribution links the voting literature to more general research on how presentation order a□ects choice (see for example Kim et al. 2015). In their experimental setting on how internet survey respondents behave, Tourangeau et al. (2013) show that people use the vertical position of the item on the screen as a simplifying cue in evaluating it. Englund and Hellström (2012) observe presentation-order e□ects in preference judgment also in horizontal ordering. Similarly Berger (2016) shows that, as a consequence of attention and memory, the position of an article in a journal issue a□ects the number of citations it receives. Last but not least, this e□ect has also been observed in product taste tests (Dean 1980; Mantonakis et al. 2009). Our results corroborate that the order in which information is presented plays an important role in forming people's impressions of it.

2 Parliamentary elections

In the elections to the lower chamber of the Parliament of the Czech Republic, 200 deputies are chosen in a party-list proportional representation system every four years. Parties set a unique electoral list for each of the constituencies, which match the country's 14 administrative regions (*kraj*). The maximum number of candidates on the electoral list is specific for each constituency and ranges between 14 and 36[1]. Political parties have no motivation to nominate fewer candidates than the legally set maximum for each constituency, since additional candidates could attract additional voters. In total they nominate up to 343 candidates, who are selected and ordered via the political parties' own internal procedures. The order in which candidates appear on the electoral list is important as it affects how the seats are allocated.

Voters can affect the order of candidates on the electoral list using preferential voting. The system of preferential voting is common in European countries, but takes various forms. In the Czech system, each voter can assign a preferential vote to up to four candidates on the electoral list by marking their number on the ballot paper. If the number of preference votes for a candidate exceeds 5% of the total number of votes her party received, she is re-ranked to the top of the electoral list.

The system of preferential voting was introduced in 1990 with first free elections after the fall of the communist regime. In 2006 there were 0.4 preferential votes per ballot cast. The subsequent elections in 2010 set a record in our estimation sample with 0.7 preferential votes per ballot cast and the share of preferential votes did not drop below 0.5 for the reminder of the observation period. The preferential votes substantially affected the election outcomes: between 2006 and 2017, 14% of deputies were elected as a result of the preferential votes they received.

There is one A5-sized printed ballot paper for each political party and constituency. 34% (= = 379) of ballots in parliamentary elections held between 2006 and 2017 contained electoral lists that were too long to fit on the front side of the ballot paper. In these cases the list of candidates continued on the reverse side of the ballot paper (for an example see Figure 3 in the Appendix). The number of candidates listed on each side of the ballot and, therefore, the location of the page turn within the list is determined by many factors, such as the length of the party name, the length of the description of individual candidates (i.e. their ranking on the ballot, name, age, occupation, municipality of residence, and political

1. The constituencies (regions) and the maximum number of candidates set by law for each are: Prague (36), Moravian-Silesian (36), Central Bohemian (34), South Moravian (34), Ústí nad Labem (26), Olomouc (23), South Bohemian (22), Zlín (22), Plzeň (20), Hradec Králové (20), Vysočina (20), Pardubice (19), Liberec (17), and Karlovy Vary (14).

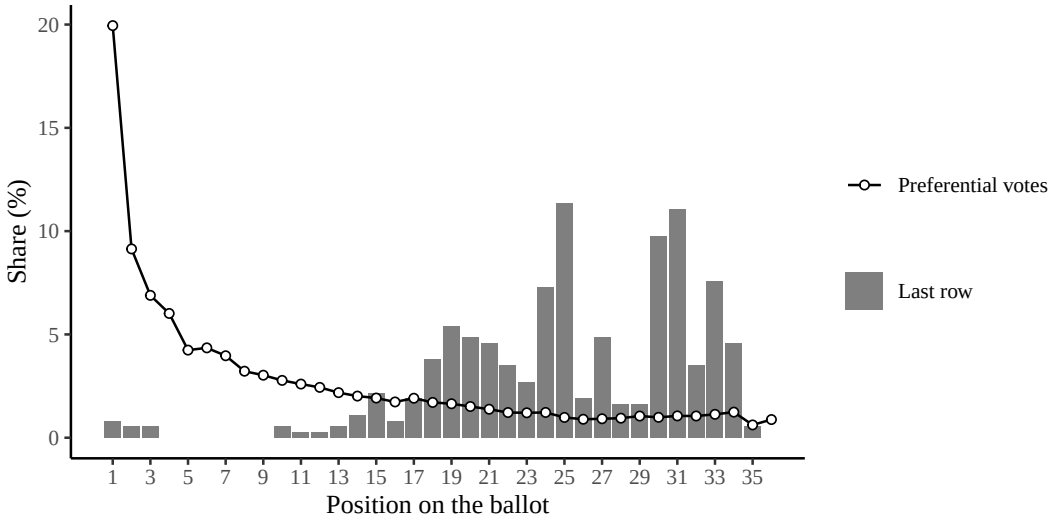

Figure 1: Distribution of preferential votes and last row number on the front side of the ballot over the position on the ballot

Note: Sample contains only double-sided ballots from the 2006, 2010, 2013, 2017 parliamentary elections with at least one candidate listed on each side of the ballot.

party a□liation) or other typographic settings such as the size of the margins that may di□er by region. Naturally, the page break is more likely to occur at lower positions in the electoral list (see Figure 1).[2]

Data suggest that political parties do not optimize the composition of the electoral list with respect to the location of the break: the candidates listed just before the page break do not di□er (at 5% level) from those listed just after it in gender, age, education, or occupation (see Table 1). The only di□erence significant at the 10% level is a di□erence in the share of candidates holding academic degrees without direct equivalents in the Czech education system (such as MBA, LLM, etc.). These are 1.3% more likely to occur on the front side.[3] Both parties and candidates also have little motivation to optimize the ranking in the close proximity of the page break, as no candidate listed immediately before or after the page break was elected in any of the 2006–2017 elections. Moreover, it would be di□cult for the parties and individual candidates to guess the exact location of the page break in advance as this varies within parties (see Figure 5a in the Appendix) as well as within constituencies (see Figure 5b in the Appendix).

This evidence shows that even though the location of the break is not intentionally randomized, it can be considered as good as random.

2. Figure 1 also shows extreme cases when there were only few candidates on the front side of the ballot. These come from a party that included its manifesto within its name (see Appendix Figure 4). This party was never elected to Parliament.

3. For details on variables description and data sources see Section 4.

Table 1: Descriptive statistics and balance tests at the page break

	Candidate		Difference in
	last on the front side	first on the reverse side	in means (2) (1)
	(1)	(2)	(3)
Age (years)	45.042	45.665	0.623
	(13.060)	(14.084)	
Male (= 1)	0.689	0.718	0.029
	(0.464)	(0.451)	
Education (ISCED 5, = 1)	0.011	0.016	0.005
Short-cycle tertiary education	(0.102)	(0.125)	
Education (ISCED 6, = 1)	0.045	0.050	0.005
Bachelor's or equivalent	(0.207)	(0.219)	
Education (ISCED 7, = 1)	0.354	0.317	0.037
Master's or equivalent	(0.479)	(0.466)	
Education (ISCED 8, = 1)	0.024	0.032	0.008
Doctorate or equivalent	(0.152)	(0.175)	
Education (other tertiary, = 1)	0.018	0.005	0.013
	(0.135)	(0.073)	
Occupation (ISCO 1, = 1)	0.206	0.211	0.005
Managers	(0.405)	(0.409)	
Occupation (ISCO 2, = 1)	0.230	0.206	0.024
Professional	(0.421)	(0.405)	
Occupation (ISCO 3, = 1)	0.187	0.203	0.016
Technicians and associate professionals	(0.391)	(0.403)	
Occupation (ISCO 4, = 1)	0.063	0.045	0.018
Clerical support workers	(0.244)	(0.207)	
Occupation (ISCO 5, = 1)	0.026	0.045	0.018
Service and sales workers	(0.160)	(0.207)	
Occupation (ISCO 6, = 1)	0.008	0.016	0.008
Skilled agricultural, forestry and fishery workers	(0.089)	(0.125)	
Occupation (ISCO 7, = 1)	0.055	0.055	0.000
Craft and related trades workers	(0.229)	(0.229)	
Occupation (ISCO 8, = 1)	0.042	0.037	0.005
Plant and machine operators, and assemblers	(0.201)	(0.189)	
Occupation (ISCO 9, = 1)	0.005	0.000	0.005
Elementary occupations	(0.073)	(0.000)	
Occupation (Unclassified in ISCO, = 1)	0.177	0.182	0.005
	(0.382)	(0.386)	
Observations	379	379	

Notes: Columns (1) and (2) contain means and standard errors in parentheses. Column (3) reports difference in means and ? values from the (test: , and denote statistical significance at 10%, 5% and 1%. Sample is limited to the baseline estimation sample.

3 Identification strategy and empirical specification

The literature suggests that voters tend to support candidates who rank higher on the electoral list as they (a) consider them more capable of holding the office, and (b) pay them greater attention, since reading electoral lists is costly. These factors jointly lead to the number of preferential votes being non-increasing in position on the electoral list (see Figure 1).

In this paper we aim to identify the effect of attention on the number of preferential votes received by exploiting the discontinuity at the break between the front and reverse side of the ballot paper. If (I) the page break is located randomly, and (II) candidates' list position does not affect the number of preferential votes received at the page break, than the discontinuity identifies the local effect of attention.

We estimate the effect of attention using data on candidates listed in positions immediately before and after the page break in the following empirical specification:

$$\log^{1}\ {}^{1}?E_{2}\ {}^{\circ\circ} = W1B_{2}\ \ ¸\ V\mathbf{X}_{2}\ \ ¸\ \log^{1}E\ {}^{\circ}\ ¸\ \backslash\ \ ¸\ \hat{}\qquad (1)$$

where $?E$ is the number of preferential votes received by candidate 2 running on electoral list (ballot) . Coefficient W is an indicator variable for the reverse side of the ballot ($1B$) identifies the effect of attention.

We also include a vector ($\mathbf{X}$) of individual characteristics of the candidate that may affect electoral support: age, occupation, education, and gender. Variable E is an offset variable that captures the number of ballots cast for the respective party. It is effectively the maximum number of preferential votes the candidate can receive.

The empirical specification also includes a set of fixed effects. The fixed effect ^ for the number of candidates on the ballot list, as a lower number of candidates *per se* increases the probability of any single candidate receiving a preferential vote. Most importantly the specification (1) contains a full set of ballot fixed effects (\ ) including a constant that controls the for popularity and characteristics of the party in question and of the election in question. The ballot fixed effects ensure that the attention effect is estimated within ballot.

We estimate regression (1) with Poisson Pseudo-Maximum Likelihood, which accounts for potential overdispersion. For all estimates we cluster robust standard errors by ballot. We exclude observations that have a fixed effect with perfect fit.

4 Data and descriptive evidence

The primary data set used in our empirical analysis is a an electoral database[4] which contains candidates' rankings (i.e. positions on the ballot paper) and secondary information on candidates that was made available to voters on the ballot (name, age, political party affiliation, occupation, municipality of residency)[5] along with electoral outcomes, including the number of preferential votes received.

The electoral database contains exact data on the ages of the candidates, which we classify into seven categories (18–29, 30–39, 40–49, 50–59, 60–69, 70–79, 80–89). Candidates list one or more occupations on the ballot. We manually encoded these occupations according to ISCO classification into 11 categories. In addition to ISCO level 1 we also use a special category for "occupations" that are not listed in ISCO such as *"student"*, *"mother"*, or *"retiree"*. If a candidate listed more than one occupation on the ballot, we use the first one.

Information on education and gender must be inferred from the name and candidate description. Tertiary education is signaled by the presence of academic titles, which are commonly used in formal communication (written and spoken) in the Czech Republic. We use academic titles to classify candidates into four categories that correspond to the levels of education defined by the International Standard Classification of Education (ISCED). In addition to ISCED 5 (Short-cycle tertiary education), 6 (Bachelor's or equivalent), 7 (Master's or equivalent), and 8 (Doctorate or equivalent) we also define a special category "other tertiary" for graduate degrees that are not traditional in the Czech Republic and have no close equivalent (such as MBA, LLM, etc.). The Czech academic titles *"profesor"* and *"docent"* (titles associated with the positions of full and associate professor) are added into the ISCED 8 category. Candidate can be classified in multiple education categories simultaneously.

We infer candidates' gender using their first names. We match the name listed in the electoral database with a database published by the Ministry of the Interior of the Czech Republic, which includes the frequency of each name for each gender.[6] We assign each candidate the gender that is more frequent for his/her first name. This is a reliable measure as the Czech Republic is highly linguistically and ethnically homogeneous[7] and first names commonly given to both genders are rare.

4. The electoral database is publicly available at https://volby.cz/opendata/opendata.htm.
5. For an example of a ballot see annotated Figure 3 in the Appendix.
6. This database is not available any more due to GDPR. We use the version that was released in 2015.
7. Over 91% of respondents who filled in nationality in the 2011 Census self-assigned to Czech nationality or to nationalities related to the Czech lands (these nationalities do not differ in culture and language from the majority).

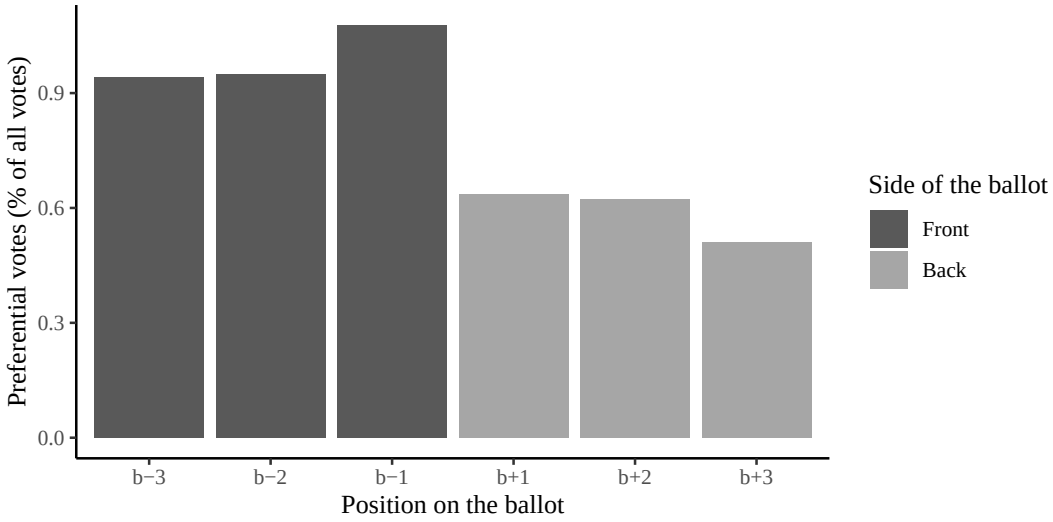

Figure 2: Position of the front side's last row on the ballot

Note: Sample contains only double-sided ballots from the 2006, 2010, 2013, 2017 parliamentary elections with at least one candidate listed on each side of the ballot. The percentage of preferential votes is calculated as the number of preferential votes received divided by the total number of votes cast for all parties.

We augment the electoral database with hand-collected data on ballot layout—specifically, we add the number of the last candidate printed on the front side of each ballot.

The resulting database contains constituency-level data for elections to the lower house of the Czech Parliament that took place in 2006, 2010, 2013, and 2017, all of which followed the same set of rules regrading preferential voting. In the first step we restrict the primary estimation sample to 379 (34%) ballots with at least one candidate on both sides of the ballot. The primary estimation sample is further limited to candidates that were either last on the front side or first on the second side of the ballot. For instance the ballot depicted in Figure 3 in the Appendix is represented by data on candidates number 33 and 34 in our estimation sample.

Figure 2 depicts the number of preferential votes received by candidates located in the close proximity of the page break between the front and reverse sides of the ballot paper (1). The differences in numbers of preferential votes between neighbouring positions on the same side of the ballot list are small, suggesting the validity of our identification assumption that ranking should not play any role in the proximity of the break (for a test see placebo estimates in Section 5). However, there is a clear difference between the number of preferential votes received by the last candidate listed on the front side of the ballot paper (1 1) and the first candidate on the reverse side (1 ¸ 1). On average, the 1 1 candidate received 328.0 votes while the 1 ¸ 1 candidate received just 193.9 votes. The

C test indicates that this difference of 134.1 votes (i.e. 41%) is statistically significant at the 1% level.

5 Results

Table 2 contains estimates of regression (1) with the inclusion of various covariates and fixed effects. The specification in column (1) contains only the variable of interest and the ballot fixed effect. In column (2) we add other covariates and fixed effects with the exception of occupation categories, which are likely to be more noisy than the other variables due to their manual coding into ISCO classifications. Finally, in column (3) we report the specification with all covariates and fixed effects.

Our estimates of the coefficient of interest are comparable across specifications and imply that being listed on the reverse side of the ballot causes a substantial reduction in preferential votes received by 67.2–72.6%.

Table 2: Effect of attention on electoral support

	Dependent variable: Number of preferential votes (log)					
	Specification					
	Baseline (*1* 1 vs *1* ¸ 1)			Adjusted (*1* 2 vs *1* ¸ 1)		
	(1)	(2)	(3)	(4)	(5)	(6)
Reverse side (= 1)	0•526	0•514	0•546	0•405	0•439	0•474
	¹0•085º	¹0•090º	¹0•096º	¹0•075º	¹0•063º	¹0•058º
Ballot FE	Yes	Yes	Yes	Yes	Yes	Yes
Education category		Yes	Yes		Yes	Yes
Age category		Yes	Yes		Yes	Yes
Gender (male)		Yes	Yes		Yes	Yes
Ballot length FE		Yes	Yes		Yes	Yes
Occupation			Yes			Yes
Observations	758	758	758	750	750	750

Notes: The table contains estimates of the coefficient of interest (W) from Equation (1). Standard errors clustered by ballot are in parentheses: , and denote statistical significance at 10%, 5% and 1%. The sample contains only double-sided ballots with at least one candidate listed on each sides of the ballot paper. Observations for which a fixed effect with perfect fit was identified are excluded from the sample.

Assuming that the location of the page break within the candidate list is (as good as) random, the interpretation of our estimates depends on the validity of our second identification assumption. The coefficient for the indicator variable for candidates listed on the reverse side of the ballot paper identifies the local effect of attention only if the ranking of candidates at the break point plays no role.

We test this assumption in falsification (placebo) tests where we artificially shift the true location of the break by up to 2 positions in both directions and re-estimate the regression (1) using the placebo break. If ranking plays a role in preferential voting in proximity to the true break, the placebo estimates should yield negative and significant coe□cients W.

Table 3: E□ect of attention: Placebo estimates

	Dependent variable: Number of preferential votes (log)		
	(1)	(2)	(3)
Placebo shift: Two positions upwards (1 3 vs 1 2)			
Placebo reverse side (= 1)	0•008	0•077	0•055
	[1]0•069[o]	[1]0•050[o]	[1]0•043[o]
Placebo shift: One position upwards (1 2 vs 1 1)			
Placebo reverse side (= 1)	0•118	0•082	0•104
	[1]0•050[o]	[1]0•054[o]	[1]0•054[o]
Placebo shift: One position downwards (1 ¸ 1 vs 1 ¸ 2)			
Placebo reverse side (= 1)	0•026	0•028	0•037
	[1]0•088[o]	[1]0•096[o]	[1]0•083[o]
Placebo shift: Two positions downwards (1 ¸ 2 vs 1 ¸ 3)			
Placebo reverse side (= 1)	0•038	0•042	0•056
	[1]0•082[o]	[1]0•086[o]	[1]0•081[o]
Ballot FE	Yes	Yes	Yes
Education category		Yes	Yes
Age category		Yes	Yes
Gender (male)		Yes	Yes
Ballot length FE		Yes	Yes
Occupation			Yes

Notes: The table contains estimates of the coe□cient of interest (W) from Equation (1). Standard errors clustered by ballot are in parentheses: , and denote statistical significance at 10%, 5% and 1%. The sample contains only double-sided ballots included in the primary estimation sample, which have at least one candidate listed on each (placebo) side of the ballot. In placebo estimates the position of the page break (1) is shifted by up to two positions in both directions. The notation of the compared candidates (1 3, 1 2,. . .) corresponds to the true position of the page break $1 = 0$. Observations for which a fixed e□ect with perfect fit was identified are excluded from the sample.

The coe□cients reported in Table 3 show no such pattern. The estimates are close to zero and insignificant in all cases, with an exception of the placebo shift by one position towards the top of the electoral list. There, we compare the preferential votes received by the last two candidates on the (true) front side of the ballot. Our positive and significant estimates suggest that the last candidate listed on the front side of the ballot (1 1) tends to receive more preferential votes then the candidate listed immediately before them (1 2).

This is in the line with the literature on ballot layout as Marcinkiewicz and Stegmaier (2015), Blom-Hansen et al. (2016) and Söderlund et al. (2021) find people prefer candidates listed on the last row of the ballot paper or ballot column.

The results of the placebo test suggest that there is a premium for candidates listed on the last row of the front side. We use these candidates as a control group in our baseline estimates and such a premium could, therefore, cause an upward bias in our estimates. In columns (4)–(6) in Table 2 we therefore replace the baseline control group with candidates listed in the position *1* 2. This indeed yields lower coe□cients, suggesting that the page break only decreases the number of preferential votes a candidate receives by 49.9–60.6%. The e□ect is lower in comparison to our baseline estimates by more than 10 percentage points, but remains substantial and statistically significant.

5.1 Robustness checks and additional place tests

In Section 2 we argue that it is hard for both parties and individual candidates to guess the location of the page break. This argument is supported by the variation in page breaks within party and within constituency. However, there are cases (see Figures 5a and 5b in the Appendix) where there was no variation in page break location for a given party or constituency in a given elections. Dropping these cases (2.4% and 5.0% of observations, respectively) from the estimation sample and re-estimating (1) yields estimates practically identical to the baseline (see Appendix Tables 4 and 5).

Our identification rests on the assumption that ranking has no e□ect on the number of preferential votes received at the page break. Placebo tests support the validity of this assumption. However, Figure 1 shows that some page breaks are located close to the top ballot positions, where the distribution of preferential votes clearly decreases – this likely violates our identification assumption. In our final robustness check we therefore exclude ballots with page breaks within the first (i) 10 or (ii) 23 list positions and re-estimate regression (1). The results for (i) reported in Appendix Table 6 are almost identical to the baseline results. With the exclusion of a larger number of ballots in (ii) the coe□cients are slightly lower (see Appendix Table 7) than the baseline suggesting an e□ect of 56.2–63.2% on preferential votes.

The placebo tests presented in Section 5 artificially shift the location of the page break on double-sided ballots. In an additional placebo test, we repeatedly (= = 1-000) randomly assign observed page break locations[8] to one-sided ballots and re-estimate (1) in the full specification, obtaining an empirical distribution of placebo estimates of the coe□cient

8. We exclude page breaks within the first nine positions on the ballot list as these are related to one rather obscure political party.

of interest. The mean of the distribution is positive and rather small[9] ($\bar{W}$ = 0•052) but statistically significantly greater than zero (t = 12•576, p = 999) – i.e. opposite to the negative results obtained with the true location of the break. Moreover, both estimates presented in columns (1) and (6) of Table 2 are lower than the 0.1% percentile of the empirical distribution of placebo estimates (0•445). This placebo test provides additional evidence that the treatment effect is driven by attention rather than by ranking.

6 Conclusion

Using data on preferential voting in Czech parliamentary elections we identify the effect of attention on electoral support for individual candidates. We measure electoral support by the number of preferential votes received. In Czech parliamentary elections voters cast a ballot specific to a political party on which they may also, if they wish, give preferential votes to up to four candidates listed on the ballot.

In 34% of cases, the list of electoral candidates is too long to fit on the front side of the ballot paper. The exact location of the break between the front and reverse sides depends on many factors such as typesetting, the length of the party's name and the length of the descriptions of the individual candidates, which effectively makes the break location as good as random or, at least, difficult to predict. Moreover, we show that parties are not likely to optimize the order in which candidates are presented with respect to the break location, since candidates listed in its close proximity do not differ in observable characteristics such as age, gender, education and occupation.

Checking the other side of the ballot requires additional use of cognitive abilities —attention— by voters, who already suffer from mental fatigue. We exploit the arguably random location of the page break to identify the effect of attention on electoral support. By comparing the number of preferential votes received by candidates listed in positions in the close proximity of the page break we find that being listed on the reverse side of the ballot decreases electoral support by at least 50%. The design of the Czech parliamentary elections enables us to identify the effect within-ballot and thus take into account systemic unobserved differences between parties and their supporters. Additionally, we find evidence that the last candidate in a given list is more likely to get preferential votes.

Our results add to a more general literature on how presentation order affects choice. We corroborate that the order in which information is presented plays an important role in forming people's impressions of it.

9. For the empirical cumulative distribution function see Figure 6 in the Appendix.

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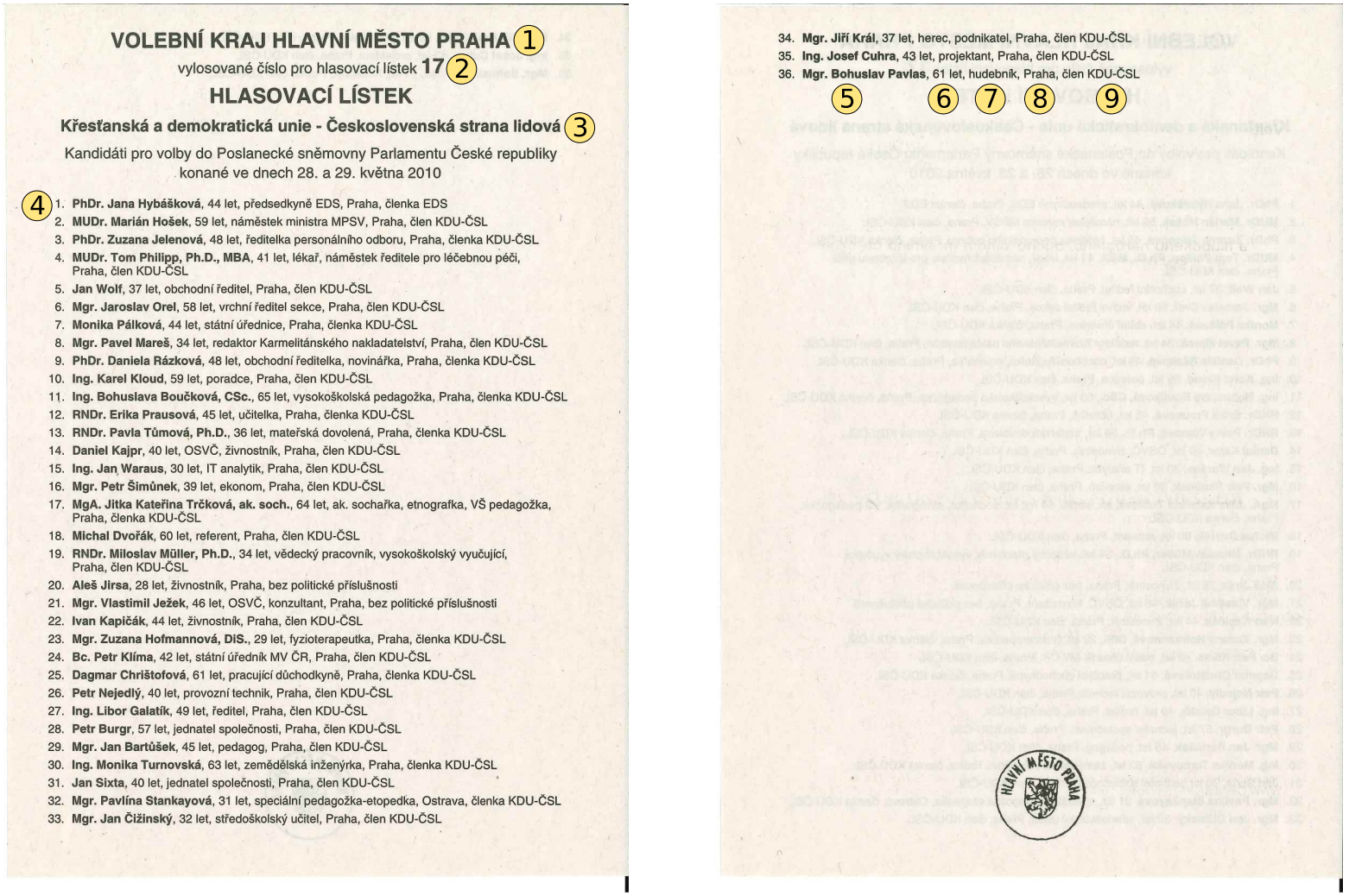
A Appendix



VOLEBNÍ KRAJ HLAVNÍ MĚSTO PRAHA (1)

vylosované číslo pro hlasovací lístek **17** (2)

HLASOVACÍ LÍSTEK

Křesťanská a demokratická unie - Československá strana lidová (3)

Kandidáti pro volby do Poslanecké sněmovny Parlamentu České republiky
konané ve dnech 28. a 29. května 2010

(4)

1. **PhDr. Jana Hybášková**, 44 let, předsedkyně EDS, Praha, členka EDS
2. **MUDr. Marián Hošek**, 59 let, náměstek ministra MPSV, Praha, člen KDU-ČSL
3. **PhDr. Zuzana Jelenová**, 48 let, ředitelka personálního odboru, Praha, členka KDU-ČSL
4. **MUDr. Tom Philipp, Ph.D., MBA**, 41 let, lékař, náměstek ředitele pro léčebnou péči, Praha, člen KDU-ČSL
5. **Jan Wolf**, 37 let, obchodní ředitel, Praha, člen KDU-ČSL
6. **Mgr. Jaroslav Orel**, 58 let, vrchní ředitel sekce, Praha, člen KDU-ČSL
7. **Monika Pálková**, 44 let, státní úřednice, Praha, členka KDU-ČSL
8. **Mgr. Pavel Mareš**, 34 let, redaktor Karmelitánského nakladatelství, Praha, člen KDU-ČSL
9. **PhDr. Daniela Rázková**, 48 let, obchodní ředitelka, novinářka, Praha, členka KDU-ČSL
10. **Ing. Karel Kloud**, 59 let, poradce, Praha, člen KDU-ČSL
11. **Ing. Bohuslava Boučková, CSc.**, 65 let, vysokoškolská pedagožka, Praha, členka KDU-ČSL
12. **RNDr. Erika Prausová**, 45 let, učitelka, Praha, členka KDU-ČSL
13. **RNDr. Pavla Tůmová, Ph.D.**, 36 let, mateřská dovolená, Praha, členka KDU-ČSL
14. **Daniel Kajpr**, 40 let, OSVČ, živnostník, Praha, člen KDU-ČSL
15. **Ing. Jan Waraus**, 30 let, IT analytik, Praha, člen KDU-ČSL
16. **Mgr. Petr Šimůnek**, 39 let, ekonom, Praha, člen KDU-ČSL
17. **MgA. Jitka Kateřina Trčková, ak. soch.**, 64 let, ak. sochařka, etnografka, VŠ pedagožka, Praha, členka KDU-ČSL
18. **Michal Dvořák**, 60 let, referent, Praha, člen KDU-ČSL
19. **RNDr. Miloslav Müller, Ph.D.**, 34 let, vědecký pracovník, vysokoškolský vyučující, Praha, člen KDU-ČSL
20. **Aleš Jirsa**, 28 let, živnostník, Praha, bez politické příslušnosti
21. **Mgr. Vlastimil Ježek**, 46 let, OSVČ, konzultant, Praha, bez politické příslušnosti
22. **Ivan Kapičák**, 44 let, živnostník, Praha, člen KDU-ČSL
23. **Mgr. Zuzana Hofmannová, DiS.**, 29 let, fyzioterapeutka, Praha, členka KDU-ČSL
24. **Bc. Petr Klíma**, 42 let, státní úředník MV ČR, Praha, člen KDU-ČSL
25. **Dagmar Chrištofová**, 61 let, pracující důchodkyně, Praha, členka KDU-ČSL
26. **Petr Nejedlý**, 40 let, provozní technik, Praha, člen KDU-ČSL
27. **Ing. Libor Galatík**, 49 let, ředitel, Praha, člen KDU-ČSL
28. **Petr Burgr**, 57 let, jednatel společnosti, Praha, člen KDU-ČSL
29. **Mgr. Jan Bartůšek**, 45 let, pedagog, Praha, člen KDU-ČSL
30. **Ing. Monika Turnovská**, 63 let, zemědělská inženýrka, Praha, členka KDU-ČSL
31. **Jan Sixta**, 40 let, jednatel společnosti, Praha, člen KDU-ČSL
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33. **Mgr. Jan Čižinský**, 32 let, středoškolský učitel, Praha, člen KDU-ČSL

34. **Mgr. Jiří Král**, 37 let, herec, podnikatel, Praha, člen KDU-ČSL
35. **Ing. Josef Cuhra**, 43 let, projektant, Praha, člen KDU-ČSL
36. **Mgr. Bohuslav Pavlas**, 61 let, hudebník, Praha, člen KDU-ČSL

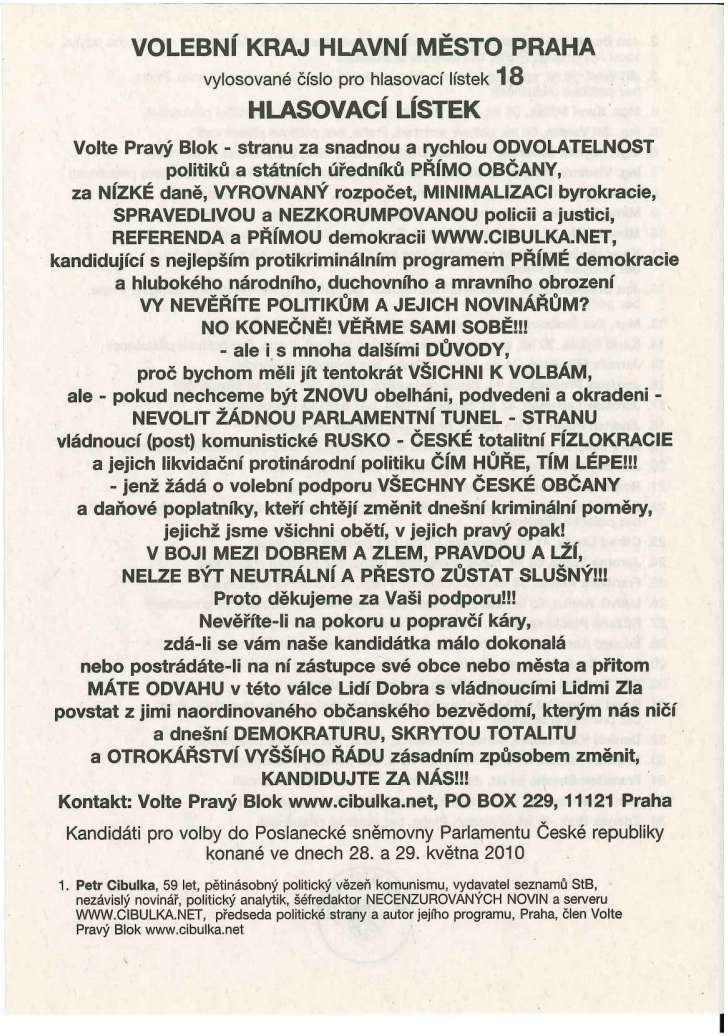
(5) (6) (7) (8) (9)

HLAVNÍ MĚSTO PRAHA

(a) Front side (b) Reverse side

Figure 3: Example of a ballot from 2010 parliamentary elections

Note: 1 – constituency; 2 – party number (identical in across constituencies); 3 – party name; 4 – candidate's position on the ballot (ranking); 5 – candidate's name; 6 – age; 7 – occupation; 8 – municipality of residence; 9 – a□liation with a political party



VOLEBNÍ KRAJ HLAVNÍ MĚSTO PRAHA

vylosované číslo pro hlasovací lístek **18**

HLASOVACÍ LÍSTEK

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VY NEVĚŘÍTE POLITIKŮM A JEJICH NOVINÁŘŮM?
NO KONEČNĚ! VĚŘME SAMI SOBĚ!!!
- ale i s mnoha dalšími DŮVODY,
proč bychom měli jít tentokrát VŠICHNI K VOLBÁM,
ale - pokud nechceme být ZNOVU obelháni, podvedeni a okradeni -
NEVOLIT ŽÁDNOU PARLAMENTNÍ TUNEL - STRANU vládnoucí (post) komunistické RUSKO - ČESKÉ totalitní FÍZLOKRACIE a jejich likvidační protinárodní politiku ČÍM HŮŘE, TÍM LÉPE!!!
- jenž žádá o volební podporu VŠECHNY ČESKÉ OBČANY a daňové poplatníky, kteří chtějí změnit dnešní kriminální poměry, jejichž jsme všichni obětí, v jejich pravý opak!
V BOJI MEZI DOBREM A ZLEM, PRAVDOU A LŽÍ, NELZE BÝT NEUTRÁLNÍ A PŘESTO ZŮSTAT SLUŠNÝ!!!
Proto děkujeme za Vaši podporu!!!
Nevěříte-li na pokoru u popravčí káry, zdá-li se vám naše kandidátka málo dokonalá nebo postrádáte-li na ní zástupce své obce nebo města a přitom MÁTE ODVAHU v této válce Lidí Dobra s vládnoucími Lidmi Zla povstat z jimi naordinovaného občanského bezvědomí, kterým nás ničí a dnešní DEMOKRATURU, SKRYTOU TOTALITU a OTROKÁŘSTVÍ VYŠŠÍHO ŘÁDU zásadním způsobem změnit, KANDIDUJTE ZA NÁS!!!
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Kandidáti pro volby do Poslanecké sněmovny Parlamentu České republiky konané ve dnech 28. a 29. května 2010

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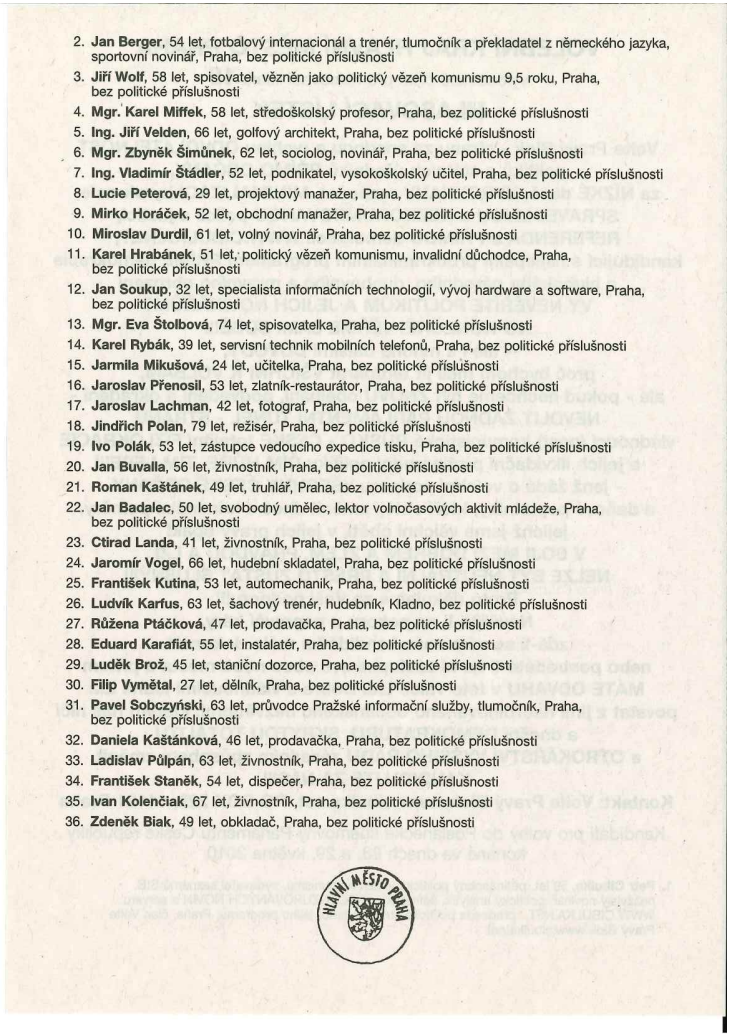
(a) Front side



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3. **Jiří Wolf**, 58 let, spisovatel, vězněn jako politický vězeň komunismu 9,5 roku, Praha, bez politické příslušnosti
4. **Mgr. Karel Miffek**, 58 let, středoškolský profesor, Praha, bez politické příslušnosti
5. **Ing. Jiří Velden**, 66 let, golfový architekt, Praha, bez politické příslušnosti
6. **Mgr. Zbyněk Šimůnek**, 62 let, sociolog, novinář, Praha, bez politické příslušnosti
7. **Ing. Vladimír Štádler**, 52 let, podnikatel, vysokoškolský učitel, Praha, bez politické příslušnosti
8. **Lucie Peterová**, 29 let, projektový manažer, Praha, bez politické příslušnosti
9. **Mirko Horáček**, 52 let, obchodní manažer, Praha, bez politické příslušnosti
10. **Miroslav Durdil**, 61 let, volný novinář, Praha, bez politické příslušnosti
11. **Karel Hrabánek**, 51 let, politický vězeň komunismu, invalidní důchodce, Praha, bez politické příslušnosti
12. **Jan Soukup**, 32 let, specialista informačních technologií, vývoj hardware a software, Praha, bez politické příslušnosti
13. **Mgr. Eva Štolbová**, 74 let, spisovatelka, Praha, bez politické příslušnosti
14. **Karel Rybák**, 39 let, servisní technik mobilních telefonů, Praha, bez politické příslušnosti
15. **Jarmila Mikušová**, 24 let, učitelka, Praha, bez politické příslušnosti
16. **Jaroslav Přenosil**, 53 let, zlatník-restaurátor, Praha, bez politické příslušnosti
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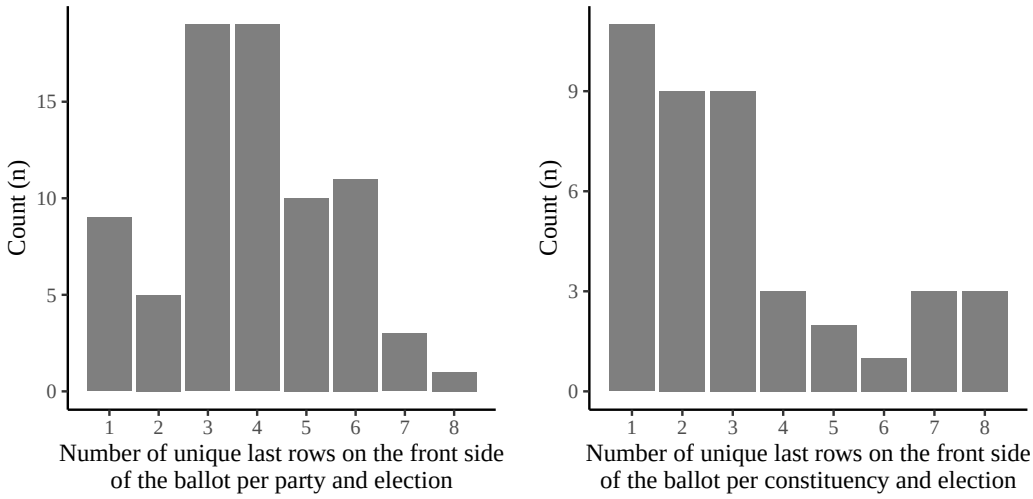
32. **Daniela Kaštánková**, 46 let, prodavačka, Praha, bez politické příslušnosti
33. **Ladislav Půlpán**, 63 let, živnostník, Praha, bez politické příslušnosti
34. **František Staněk**, 54 let, dispečer, Praha, bez politické příslušnosti
35. **Ivan Kolenčiak**, 67 let, živnostník, Praha, bez politické příslušnosti
36. **Zdeněk Biak**, 49 let, obkladač, Praha, bez politické příslušnosti

HLAVNÍ MĚSTO PRAHA

(b) Reverse side

Figure 4: Example of a ballot with an extreme layout



(a) Number of unique last rows per party and election

(b) Number of unique last rows per constituency and election

Figure 5: Number of unique last rows

Note: Sample contains only double-sided ballots from the 2006, 2010, 2013, 2017 parliamentary elections with at least one candidate listed on each side of the ballot.

A.1 Robustness checks

Table 4: Robustness check: Exclusion of observations with no variance in the position of the last row on the front side in party–elections pairs

	Dependent variable: Number of preferential votes (log)		
	(1)	(2)	(3)
Reverse side (= 1)	0•523	0•509	0•541
	(0•085)	(0•090)	(0•096)
Ballot FE	Yes	Yes	Yes
Education category		Yes	Yes
Age category		Yes	Yes
Gender (male)		Yes	Yes
Ballot length FE		Yes	Yes
Occupation			Yes
Observations	740	740	740

Notes: Table contains estimates of coefficient of interest (β) from Equation (1). Standard errors clustered by ballot are in parentheses: , and denote statistical significance at 10%, 5% and 1%. Sample contains only double-sided ballots with at least one candidate listed on each side of the ballot. Observations for which a fixed effect with perfect fit was identified are excluded from the sample.

Table 5: Robustness check: Exclusion of observations with no variance in the position of the last row on the front side in constituency–elections pairs

	Dependent variable: Number of preferential votes (log)		
	(1)	(2)	(3)
Reverse side (= 1)	0•513	0•500	0•532
	¹0•085º	¹0•091º	¹0•097º
Ballot FE	Yes	Yes	Yes
Education category		Yes	Yes
Age category		Yes	Yes
Gender (male)		Yes	Yes
Ballot length FE		Yes	Yes
Occupation			Yes
Observations	720	720	720

Notes: Table contains estimates of coe□cient of interest (W) from Equation (1). Standard errors clustered by ballot are in parentheses: , and denote statistical significance at 10%, 5% and 1%. Sample contains only double-sided ballots with at least one candidate listed on each side of the ballot. Observation for which a fixed e□ect with perfect fit was identified are excluded from the sample.

Table 6: Robustness check: Exclusion of observations with the position of the last row on the front side Ÿ 10

	Dependent variable: Number of preferential votes (log)		
	(1)	(2)	(3)
Reverse side (= 1)	0•525	0•513	0•543
	¹0•086º	¹0•091º	¹0•097º
Ballot FE	Yes	Yes	Yes
Education category		Yes	Yes
Age category		Yes	Yes
Gender (male)		Yes	Yes
Ballot length FE		Yes	Yes
Occupation			Yes
Observations	726	726	726

Notes: Table contains estimates of coe□cient of interest (W) from Equation (1). Standard errors clustered by ballot are in parentheses: , and denote statistical significance at 10%, 5% and 1%. Sample contains only double-sided ballots with at least one candidate listed on each side of the ballot. Observations for which a fixed e□ect with perfect fit was identified are excluded from the sample.

Table 7: Robustness check: Exclusion of observations with the position of the last row on the front side $\ddot{Y}$ 23

	Dependent variable: Number of preferential votes (log)		
	(1)	(2)	(3)
Reverse side (= 1)	0•463	0•446	0•490
	¹0•095º	¹0•105º	¹0•116º
Ballot FE	Yes	Yes	Yes
Education category		Yes	Yes
Age category		Yes	Yes
Gender (male)		Yes	Yes
Ballot length FE		Yes	Yes
Occupation			Yes
Observations	486	486	486

Notes: Table contains estimates of coe□cient of interest (𝕎) from Equation (1). Standard errors clustered by ballot are in parentheses: , and denote statistical significance at 10%, 5% and 1%. Sample contains only double-sided ballots with at least one candidate listed on each side of the ballot. Observations for which a fixed e□ect with perfect fit was identified are excluded from the sample.

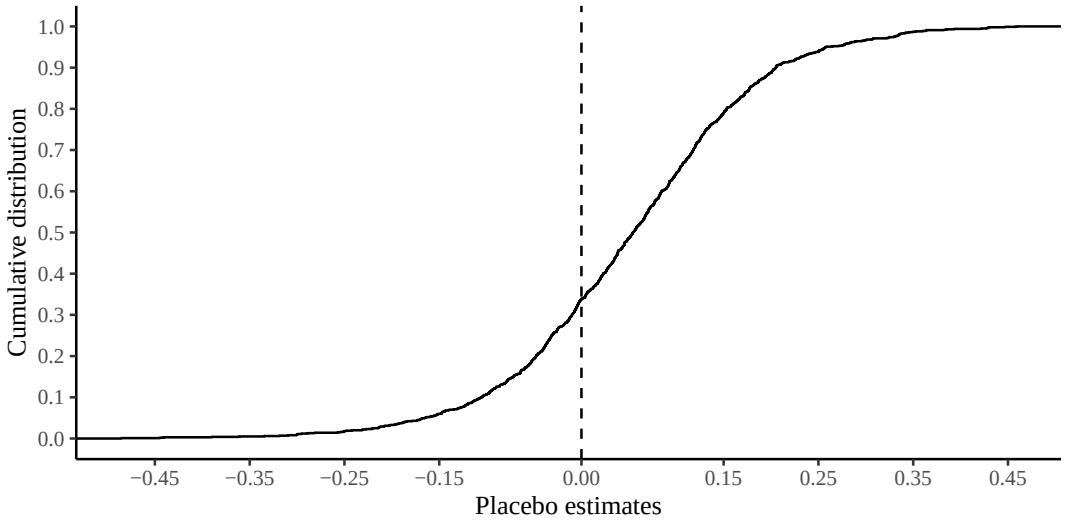


Figure 6: Empirical cumulative distribution of placebo estimates

Note: Figure depicts the empirical cumulative distribution function of placebo estimates of the coe□cients of interest. In the placebo test we repeatedly (= = 1-000) randomly assign observed page break locations to single-sided ballots and re-estimate (1) in full specification.

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