

## **Impatient for Gender Parity in Parliaments but Bothered by Mandatory Quotas?**

### **Consider Preference Voting**

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#### **Abstract**

Previous cross-national research on electoral-system effects on women's legislative representation suggests that candidate-centered systems – including list PR preference systems– are disadvantageous for women candidates precisely because they allow citizens to have some direct say in the election of individual members of parliament. We develop a dynamic theoretical model of agent-mediated electoral-system effects on women's representation that shows why preference voting systems may benefit women, especially over multiple elections, though they may be disadvantageous for further increasing women's representation where women are most active in politics. We test and support these propositions with a new dataset covering over 80,000 candidates in Central Europe, where our theory predicts different effects than previous scholarship. We conclude with a positive assessment of the benefits of PR preference systems.

Keywords: women's representation, candidate effects, preference voting, electoral systems, Central Europe

Electoral systems have long been regarded as important to women's representation (Norris 1996: 199), with majoritarian systems considered less conducive than proportional representation (Rule, 1987, 1994; Darcy et al., 1994: 141-44; Taagepera, 1994: 242; Matland, 1993; Matland & Studlar, 1996; Kenworthy & Malami, 1999; Norris, 2004: 186; Paxton et al., 2010; but cf. Inglehart & Norris, 2003: 140). Parties are deemed reluctant to select women for single-member districts for fear that voters prefer men, and high incumbent re-election rates make adaptation to changes in voters' attitudes slow (Norris, 1987; Matland & Studlar, 1996: 709; Reynolds, 1999: 555). The same argument explains why, across PR systems, the percentage of woman legislators increases with district magnitude (Rule, 1987, 1994; Taagepera, 1994; Norris, 1996; but cf. Studlar & Welch 1991; Schmidt 2009; Thames & Williams, 2010) and party size (Matland, 1993; Matland & Taylor, 1997; Matland, 2005; Salmond, 2006; but cf. Jones 2009: 75). In short, since women candidates are less valued by party and/or voters, from a given group of candidates they are less likely to be first choice than second and so forth. A similar argument links stronger women's representation to party list systems that give voters no choice between individual candidates (Thames & Williams, 2010; Valdini, 2010) and hence directly enforce placement mandates, including party quotas allocating favorable list places to women (Matland 2003, 2005; Schmidt, 2009).

Our paper contributes to understanding the legislative representation of women in three ways. In terms of theory we bind together various empirically supported claims into a model that depicts electoral-system effects as contingent on dynamic interactions between agents and structural factors, and further elaborate Darcy et al.'s (1994) proposition that candidate selectors are less likely to adopt women candidates than voters to elect women to office. This theory implies that women's representation is best advanced by preference systems and yields

a series of testable propositions. In terms of methods, we argue that the study of women's representation can learn at least as much from large-N studies using a *relatively similar systems design* as from statistical comparisons between different electoral systems. Empirically, we show that voters tend to prefer women candidates more than candidate selectors do, and the cross-contextual variation in this gender effect follows the pattern anticipated by our theory.

### **Theory**

The key institution in our theory is intra-party preference voting, which is used widely in proportional representation (PR) and semi-PR systems and allows or requires supporters of a party to express preferences among individual candidates. Preference systems vary greatly in design but contrast with closed-list systems that see candidates elected strictly in the order established by the party (Farrell, 2001; Marsh, 1985; Shugart, 2005). Some scholars found that preference voting helps the election of women (Rule, 1994: 18; Rule & Shugart, 1995; Kittilson, 2006: 106), but recent analyses of large cross-national data sets with multivariate models imply the opposite (Thames & Williams, 2010; Valdini, 2010).<sup>1</sup> Broadly, the conclusion of contemporary scholarship is that women's legislative representation is best facilitated by closed party lists with carefully designed gender quotas (Jones, 2009; Matland, 2005; Schmidt, 2009). However, this inference appears open to challenge on empirical, theoretical, and methodological grounds.

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<sup>1</sup> We use 'imply' because these two studies do not study the impact of preference systems but of personalized electoral choice – a conceptually similar but empirically near-orthogonal category that collapses some intra-party preference voting systems with single-member district systems and others with closed list PR (see details in our online appendix).

Empirically, preference systems do not exclude the use of quotas; they simply allow voters to change or endorse party-established rankings of candidates. This can only harm women's representation if voters have weaker preferences for women than do candidate selectors. Yet prior comparisons of voter and party rankings of candidates show mixed, inconclusive evidence on this point (Studlar & McAllister, 1991; Darcy et al., 1994: 149; Rule, 1994: 19; Schwindt-Bayer, Malecki, & Crisp, 2010: 702). This is important from a methodological perspective because only such studies can adequately address the key causal proposition regarding the impact of preference systems (see below).

Theoretically, the view that closed-list systems suit women candidates better seems to assume that candidate selectors are either more progressive than voters, or more susceptible to pressure from women's groups, or, as Valdini (2010) suggests, that voters are biased against women candidates and preference voting allows a stronger expression of this than closed lists. However, in our theory four structural factors interact to make PR preference systems potentially more favorable for women candidates (though not in all contexts). First is the near-universal underrepresentation of women as candidates, which suggests that candidate selectors are often predominantly male (Kunovich and Paxton 2005). The second is the ever-present uncertainty that candidate selectors face about the electoral and legislative utility of candidates when trying to construct the best possible lists for their party. This uncertainty gives scope for the private preferences and gendered stereotypes of selectors in judging candidate traits and voters' preferences. The third factor is that women value female candidates more than men do (Dolan, 2008; Holli & Wass, 2010; Sanbonmatsu, 2002; Inglehart & Norris, 2003: Figure 6.5). When factors one to three are all present, we expect what Fox and Lawless (2010) and Sanbonmatsu (2006) showed for the US, i.e. that party politicians fail to recognize fully the

quality and popular appeal of women candidates. The fourth factor is the institutionalized feedback about voters' views of candidates that only preference systems can provide. This feedback allows voters' candidate preferences to be expressed and recorded independently of their party choice, to influence which candidates get elected, and to be purposefully used by agents like women's groups to reduce candidate selectors' uncertainties about candidate quality with new information.

Preference voting systems should thus advance women's legislative representation – but only when pro-women attitudes are better represented among voters than candidate selectors. We should expect the opposite effect, however, if – perhaps because of a good supply of female candidates or the strong influence of quotas, women's groups or women politicians on candidate selection – a list features more women candidates than there is demand for among voters.

But these structural aspects of demand and supply only make a difference, in either direction, through agency. First, preference voting can only matter if voters' ranking of candidates is neither completely endogenous to, nor perfectly anticipated by candidate selectors in list placement. Second, more preference votes only help get more women elected if the extra votes constituting the gender bonus are not 'wasted' on candidates who do not enter parliament or who would be elected anyway without this vote bonus. Third, agency remains important for updating candidate selectors' beliefs about voters' candidate preferences with information revealed by past preference votes before the next round of elections.

By adding interest group influence, intra-party power structures and selection bias to a conventional supply-demand model with exogenous institutions, our agency-driven model reflects the complexity of recent theories on women's legislative presence (Norris, 2004: 183;

Paxton et al., 2007). It expects candidate selectors, voters, and groups seeking greater women's representation to mediate the influence of institutions. Above all, when women have a particularly strong presence on party lists, preference voters may become kinder to male than female candidates - which is a recurrent finding about Norwegian local elections (Bergh et al., 2009: chapter 6).

Outcomes are also contingent on electoral coordination. Parties are well suited to prioritize one candidate over another and to run as many nominees in a district as would maximize their expected share of seats. Women's groups, especially when non-partisan, are poorly suited to this function. To coordinate effectively they would need to agree which candidates to support on which party list, but for many the choice of party would be more salient than the desire to help women candidates. Moreover, they almost certainly lack information about which of the many women candidates running on different lists in a district would offer the best returns to their efforts in terms of extra seats. This makes targeting decisions yet more divisive. But worst of all, identifying potential voter-participants in such a cross-party scheme and effectively communicating with them would be prohibitively costly. Instead, women's groups understandably see superior cost-benefit ratios in promoting gender quotas on the coattails of international norm diffusion (Krook, 2009).

Thus we expect that the extra preference votes of women candidates are rarely converted into stronger legislative representation. Yet this does not mean that preference voting is harmful for women's representation; rather it creates otherwise non-existent opportunities for updating candidate selectors' views regarding women candidates, which, as Darcy et al. (1994) suggested, are a bigger hindrance to women's legislative representation than some voters' unfavorable attitudes to women candidates.

## Hypotheses

We argue that candidate selectors, under the circumstances of a typical contemporary democracy, value women candidates less than their male equivalents because of biased private information about citizens' taste and/or gendered assessments of candidate quality (Fox & Lawless, 2010; Sanbonmatsu, 2006). Hence hypothesis one expects that women are less likely to become candidates than men and less likely to gain list places that offer the best prospects of election.

Hypothesis two is that the distribution of preference votes among candidates is strongly, positively, but imperfectly correlated with the parties' initial ordering of their candidates. First, voters' evaluation of candidates is not wholly different from that of their party's selectors – after all, both voters and selectors desire the victory of the same political cause. Second, selectors' candidate ranking is responsive to voters' expected evaluation of candidates. Third, citizens take cues about candidate quality from list placement and incumbency. Fourth, since in list PR systems it is unusual for candidates to have separate campaign funds and activities from those of their parties, list positions (together with incumbency) must be excellent proxies of campaign efforts on behalf of individual candidates. In spite of these four factors, though, some citizens inevitably have independent opinions, and preference-vote shares must thus reveal some new information about voters' taste.

Hypothesis three states that women candidates tend to receive a bigger share of preference votes than we would expect merely on the basis of list place and incumbency, unless demand is satisfied by an unusually strong supply of women candidates on a list. If this is true, then selectors' rational expectations about voters' attitudes cannot be the sole reason why women candidates receive less favorable places than men on party lists. Instead, gendered

assessments of candidates or gender-based solidarity between selectors and potential candidates must affect list order. However, this bias – and with it the positive difference between voters’ and selectors’ evaluations of women candidates – should disappear and even reverse as the percentage of women candidates on party lists increases.

Hypothesis four expects that whatever preference-vote advantage candidates of either sex have over the other net of list placement, party and incumbency, this gender bonus is spread rather evenly across candidates. This follows from our previous argument about the difficulty of electoral coordination on the basis of candidate sex. The implication is that the net vote advantages that one sex may have over the other may not readily convert into extra seats won over and above the level expected merely on account of list placement, party and incumbency. Thus party placements will largely determine the percentage of women legislators under preference voting too.

### **Research design, data and context**

The previous literature examined electoral-system effects on women’s representation mostly via cross-sectional comparisons of women’s legislative presence across electoral systems with controls for socio-economic development, institutions, culture and so forth (see e.g., Schmidt, 2009; Thames & Williams, 2010; Norris, 2004: 186; Paxton & Kunovich, 2003). Many such controls are reasonable proxies for *both* voters’ and candidate selectors’ preferences for women legislators and thus affect the latter either directly or – in the case of citizens’ attitudes towards women politicians in Valdin’s (2010) study – in interaction with electoral-system type.

What these controls miss is the *difference* between candidate selectors’ and voters’ evaluation of an *identical* set of women candidates, i.e. the key causal mechanism that links



preference voting to women's representation in current theories. Statistical associations that are not controlled for the key intervening variable cannot speak to direct causation between the two variables and are likely to yield unreliable predictions.<sup>2</sup> Genuine electoral-system effects are better identified if one can estimate what would happen in the same context with and without an institution. Therefore our analysis focuses on the unique laboratory of preference voting because it provides comparable data about party selectors' and voters' rankings of identical candidates. Thus it reveals not only what happens under preference voting but also what might happen without it.<sup>3</sup>

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<sup>2</sup> For instance, if Valdini (2010) were correct, and personalized votes really suppressed women's representation in interaction with public opinion of women politicians, then we should expect preference voting to have no impact on women's representation where popular attitudes towards women politicians are as positive as in Norway and Australia, but to have a clear negative impact in countries where these attitudes are as negative as in the Czech Republic, Poland, and Slovakia. These are the five countries out of twenty in her analysis for which multivariate analyses of candidate selectors' and voters' rankings of identical sets of candidates are known to us, and some of the most extreme of her 20 cases in terms of public opinion regarding women in politics. Yet Norwegian voters prefer women candidates less, while Australians, Czechs, Poles and Slovaks prefer women more than candidate selectors do (see Bergh et al., 2009; Schwindt-Bayer et al., 2010; and the analysis below, respectively).

<sup>3</sup> It is possible that the desire to avoid embarrassment at the polls may bring party-defined list order closer to the voters' expected ranking of the candidates under preference voting than it would be under closed lists. Therefore, our method of comparing voters' and party selectors

Specifically, we focus on preference systems that award voters significant influence and thus motivate citizens to develop and reveal preferences for individual candidates but also require parties to present their candidate rankings or even ensure that party list-order has some impact on the outcome. Under any other circumstances either citizen or party rankings could be ad hoc or insincere.<sup>4</sup> Moreover, we focus exclusively on medium-developed countries that, in the first decade of the twenty-first century, hovered around the world average both for women's representation in lower houses of national parliaments and in popular attitudes to gender equality (IPU, 2011; Inglehart & Norris, 2003: 178). This is because we expect such countries to be more typical of an average democracy in terms of women's influence on candidate selection and popular attitudes than advanced democracies using PR preference systems. The latter typically have more balanced representation of the two sexes among politicians and strong networks of women's groups and women politicians. Therefore they are likely to have more female influence on candidate selection, and hence, if our theory is correct, may produce an oversupply of women candidates compared to popular demand. In the contexts we examine, preference voting should have a predominantly positive influence on women's chances of election if our theory is correct, but a negative effect if Thames and Williams'

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evaluations provides lower-bound estimates of the difference between voters' evaluations and what the same party selectors' evaluations of the same candidates would be with a closed list.

<sup>4</sup> Only some preference voting systems satisfy these criteria. For instance, citizens' preference votes hardly ever make a difference in seat allocation in the Netherlands, while Finnish parties do not rank candidates.

(2010) and/or Valdini's (2010) findings about personalized vote systems apply to preference systems as they assume.

Our study design is best described as a large-N relatively-similar-systems study of nested data. It limits variance in the dimensions discussed above to approximate the causal homogeneity ideal of experiments more closely. But, since competing candidates are nested within party lists in specific electoral districts and elections, we obtain literally thousands of distinct contexts in the data. This large-N aspect helps generalizations for the target universe by allowing for substantial variance in candidate characteristics as well as the length, gender balance, electoral appeal, ideology, regional, national and temporal contexts of the party lists (see descriptive statistics in the online appendix). In particular, the percentage of women candidates on the lists varies over the whole possible range, from 0 to 100. Hence the data allow testing the proposition that a stronger influence of women's preferences on candidate selection and/or a better supply of women candidates reduces – and eventually reverses – the difference between candidate selectors' and voters' preferences for identical sets of male and female candidates, i.e. the net impact of candidate gender on preference-vote shares controlled for list placement and incumbency.

Our study thus focuses on data covering the list placement and election results of all 86,451 candidates on all 5,564 party lists in elections to the lower or sole chamber of parliament from full democratization and/or independence to the end of 2010 in the Czech Republic, Estonia, Poland and Slovakia. These post-communist democracies have used list PR with preference voting for all their elections.<sup>5</sup> Table 1 summarizes key features of their

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<sup>5</sup> Relevant legislation, election results and candidate-level data are available from the authors and our website at [REFERENCE SUPPRESSED FOR BLIND REVIEW].

preference arrangements. In all 21 elections voters were presented with party-ordered lists of candidates in their districts. While a second (national) tier of seat allocation existed in many of these elections for remainder votes pooled by parties, preference votes had no impact at that stage, and thus our analysis deals exclusively with the first, district-level tier.<sup>6</sup>

In Poland and Estonia voters cast a single vote for their chosen candidate and that vote also counts as a vote for the candidate's party. Czech and Slovak citizens vote for a party and may optionally endorse several candidates on the list. Votes are pooled by party in all four countries to determine how many seats each party obtains in the district (for details see Birch et al., 2002). Seat allocation to winning lists is determined by preference votes in Estonian and Polish constituencies, while the Czech and Slovak systems only allow preference votes to affect seat allocation for candidates endorsed by a percentage of a party's voters. The proportion of deputies elected because preference votes pushed them higher up the pecking order than their initial list placement averaged 23, 12, 7, and 4 percent across Polish, Estonian, Czech and Slovak elections. Including deputies placed high enough on party lists to have been elected under closed-list voting rules, a total of 93, 58, 23 and 35 percent were elected by preference votes in the four countries, respectively (see our online appendix for details by election and sex). Hence both preference votes and the list order assigned by the party had relevant effects on candidate success in all four countries; thus their electoral systems meet our selection criteria.

Table 1 about here

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<sup>6</sup> This also applies to post-1992 Estonian elections, where candidates were elected from national lists in order of list place but only if they won a certain quota of preference votes.

## Party evaluations of women candidates

In total, 18,145 female and 68,306 male candidates stood in the 21 elections that our data cover. The proportion of women candidates rose in all four countries in the 1990s, and then remained relatively stable at around one-quarter of all candidates (see the leftmost column of Table 2).

Table 2 about here

The extent to which parties considered their women candidates less qualified or less attractive to voters is illustrated by the fact that women on average were placed one and a half places lower on party lists than men.<sup>7</sup> The practical significance of this average difference depends, of course, on whether it occurs between candidates towards the very bottom or close to the top of their respective lists. To take account of these nuances, we transformed *List Placement* into a *Relative List Position* variable that assigns a -1 value to candidates at the bottom of their list, and +1 to candidates leading the list (the variables are elaborated in the technical appendix). Figure 1 displays the percentage of women among candidates for each percentile group by *Relative List Position*, i.e. for the lowest placed one percent followed by the second lowest placed percent and so forth, all way up to the highest placed one percent. A thick line in the figure, drawn with the help of locally weighted polynomial regressions (called a ‘lowess curve’), indicates the pattern of bivariate relationship between the two variables (Cleveland, 1979). The proportion of women slightly but steadily declines as we move up party lists. This pattern holds across countries and broadly defined party families except for Poland and the left-wing and liberal party groups, where women were more likely placed towards the

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<sup>7</sup> The precise figure is 1.48 (with a plus-minus 0.4 margin of error), which drops to 1.07 among the 80,887 candidates who did not top their party list.

middle than the bottom of party lists but still remained somewhat underrepresented in high list positions (see the online appendix).

While women are assigned just slightly less favored places on party lists than men, such small gender gaps are repeated systematically across a number of other indicators that all foreshadow a candidate's chances of winning a seat (see Table 2). In nearly all elections, male candidates were more likely to appear on seat-winning lists, to top the list on which they appeared, and to run as incumbents. All these differences were statistically significant in about half the 21 elections,<sup>8</sup> and, as our regression analyses show below, may well have contributed to cutting the presence of women to just 16.2 percent of the candidates elected at the first tier as opposed to 21 percent of all candidates in our data. All in all, hypothesis one receives fairly consistent support: candidate selectors apparently value women candidates less than their male counterparts. What we cannot be sure of at this point is whether they are simply anticipating correctly how voters evaluate the quality of different candidates.

### **Preference votes**

Table 3 shows that list position and preference-vote shares show non-trivial positive correlation in all elections. Hypothesis two is thus supported: voters tend to share party evaluations of candidates.

Table 3 about here

Yet, while women on average had a lower relative list position than men in all but two elections (Poland 1993 and Estonia 2003), they received *more* preference votes than men in 12 out of 21 elections. The gender gap in preference-vote shares was statistically significant in six

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<sup>8</sup> In 17, 12, 10 and 13 elections for the four variables respectively, using one-tailed T-tests with a critical value of  $p < .05$ .

elections. Three (Poland 2001, Estonia 1995 and 1999) showed a male, and three (Poland 1993, Czech Republic 1996 and 2006) a female advantage. All four countries had at least two elections where women candidates had a higher average preference-vote share. This is consistent with our expectation that the disadvantages of women candidates at the nomination stage are rooted in selectors' attitudes.

The crucial test of hypothesis three within the confines of our data set is whether voters give more or fewer preference votes to women candidates than we might attribute to factors that are fully or partly controlled by the party, i.e. list place and incumbency (with the latter partly reflecting candidates' list places in past elections). We test this with a linear regression model. The dependent variable is each candidate's percentage share of all preference votes cast for candidates on his or her party list, and the key predictor (*Female Candidate*) signals sex. If our theory is correct, the main effect of *Female Candidate* should be positive on preference-vote shares but its interaction with the *Proportion of Women on List* should have a negative effect, i.e. the vote bonus of female candidates should diminish when voters' demand for women candidates is already satisfied by the composition of the list.

The first control variable is the inverse of the number of candidates on a list (*Inverse List Length*). We use the inverse of list length because the more candidates on a list, the smaller the average candidate's vote share. The other control variables are *Relative List Position* as introduced above; *Capolista*, which identifies the first-placed candidate on each list, who usually win a disproportionately large share of preference votes (Katz, 1985; Marsh, 1985); and *Incumbent*, which marks candidates standing for re-election. These controls should capture cross-candidate differences in access to party-controlled resources that help voters' recognition

of candidate name, expertise and other qualities, and thus allow a better assessment of how candidate sex itself relates to the traits that voters appreciate.

The coding of the *Capolista*, *Incumbent* and *Female Candidate* variables reflect the fact that candidates' preference-vote shares sum up to 100 percent within each of the 5,564 party lists in these 21 elections, i.e. vote gains of one candidate on the list turn into vote losses for all other candidates on the same list. We deal with this problem partly through the estimation of cluster-corrected standard errors for all model coefficients,<sup>9</sup> and partly through a variable recode that assures that the net vote gains<sup>10</sup> of each list leader, incumbent, and woman candidate turn into a strictly predictable reduction in the expected vote shares of all other candidates on the same list. For instance, if there are  $k$  incumbents on a party list, then we code each of them as  $1/k$  on the *Incumbent* variable, and hence their combined net vote gain equals  $b$ , i.e. the estimated effect of the *Incumbent* variable on preference-vote shares. The expected net change in the vote shares of all other candidates on the list that is due to the presence of  $k$  incumbents on the list must then be minus  $b$ . Thus our coding of these other candidates on the *Incumbent* variable is minus one divided by  $(List\ Length - k)$ . Due to this coding of *Incumbent*, our regression model can estimate the correct value of  $b$  that takes into account that the vote gains of incumbents are necessarily distributed as losses across other candidates. Obviously,

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<sup>9</sup> In other words, the estimated confidence intervals for the effects recognize that our 86,451 candidates are clustered by party lists, which creates within-cluster correlations among the unexplained part of candidates' vote shares.

<sup>10</sup> By these net vote gains (which can be negative, i.e. vote losses) of candidates we mean the difference that the respective variables – *Capolista*, *Incumbent*, or *Female Candidate* – make in their expected vote share according to a particular multivariate regression model.



*Incumbent* cannot affect vote share if either all candidates on a list or none at all are incumbents, thus all candidates on such lists are coded zero on the *Incumbent* variable.

The *Capolista* and *Female Candidate* variables were created following the same rules. In addition, we recoded the 141 candidates (mostly independents) who ran on single-candidate lists. Since their list placement could not affect their share of preference votes (which must be 100 percent), they were coded 0 on all independent variables save *Inverse List Length*.

Table 4 displays the results with five different models for the pooled sample of 21 elections. The impact of list length has the expected relationship with expected vote shares, i.e. 100 times the inverted list length is exactly the expected vote share of an average candidate on a list. This factor alone explains nearly 40 percent of the cross-candidate variation in preference-vote shares. The other model variables account for over half the remaining (i.e. within-list) variance, and the fullest model explains 74 percent of the total variance. The impact of candidate gender is small compared to list placement and incumbency but is highly significant and in the expected direction. On the average party list woman candidates obtain about 1.5 percent more preference votes than expected on account of list length, incumbency and list placement (see the results with model 3). This effect is as large as if roughly one in 32 women voters cast a preference vote for a women candidate for reasons other than incumbency and list place, while all other voters – men and women alike – remained completely gender-neutral except that they rated incumbents and higher-placed candidates somewhat above non-incumbents and lower-placed candidates.

The model fit statistics show small but significant improvement when we add the theoretically important and statistically significant interaction between *Female Candidate* and the *Proportion of Women on List*. The interaction works as expected: the greater the proportion

of female candidates, the fewer bonus votes they, collectively, can expect. Figure 2 shows the 95 percent confidence intervals for the expected vote share of typical male and female candidates as a function of the *Proportion of Women on List*.<sup>11</sup> The vote advantage of women over men sharply and significantly increases as the proportion of women on the list drops below 35 percent, partly because the impact of *Female Candidate* shows the combined gain of all women, which has to be distributed among fewer and fewer women as we move leftwards in the plot. On the opposite pole, the confidence interval becomes wide for male candidates because so few men run on lists dominated by women that no statistically significant differences can be detected. Both the figure and the estimates in Table 4 suggests that the net impact of *Female Candidate* on vote shares is expected to turn negative when the proportion of women on a list rises somewhat above one half. This seems consistent with our suggestion that gender effects of preference votes are due to the different gender balance among voters and candidate selectors.

Figure 2 about here

All estimated model coefficients save the impact of *Inverse List Length* and the constant show some variation in size across regional party lists, party types, elections, countries, lists of different length, and so forth. While we cannot explore here this variation for reasons of space and theoretical focus, our online appendix presents separate parameter estimates for model 3

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<sup>11</sup> The simulations displayed in the figure were performed using the Clarify package of King et al. (2000) and holding constant the values of *Relative List Position* and *Incumbent* at their sample mean, and those of *Capolista* and *Inverse List Length* at their mean value for candidates in the middle position on lists of average length plus-minus one.

for each election as well as estimates for a more fully specified hierarchical linear model featuring all plausible two-way interactions that we could control for. What is relevant from these results is that the effect of *Female Candidate*, while positive in all Polish, Czech, and Slovak elections, turns negative in four out of five Estonian elections, ranging from -3.1 to 3.3 (percent) across the 21 elections. The effect is statistically significant in eleven elections, but only once in the negative direction. All in all, candidate gender has a modest effect and rarely seems to swing more than 3 percent of preference votes. While the gender effect is often statistically insignificant in smaller samples (such as those produced by Slovak and Estonian elections), in the large majority of elections it favors women candidates. The results of the multilevel analysis reported in the online appendix further confirm that all our key results hold in the context of random-coefficient linear hierarchical models featuring a variety of plausible interactions between the control variables and the contextual characteristics of party lists. Hypothesis three thus receives clear support.

Table 4 about here

Hypothesis four, however, expects that, in the absence of electoral coordination to convert this gender bonus into seat gains for women candidates, the bonus is spread rather evenly across candidates with different chances of election. Given that, as we saw above, the relative list position of candidates has a strong non-linear impact on their preference-vote shares – non-linear because of the extraordinary influence of being a list leader –, we first proxy the chances to get elected with this variable. Figure 3 presents the bivariate relationship between *Relative Vote Share* and *Relative List Position* for the two sexes. The construction of *Relative Vote Share* imitates that of *Relative List Position* to allow comparisons across party lists of varying lengths. The top vote getter is coded one, the median candidate (in terms of

preference votes) zero, the weakest vote getter minus one and all other candidates in between 1 and -1 according to their rank order within the list in terms of preference votes obtained (see the technical appendix for details).

Figure 3 about here

Figure 3 shows, as a background, the bivariate scatterplot of the two variables for women candidates, with the position of each signaled by a short grey dash.<sup>12</sup> What is interesting are the two thick lowess curves in the plot that characterize the non-linear relationship between relative list positions and relative vote shares for male and female candidates respectively. Remarkably, the solid line for women candidates always runs above the dashed line for men, suggesting that female candidates tend to receive more preference votes than male candidates with an identical list place virtually irrespective of whether they are placed close to the bottom, around the middle or towards the top of the party list. Active electoral coordination could ensure that women in more electable places were the primary recipients of gender-based bonus votes. However, the opposite appears to be the case: as we move closer and closer to the very top of a party list, women candidates gradually cease to outdo male candidates in terms of their preference-vote ranking. This supports hypothesis four, postulating the lack of effective voting coordination.

### **Seat allocation**

Another way of addressing the same hypothesis is to analyze the impact of candidate gender on the chances of election in the district where the candidate stood. If the net vote gains of women candidates – relative to their list place – are effectively converted into seat gains, we would expect *Female Candidate* to have a positive net effect on the probability of having been

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<sup>12</sup> The locations of the dashes for candidates were jittered to reduce location overlaps.

elected in the district. This analysis included only those candidates who ran on winning party lists in the given election, as otherwise their individual characteristics could not influence their chances of election. Except for replacing *Inverse List Length*, not directly relevant in this equation, with the *Percentage Elected from the List* among the controls, and running a logistic regression rather than OLS, the specifications of this model are very similar to that presented in Table 4 for preference-vote shares. In that equation *Female Candidate* recorded a statistically significant positive effect in both the pooled cross-election data and about half the national elections taken individually. As Table 5 shows, this changes when ‘getting elected’ becomes the dependent variable. While list position and incumbency retain their predictive power, the effect of gender, while positive, is not statistically significant in the pooled data or in any one country. When we repeat the same analysis election by election, the impact of gender is statistically significant in just two elections: with a negative sign in Poland 1993 and a positive sign in Poland 1997 (data not shown).

Overall, then, hypothesis four seems vindicated. Whatever the strategies of women’s groups and other interested parties during the nomination phase or in election campaigns in these four countries, they failed to increase the chances of electing women candidates to parliament by a bigger ratio than that pre-determined by how many women candidates were placed on party lists and in what kind of position.

## **Conclusions**

A voluminous scholarly literature argues that parity among sexes in legislatures is undermined in candidate recruitment processes and the best way to address this issue is the introduction of gender-based quotas (see Krook, 2009 and Matland, 2005 for recent reviews). We did not dispute this but argued that preference systems that give voters a choice between

candidates of the same party, and thus give more legitimacy to electoral outcomes in terms of the deputies elected, usually help rather than hurt women candidates, at least until the proportion of women on a list reaches a high level. Our theory suggests that this level is dependent on the supply of women candidates and public attitudes to women politicians. Empirically, the four polities in our analysis did not have favorable parameters for women's legislative representation in either respect. Yet women candidates polled more preference votes than expected on account of their list place and incumbency until their percentage on a list reached roughly their proportion in the population.

Our findings imply that male dominance of candidate selectors is probably a more important obstacle to increasing women's legislative presence than public opinion. Thus, intraparty preference voting should usually promote women politicians. However, adopting the institution itself may not make much difference in the absence of agents taking advantage of it, and the effects on women's representation are likely to be indirect since electoral coordination (as opposed to mobilization) on the basis of candidate gender is unlikely to occur on a large scale. Even for the indirect effects to materialize, voters must not simply endorse the party-established ranking of candidates, and women's groups should probably allocate efforts to highlight the extra information revealed by preference votes about citizens' judgment so as to secure better list placement for women candidates in subsequent elections, probably through the enforcement of gender-based mandate placements.

Future research may wish to explore on large cross-national data sets whether PR systems lead to growth over time in the percentage of women candidates and legislators dependent on the degree to which they give preference votes an influence on the outcome. As we showed, the limited evidence from the four countries is consistent with this proposition.

Hence advocates of gender-based quotas should probably appreciate rather than oppose these systems for giving the ultimate choice of legislators to voters. First, our findings imply that preference voting systems are probably more likely to give electoral legitimation to gender-based candidate quotas than to upset the gender ratio anticipated by quota designs. Second, precisely because they leave the choice of legislators in voters' hands – and thus reveal extra information about their preferences – these systems may in fact help the adoption of gender-based quotas more than closed-list PR. Poland did just that in 2011, with a new mandatory requirement for party lists to include at least 35 percent of candidates of each sex.

Our analysis also has broader implications for the study of electoral systems. Theoretically and empirically, we showed that PR preference systems may have genuine effects on relevant political outcomes, but only with the intervention of purposively acting agents. Like single-member district systems they, to a degree, personalize vote choice, but their impact on the representation of minorities is nevertheless very different, because they also allow for intraparty competition among candidates for the voters' favor. In terms of methods, finally, we argued that comparisons across relatively similar systems may at times provide better control over causal mechanisms and thus yield more insight than most-dissimilar-systems comparisons. The latter have an important place in testing propositions that refer to independent variables that can be observed across different systems. But some factors, like the difference between voters' and candidate selectors' appreciation of identical candidates, can only be observed in certain systems, and hence their impact should be analyzed accordingly.

## Technical appendix: The construction of the variables in the analysis

*Capolista*: generally this variable is coded 1 for candidates heading the party list, and minus 1 divided by  $(List\ Length - 1)$  otherwise. However, all candidates on lists where  $List\ Length=1$  were coded zero.

*Elected in the District*: a dummy variable coded 1 for candidates elected at the first tier of seat allocation – i.e., where personal preference votes could conceivably matter – and zero otherwise. Candidates elected at the second tier (as on national lists) are coded zero on this variable.

*Female Candidate*: generally this variable is coded  $1/k$  for women (where  $k$  is the number of women on the given party list), and minus 1 divided by  $(List\ Length - k)$  for men. However, all candidates on lists where  $k=0$  or  $List\ Length=1$  were coded zero.

*Incumbent*: generally this variable is coded  $1/k$  for incumbents (where  $k$  is the number of incumbents on the given party list), and minus 1 divided by  $(List\ Length - k)$  for all other candidates. However, all candidates on lists where  $k=0$  or  $List\ Length=1$  were coded zero.

*Inverse List Length*: 1 divided by  $List\ Length$ . Note that by mathematical necessity this is equal to the average preference-vote share of candidates on any given party list.

*List Length*: the number of candidates on a given party list; it ranges from 1 to 150.

*List Placement*: the original place of a candidate on the list, coded 1 for ticket-leaders, 2 for second place candidate, and so forth up to 150.

*Percentage Elected from the List*: The number of candidates elected at the first electoral tier (i.e., in the primary electoral district) from the party list as a percentage of the total number of candidates on the list.

*Preference-Vote Share*: the number of preference votes cast in support of the candidate as a percentage of all preference votes cast for all candidates on the same party list (in a given election and district).

*Proportion of Women on List*: the proportion of women among all candidates on the list.

*Rank by Vote*: the ranking of candidates on a list in terms of personal preference votes obtained from 1 to 150. Ties were broken by list order.

*Relative List Position*: A linear transformation of *List Placement* that assigns a value of +1 to ticket leaders and -1 to the last placed candidate irrespective of the length of the list using the following formula:

$$Relative\ List\ Position = 2\left(1 - \frac{(List\ Placement - 1)}{(List\ Length - 1)}\right) - 1$$

Candidates on lists where  $List\ Length=1$  were always coded zero.

*Relative Vote Share*: A linear transformation of *Rank by Vote* with the following formula:

$$Relative\ Vote\ Share = 2\left(1 - \frac{(Rank\ by\ Vote - 1)}{(List\ Length - 1)}\right) - 1$$

Candidates on lists where  $List\ Length=1$  are coded missing.



**Table 1. Preference Vote Arrangements across the Elections in the Analysis**

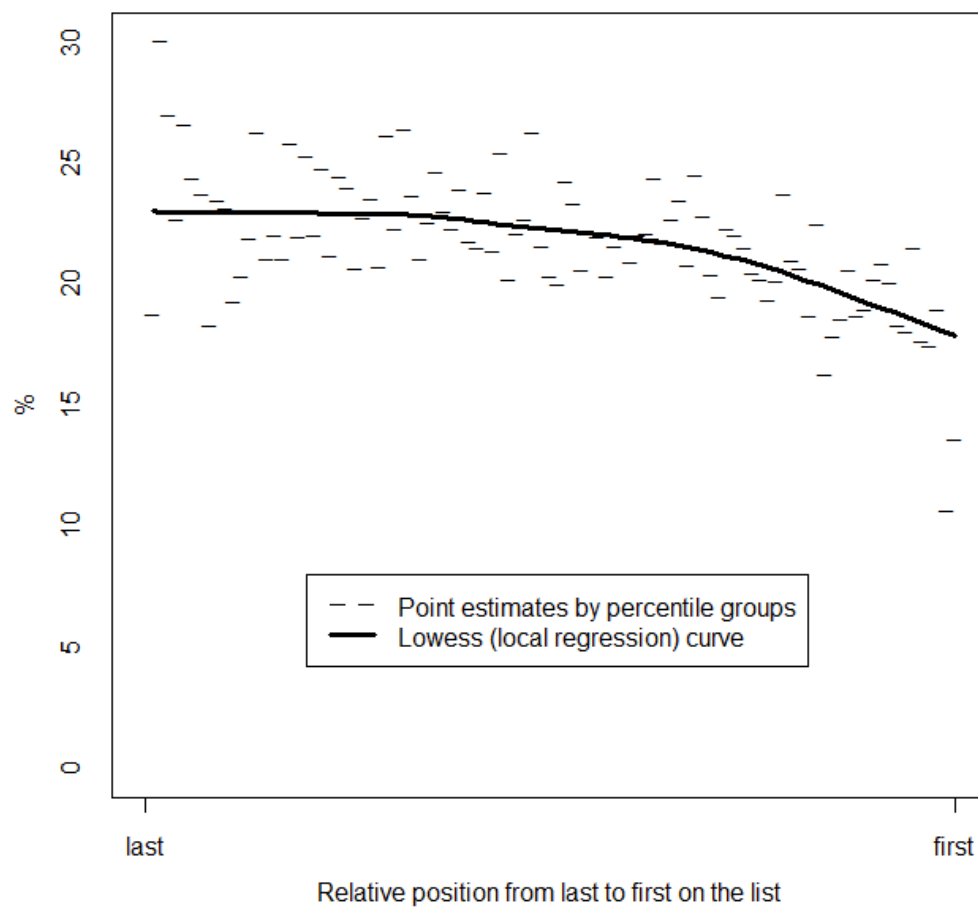
	<i>Average district magnitude</i>	<i>Ballot choice</i>	<i>Number of seats and tiers</i>	<i>Vote pooling</i>	<i>Seat allocation among candidates</i>
<i>Poland</i>	1991: 11 (7-17) 1993-97: 9 (3-17) 2001-: 12 (7-19)	one candidate from party list	460 seats allocated at two tiers till 2001; 391 in districts and 69 at national level; from 2001 only 460 district seats	by party in district and (for remainder list votes at the national level) party in country; 5% national legal threshold applies (in 1991 only at national level)	constituency deputies elected in order of preferences (from 1993: subject to party passing 5% legal threshold nationally); prior to 2001, national list deputies elected in list order from parties passing 5% legal threshold
<i>Estonia</i>	1992: 9 (2-15) 1995: 9 (7-12) 1999: 9.3 (6-11) 2003: 9 (5-13) 2007: 9 (4-12)	one candidate from party list	101 seats allocated in flexible proportions at two different tiers (region and nation)	by party in district and (for seat allocation to remainder list votes at the national level) party in country; 5% national legal threshold applies to 2 <sup>nd</sup> and 3 <sup>rd</sup> allocation	1 <sup>st</sup> allocation to candidates obtaining a full Hare quota; 2 <sup>nd</sup> to candidates in order of preference votes on lists with any remainder full quota* ; 3 <sup>rd</sup> allocation (any remaining seats) to remainder votes of parties pooled at the national level: candidates (from 1995 on with at least 10% of their district quota on district lists winning at least one full Hare quota of votes in district) win national seats in list order
<i>Czech Rep.</i>	1996: 28 (14-41) 1998: 28 (15-40) 2002-: 16 (5-25)	party only or up to four (in 2002- 2006: two) candidates	200 seats allocated in flexible proportions at two different tiers (region and nation) but all assigned to districts at the end	by party in district and (for remainder votes) party; 5% national legal threshold applies	candidates elected in order of preference votes if their personal vote exceeds 10 (2002-2006: 7, 2010: 5)% of total party vote; any remaining seats allocated to candidates in list order or (prior to 2002) decision by the party
<i>Slovakia</i>	1994: 40 (11-51) 1998-: 150	party only or up to four candidates	150 seats in a single nationwide district since 1998; in 1994 Czech-style rules with 150 seats	by party in district (and, in 1994, by party for remainder votes); 5% national legal threshold applies	candidates elected in order of preference votes if their personal vote exceeds 10 (from 2006: 3)% of total party vote; any remaining seats allocated to candidates in list order or (prior to 2004) decision by the party

\*: From 2003 on, an additional seat was allocated to parties with remainder votes exceeding 75% of a full Hare quota.

**Table 2: Underrepresentation of women among candidates by election**

	<i>Percentage of women among candidates ...</i>					
	<i>... on any list</i>	<i>... on seat-winning lists</i>	<i>... topping their list</i>	<i>... running as incumbents</i>	<i>... elected in the district</i>	<i>... all elected candidates</i>
<i>Poland</i>						
1991	13	11	11	-	9	10
1993	13	13	11	11	14	13
1997	16	14	9	18	15	14
2001	23	22	11	14	20	20
2005	24	21	18	23	20	20
2007	23	20	18	20	20	20
<i>Estonia</i>						
1993	14	12	16	-	7	13
1995	18	14	14	13	6	12
1999	27	25	18	13	16	18
2003	21	18	21	18	14	18
2007	27	24	19	18	23	24
<i>Czech Republic</i>						
1996	20	16	15	11	15	15
1998	21	18	15	15	15	15
2002	26	20	16	16	17	17
2006	28	24	21	18	15	15
2010	27	25	16	15	23	23
<i>Slovakia</i>						
1994	15	14	4	11	15	15
1998	17	14	12	14	11	11
2002	24	19	12	15	15	15
2006	23	19	14	16	16	16
2010	23	18	6	20	15	15

**Figure 1: Percentage of women among candidates by relative list position**



**Table 3: Bivariate relationships between the candidates' sex, relative list position, and preference-vote shares by election**

	<i>Average relative list position (from -1 to 1)</i>		<i>Average preference vote share (%)</i>		<i>Correlation of list position and vote</i>
	<i>Men</i>	<i>Women</i>	<i>Men</i>	<i>Women</i>	
<i>Poland</i>					
1991	0.01	-0.04	13.3	13.8	0.53
1993	0.00	0.01	9.7	10.5*	0.51
1997	0.01*	-0.04	8.7	8.8	0.50
2001	0.01*	-0.04	5.5*	5.0	0.50
2005	0.02*	-0.05	5.6	5.4	0.50
2007	0.00	0.00	4.7	5.0	0.51
<i>Estonia</i>					
1993	0.01	-0.06	26.6	28.3	0.35
1995	0.02*	-0.10	14.7*	11.0	0.51
1999	0.02*	-0.07	7.6*	5.6	0.46
2003	0.00	0.01	13.8	14.4	0.40
2007	0.02	-0.05	13.7	12.8	0.40
<i>Czech R.</i>					
1996	0.01	-0.04	2.9	3.3*	0.43
1998	0.01*	-0.04	2.9	3.0	0.55
2002	0.02*	-0.05	5.2	5.0	0.44
2006	0.01*	-0.04	5.1	6.1*	0.34
2010	0.02*	-0.04	4.8	4.9	0.25
<i>Slovakia</i>					
1994	0.01*	-0.07	3.5	3.7	0.44
1998	0.02*	-0.11	1.0	1.1	0.38
2002	0.02*	-0.07	1.0	0.8	0.38
2006	0.02*	-0.07	0.9	0.8	0.37
2010	0.01	-0.04	0.8	0.6	0.27

\* Significantly higher at the  $p < .05$  level than the corresponding figure for the opposite sex (two-tailed T-test result).

**Table 4: Regression analyses of candidates' personal preference-vote shares as the dependent variable in the pooled sample of 21 elections**

<i>Variable</i>	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 4</i>	<i>Model 5</i>
<i>Inverse List Length</i>	100.00*** (0.000)	100.00*** (0.000)	100.00*** (0.000)	100.00*** (0.000)	100.00*** (0.000)
<i>Relative List Position</i>		3.00*** (0.042)	3.00*** (0.042)	3.00*** (0.042)	3.00*** (0.042)
<i>Capolista</i>		17.54*** (0.227)	17.58*** (0.227)	17.58*** (0.227)	17.58*** (0.227)
<i>Incumbent</i>		11.12*** (0.448)	11.11*** (0.448)	11.11*** (0.448)	11.11*** (0.448)
<i>Female Candidate</i>			1.52*** (0.186)	1.52*** (0.186)	2.58*** (0.398)
<i>Proportion of Women on List</i>				0.00** (0.000)	0.00** (0.000)
<i>Female Candidate times Proportion of Women on List</i>					-5.00* (2.232)
Constant	0.00*** (0.000)	0.00*** (0.000)	0.00*** (0.000)	0.00*** (0.000)	0.00*** (0.000)
F	54847.6	60998.2	48954.1	40794.6	34988.9
Adjusted R <sup>2</sup>	0.39	0.74	0.74	0.74	0.74

Notes: Table entries are OLS regression coefficients (with cluster-corrected standard errors in parentheses) and model fit statistics (calculated without allowance for clustering).

N=86451 candidates nested within 5564 party lists. \*: p<.05; \*\*: p<.01; \*\*\*: p<.001.

Figure 2: Expected vote share of candidates on an average party list by sex and proportion of women candidates on list

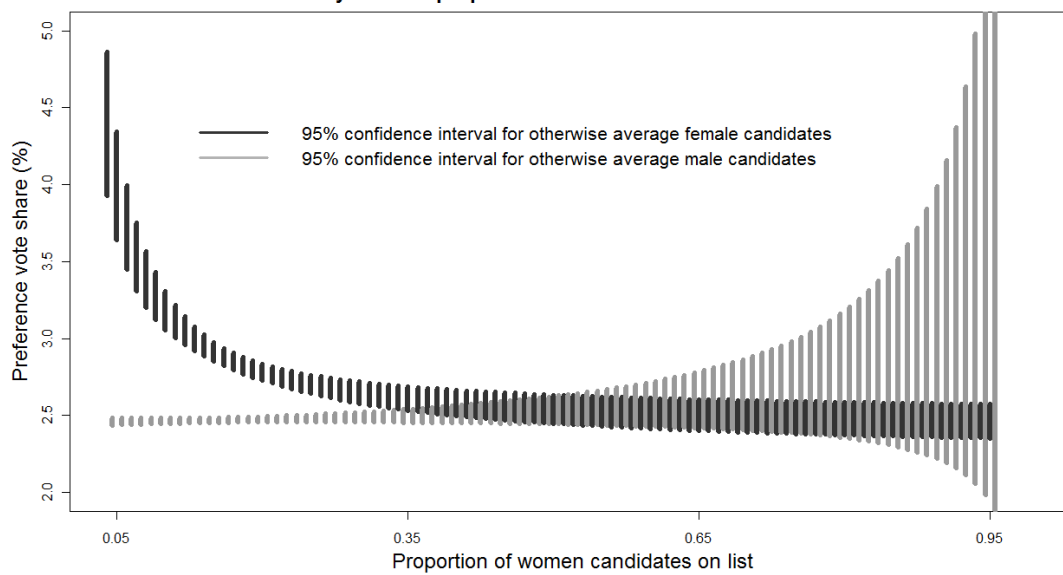
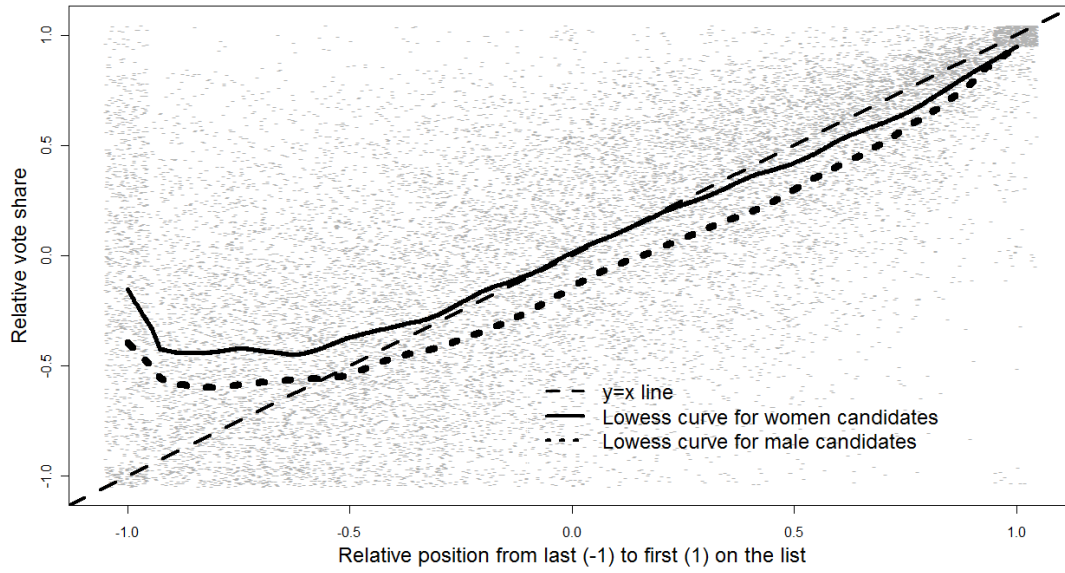


Figure 3: Preference vote shares of 18,109 women candidates by placement on multicandidate lists



**Table 5: Logistic regression analyses of whether the candidate was elected at the first tier (*Elected in the District*) as the dependent variable in the pooled sample of 21 elections and each country separately**

<i>Variable</i>	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 4</i>	<i>Model 5</i>
<i>Percentage Elected from List</i>	0.04 <sup>***</sup> (0.001)	0.07 <sup>***</sup> (0.003)	0.07 <sup>***</sup> (0.003)	0.07 <sup>***</sup> (0.003)	0.07 <sup>***</sup> (0.003)
<i>Relative List Position</i>		4.18 <sup>***</sup> (0.182)	4.19 <sup>***</sup> (0.182)	4.19 <sup>***</sup> (0.182)	4.19 <sup>***</sup> (0.182)
<i>Capolista</i>		2.28 <sup>***</sup> (0.125)	2.28 <sup>***</sup> (0.125)	2.27 <sup>***</sup> (0.125)	2.27 <sup>***</sup> (0.125)
<i>Incumbent</i>		2.43 <sup>***</sup> (0.199)	2.43 <sup>***</sup> (0.199)	2.44 <sup>***</sup> (0.200)	2.44 <sup>***</sup> (0.200)
<i>Female Candidate</i>			0.18 (0.174)	0.17 (0.173)	0.47 (0.469)
<i>Proportion of Women on List</i>				-0.72 <sup>*</sup> (0.294)	-0.72 <sup>*</sup> (0.294)
<i>Female Candidate times Proportion of Women on List</i>					-1.87 (2.935)
Constant	-2.72 <sup>***</sup> (0.027)	-5.48 <sup>***</sup> (0.136)	-5.49 <sup>***</sup> (0.136)	-5.36 <sup>***</sup> (0.138)	-5.36 <sup>***</sup> (0.138)
-2 log likelihood	-12932.5	-6223.8	-6223.2	-6218.7	-6218.2
Chi <sup>2</sup>	1249.45	14666.8	14668.1	14677	14678.1
AIC	25869.04	12457.7	12458.4	12451.5	12452.4

Notes: Table entries are logistic regression coefficients (with cluster-corrected standard errors in parentheses) and model fit statistics (calculated without allowance for clustering). All candidates running on lists that did not win seats at the first tier are excluded from the analysis. N=34662 candidates nested within 1760 party lists. \*: p<.05; \*\*: p<.01; \*\*\*: p<.001.



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