The Gender Gap in Political Careers
Under Proportional Representation

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22nd June 2021

Abstract

Equal representation of women in politics is a key objective for democratic legitimacy. Proportional representation (PR) systems likely increase the overall share of female candidates who run (and win) in the first place. Yet, it is unclear whether PR is also successful in keeping women in office in the long run. I study how, within the family of PR, more party-centered systems can help to fix the 'leaky pipeline' by limiting opportunities for voters' biases against women to affect individual candidates. Closed-list PR (compared to open-list PR) can therefore help attenuate the gender gap in incumbency advantages. Testing this theory, I contrast gender-specific incumbency effects in municipal elections in Norway (open-list PR) and Spain (closed-list PR) using difference-in-discontinuity designs. In Norway, women experience an incumbency advantage in winning future elections that is up to 60% lower than men's. By contrast, in Spain, fem ale candidates enjoy equal (or even greater) incumbency advantages. Additional analyses indicate that these results are unlikely to be due to unobserved country characteristics or candidate attributes correlated with gender. Further results also point towards voter biases affecting women's preference votes in open-list PR as a key mechanism. All told, this paper highlights the importance of electoral rules in ensuring gender equity in political representation by addressing leaky pipelines in office.

1 Introduction

The underrepresentation of women in politics is a key concern in political economy, both for intrinsic normative reasons, as well as its consequences on downstream policy outcomes (Mansbridge, 1999, 2003; Chattopadhyay and Duflo, 2004; Dahlerup, 2013). A rich literature explains the empirical fact that countries using proportional representation (PR) are more likely to feature higher proportions of women elected to the legislature – and thus less 'sticky' floors (Norris, 1985; Matland and Studlar, 1996; Matland, 1998; Thames and Williams, 2010; Roberts, Seawright, and Cyr, 2013; Thames, 2016; Golder et al., 2017; Verge and Wiesehomeier, 2019; Lucardi and Micozzi, 2020).[1]

Yet, simply counting the number of women elected to the legislature is insufficient: their trajectory, time in office, and political experience all matter for the objective of equal opportunities in politics, as well as their efficiency as policymakers representing women's preferences. If female officeholders suffer from a 'leaky pipeline' – that is, they are less likely to win re-election and promotion to higher offices – concerns about unequal representation remain.[2] Do PR systems, in addition to boosting the overall share of women elected, also close the gender gap in the effect of incumbency on future career outcomes?

I argue that elections using closed-list PR – compared to those with open-list PR – are more likely to plug the 'leaky pipeline' by limiting opportunities for voter bias. In closed-list PR, incumbency advantages arise from party elites' decisions to elevate candidates throughout list ranks. Though party elites may have initial biases against women, they have little reason to treat bare winners (compared to bare losers) differentially by sex: if anything, their initial bias towards women should diminish upon observing them perform in office. By contrast, in open-list systems, the effect of being elected on future election outcomes may

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[1] Common theories include the existence of list quotas (Casas-Arce and Saiz, 2015) and the fact that female candidates are 'shielded' from voters' decision-making (Matland and Studlar, 1996). Though reduced, sticky floors still represent significant hurdles for women entering the political arena (Folke and Rickne, 2016).

[2] Recent evidence from single-member, plurality systems suggests that women might be less persistent in pursuing political careers (Wasserman, 2020) and suffer from a lower probability of promotion to higher office (Brown et al., 2019; Cipullo, 2021), though see also Bernhard and de Benedictis-Kessner (2020). See also Folke and Rickne (2020).

be differentially greater for men due to a larger increase in personal votes for barely elected male candidates. This gap will be especially pronounced where voters are more strongly biased against women and award preference votes based on name recognition, rather than observed performance in office. Overall, my theoretical argument implies that women should face diminished incumbency effects in open-list PR systems, while we can expect an equal or even greater incumbency advantage for women in closed-list PR systems.

Empirical results from difference-in-discontinuity designs in municipal elections in Norway and Spain support my argument. In Norway's open-list elections, barely elected women enjoy a significantly smaller incumbency advantage then men: whereas men who won (compared to men who barely lost) have an approximately 10 percentage point higher probability of winning in the next election, the effect decreases (in the main specification) to about 4 percentage points for women who won (compared to women who barely lost) – a 60% decline vis-a-vis their male colleagues. Women in Spain's closed-list elections, by contrast, enjoy a differentially greater incumbency advantage than men. This finding holds across parties and municipality sizes. Importantly, I find no evidence of large gender gaps in career *persistence* in either setting: the effect of winning on the probability of running again is the same for men and women in each country.

Additional analyses support the theorised mechanism behind the negative gender gap in Norway – biased voters awarding a smaller increase in preference votes to barely elected women. These results are consistent with extant descriptive studies (Górecki and Kukołowicz, 2014; Ragauskas, 2019) and quasi-experimental findings highlighting voters' biases (Le Barbanchon and Sauvagnat, 2019). Specifically, although women are unlikely to face a comparative penalty imposed by their *party* for being elected, the effect of winning in right-wing parties results in a far smaller increase, or potentially even decrease, in personal preference votes for women when compared to men. Notably, no such discrepancy exists among candidates in left-wing parties. Voters' influence over list ranking – the key difference between open and closed-list PR – thus contributes to the stark difference in incumbency advantage

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gender gaps.

I guard against two alternative explanations of the results. Firstly, my results may be due to idiosyncracies in the cross-country case selection, and may not travel to other settings. To alleviate this concern, I exploit both within-country and across-country variance in electoral rules. Whereas the gender gap persists across different countries with the same open-list rule, it disappears within the same country when closed-list rules apply. While these additional results come with larger uncertainty estimates and cannot fully account for unobserved differences, they render one of the most plausible alternative explanations far less likely.

Secondly, the contrast in gender gaps may be due to differential selection into running for office. While this concern may lead to men and women of different types ending up in the threshold sample, it is far less likely to explain the difference in the effect of being elected within the threshold sample. In addition, I find no meaningful difference in incumbency advantages based on age or previous experience. This suggests that candidates' sex, rather than other characteristics that may be correlated with female candidates, drives the negative gender gap.

This paper connects and contributes to a number of existing literatures. First, it offers a new explanation for how electoral rules can affect gender equity in politics. While recent work examines whether specific electoral systems can boost the overall share of women (Ragauskas, 2019; Jankowski and Marcinkiewicz, 2019), this is one of the first studies to broaden our understanding on how electoral rules connect to gender differences in incumbency advantages. Compared to emerging work on the 'leaky pipeline' in plurality systems (Cipullo, 2021; Brown et al., 2019), women face far less of a disadvantage in the PR systems examined. Still, this paper establishes the need to differentiate between open- and closed-list PR systems: where voters can weigh in on individual candidates, the gender gap in incumbency advantages is more likely to persist. Second, the paper's finding of a decreased incumbency advantage for women in open-list PR systems also ties into the extant literature on voter bias and gender perceptions, mostly in plurality (Anzia and Bernhard, 2019; Beaman et al., 2009;

Broockman and Soltas, 2020). This paper contributes a first estimate of the gender gap in open-list PR using difference-in-discontinuity designs. Finally, the paper also speaks to the broader literature on political careers (Cirone, Cox, and Fiva, 2021; Kerevel, 2019; Folke, 2014) and offers an important theoretical distinction between the mechanisms driving incumbency advantages in open and closed-list systems more generally.

2 Electoral Systems and the Gender Gap in Political Careers

2.1 Proportional Representation Likely Boosts Number of Women Running

While proportional representation (PR) can boost the number of female candidates running (and potentially winning), we know far less about whether it also leads to similar incumbency advantages for men and women.

Institutional theories for the positive association between PR and the share of women running and winning highlight three key mechanisms. First, PR systems determine winners by allocating a party's seats following a list or other rank ordering of candidates. To the extent that party leadership can control or influence the rank order, they can place women in viable list positions that enable them to win.[3] Similarly, list rank orders in PR may follow gender-agnostic seniority norms (Fiva and Røhr, 2018; Cirone, Cox, and Fiva, 2021), which can allow women to enter viable list positions after some time. Second, when selecting more than one candidate in a district, party elites no longer have to cater towards a 'lowest common denominator' appealing to voters, and can instead attempt a more equitable distribution of viable spots within a district (Matland, 1998). Thirdly, PR systems can accommodate a more fragmented party system in which left-leaning parties with a strong emphasis on gender

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[3]This assumes that voters do not penalise whole party lists for fielding women in viable positions. See Bagues and Campa (2020b) for evidence.

equity push forward with nominating more women into viable spots, and other parties are forced to follow (Matland and Studlar, 1996). Finally, Fiva and Smith (2018) note that PR systems (compared to plurality) generally have less severe incumbency advantages, which may contribute to preventing from old (male) incumbents entrenching their positions as women enter the political arena.

Although increasing women's numerical representation on the ballot and in office is essential for ensuring equity in downstream policy outcomes, it is not sufficient on its own. Put differently, while existing work points towards PR attenuating the problem of a "sticky floor" for women, it remains an open question whether it can also close the "leaky pipline" along women's career trajectories (Cipullo, 2021). If women, once elected, have shorter tenures in office or miss out on promotion to senior office, their representation might still carry less weight, as they wield less power and experience in legislative processes. Moreover, if women suffer from diminished effects of being elected on future career progression, this might also contribute to a greater gender gap in representation at higher levels of political office.

One key aspect that may drive the gender gap in political careers is whether there is a difference in the effect of being elected on running again and winning again. In other words, is there a 'gender gap in the incumbency advantage'? Recently, scholars have begun to examine this question in the context of plurality elections (Brown et al., 2019; Bernhard and de Benedictis-Kessner, 2020; Wasserman, 2020; Cipullo, 2021). So far, however, this question remains without an answer for the domain of PR.

2.2 When Does PR Create Similar Incumbency Advantages for Men and Women?

How, if at all, should we expect incumbency advantages under PR to differ by candidates' gender? The core argument of this paper is that more candidate-centred (i.e., open-list) systems, in which voters can determine the ranking of individual candidates, may render women more vulnerable to voter biases, and lead to a smaller incumbency advantage com-

pared to men. Table 1 summarises the argument. Specifically, I maintain that the primary incumbency advantage mechanism in closed-list systems – rank increases due to seniority – is unlikely to produce a gender gap, even if party elites are unconditionally biased against women. By contrast, a key mechanism in open-list PR systems – an increase in personal votes due to name recognition – may be reduced for women and produce a smaller incumbency advantage for female candidates if voters are biased. Altogether, closed- and open-list PR systems have different mechanisms through which the incumbency advantage operates. This, in turn, affects the gender gap in political careers. Below, I elaborate on the mechanisms in each setting.

	Closed-list	Open-list
Incumbency Effect Mechanisms		
Party-driven	Seniority (rank advance)	Seniority (pre-vote rank advance)
Voter-driven		Name Recognition (pref vote increase)
Gender Gap Mechanisms	Social Learning (+)	Social Learning (+) Voter Bias (-)

Table 1: Summary of Incumbency Advantage Mechanisms under Proportional Representation

Closed-list PR. In closed-list PR, the rank order of list positions decides about individuals' electoral fortunes: higher list ranks translate into greater electoral security. Mechanically – as long as voters' decision what party to vote for does not depend on the position of individual candidates – any incumbency advantage for barely elected politicians must come from an improved list rank. [4]. Put differently, candidates who are just barely elected move up to a a safer list position with a higher chance of winning office in the next election. This mechanism is often institutionalised as a seniority norm in closed-list PR systems (see Cirone, Cox, and Fiva, 2021).

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[4]The larger the district magnitude, the easier this assumption becomes to satisfy. With dozens of candidates on a party list, voters are quite unlikely to switch their ballot to another party because of a single candidate that they dislike.

Under closed-list PR, we should expect party elites' behaviour to show no meaningful difference in the incumbency advantage regarding the incumbency advantage between men and women. Party leadership may still exhibit unconditional negative biases towards women – for example, in the form of lower initial placements or a penalty to their perceived ability. If a female candidate overcomes the initial bias (e.g. with greater ability) and proceeds to ascend through the list ranks towards the set of borderline elected candidates, it is hard to imagine why parties would further increase their negative bias of women as a result of being elected. Another reason why parties ought to be consistent in their treatment of borderline candidates is strategy: if the party were to deny women an incumbency advantage, they would be less likely to run in the first place.

One corollary of this argument is that female candidates who select into running are, on average, of higher quality than men.[5] If anything, then, parties should reduce their negative stereotypes upon observing a female candidate in office perform well: their perception should move closer to the true ability. If this is the case, and the initial perception was biased downward, women should actually experience a *greater* incumbency advantage then men. An important caveat to this argument is that women may suffer from lower persistence in political careers even after winning elections due to asymmetric outside factors (e.g., higher divorce rates, see Folke and Rickne (2020)), or more general differences in persistence or motivation to run for office (Lawless and Fox, 2005; Wasserman, 2020)).

Open-list PR. In open-list (and more candidate-centred) PR systems, part of the incumbency advantage comes from voters awarding elected candidates a boost in preference votes, therefore making it more likely that they will be re-elected (Dahlgaard, 2016; Dettman, Pepinsky, and Pierskalla, 2017; Jankowski and Müller, 2021).[6] In lower-level elections, such

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[5]This follows from women having to overcome the bias term in the first place, similar to Ashworth, Berry, and de Mesquita (N.d.).

[6]Fiva and Røhr (2018), also studying Norwegian local elections, do find the overall effect of incumbency on personal vote shares to be small and statistically indistinguishable from zero. This is likely the result of a particular operationalisation of personal vote share (relative to all votes cast for the party), which makes estimation challenging. I discuss this issue further in Appendix D.3 and show that my results – showing

as municipal elections – typically a low-information environment – voters rarely observe the quality of candidates precisely. Instead, they might follow established heuristics in the form of incumbency status, (pre-vote) list rank, and name recognition. They typically only have a limited number of preference votes (e.g. in Norway, one-quarter of the council size) that they can allocate across the party list.[7] A candidate who is barely elected, compared to one who barely lost, will have greater name recognition and will be more likely to receive voters' preferences based on their heuristic.

However, if voters are also biased against women, their heuristic will lead them to award these preference votes disproportionally towards male candidates. Survey experiments and quasi-experimental evidence conducted in plurality settings suggest that voter biases against women exist, but may be context- and party-specific (Anzia and Bernhard, 2019; Le Barbanchon and Sauvagnat, 2019; Eymmoud and Vertier, 2017; Cipullo, 2021). In addition, it is far less costly for voters to act on their biases in an open-list PR system: they can vote for co-partisans and thus need not trade off ideological proximity with a preference for candidates of a certain sex. Under such conditions, the name recognition bonus for women may be smaller than for men. Unlike party elites, voters are unlikely to follow gender-agnostic seniority norms that would ensure incumbents of either gender receive a boost in preference votes. Thus, male candidates should gain a greater incumbency advantage, as they experience a greater increase in preference votes (compared to barely losing men). This claim does not rule out an incumbency advantage for women overall – it is still possible for women to experience a positive effect of being elected by virtue of party nomination to higher ex ante list ranks. The discussion merely implies that the incumbency advantage in open-list sytems should be *smaller* for women when voters come with meaningful negative biases towards

that there is a meaningful effect, at least for male candidates – hold up over a range of specifications and decisions. Nonetheless it is worth highlighting that, as Fiva and Rohr find, a large part of the incumbency advantage likely comes from parties ex ante placement. This may explain why women still enjoy a sizeable, though diminished incumbency advantage.

[7]If parties can still decide the order in which candidates appear on the ballot, they may still be able to affect candidates' success: candidates' success is strongly correlated with the initial list position before voters distribute their preferences (see Appendix D.4). In that sense, parties in open-list determine which candidates enter the set of *viable* candidates, but do not have fully discrete power to decide who gets elected.

women.[8]

3 Data and Design

How can we study the gender gap in political careers under proportional representation? In this section, I describe my case selection, data sources, and research design.

3.1 Cases and Data

In an ideal world, my case selection would exploit within-country variation in electoral rules to mitigate the concern of cross-country differences. Unfortunately, no such straightforward setting exists that would allow for estimation with sufficient statistical power. Instead, I turn to a comparison of local elections across countries.

To estimate the gender gap in incumbency advantages, I use local elections between 2003 and 2019 in two countries – Norway (open-list) and Spain (closed-list).[9] In the closed-list system of Spain, voters can only cast their ballot for parties, not candidates: here, the order of list rankings is ex ante determined by the local party leadership. By contrast, in the Norwegian open-list system, voters cast preferences for individual candidates *within* a party, which ultimately determines list rankings and, consequently, which candidates are successful in winning a seat. Party elites do come up with an *ex ante* ordering of candidates appearing on the ballot. They also award a 'pre-advantage' status to a limited number of candidates that allocates them additional preference votes compared to non-advantaged candidates.[10] Nonetheless, it is ultimately voters' allocation of preference votes that decides on the *ex post*

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[8]Note also that the theoretical argument makes no claim about an unconditional difference in candidate type between men and women. If women still suffer from a sticky floor, the entire sample of female candidates on either side of the election threshold may still be higher quality than the respective male one. But this paper's argument is specifically about the difference in the effect of being elected – and so any alternative explanation focussed on differential selection needs to explain why there is an additional effect kicking in at the election threshold.

[9]Parts of the literature use the term 'flexible-list' PR instead of open-list to characterise Norway's electoral system at the local level.

[10]Each candidate with pre-advantage is awarded a bonus number of preference votes equal to 25% of all votes cast for the party list.

rank ordering.

Apart from the different electoral system, the two cases share many similarities. Both countries feature a parliamentary-style setup at the local level and hold elections in a regular, fixed four-year cycle. Both countries rank highly in terms of overall share of women's representation in the national legislature, as well as in lower-ranked levels of government.[11] Both countries also rank below average in terms of societal biases against women: The UN Gender Social Norms Index reports that about 20% of respondents in Norway showed a negative bias towards women in politics; the proportion was close to 30% in Spain. Despite great care to account for differences between the two cases, it is important to stress that my findings nonetheless remain suggestive: we still require more work to credibly estimate the true effect of different shades of PR on the gender gap in political careers.

I collect my data for this analysis from two main sources. Data on elections and candidates in Norway come from Fiva, Sorensen, and Vollo (2020), who helpfully already code unique candidate identifiers across multiple election cycles. I drop all candidates that the original authors flagged as inconsistent, as well as those from minor or non-partisan lists.[12] Data on elections and candidates in Spain come from the country's Ministry of Interior (`http://www.infoelectoral.mir.es`). Here, I undertook a number of pre-processing and cleaning steps after obtaining the raw data. To link candidate records across time, I converted candidate names to lower case, substituted common abbreviations and linked records if the Jaro-Winkler distance between two full names in the same municipality was less than

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[11]In the analysis sample of bare losers and bare winners, 38% of candidates in Norwegian local elections are women. The percentage in the Spanish sample is similar, with 35% being women. These proportions put them towards the top of European countries.

[12]In addition, the data source flags around 30% of observations in the threshold sample as belonging to municipalities where non-threshold candidates' preference vote records may be missing. Typically, this is due to missing data from minor parties' candidates. However, all of the candidates in the threshold sample itself feature fully recorded preference votes. Moreover, candidates' list rank and election outcome are recorded throughout. Including flagged municipalities is therefore unlikely to affect data quality in the analysed threshold sample. Appendix D.1 reports the estimates from the main specifications fitted on the sample of candidates restricted to those from municipalities without a flag and finds no meaningful difference in the results. The only case in which I drop observations from 'incomplete' municipalities is when using preference votes or preference vote shares as an outcome.

0.1.[13] Because the original data do not report candidates' gender before 2007, I classified their gender in 2003 based on the probability that the same first name was assigned as either male or female in subsequent elections.[14]

In both cases, I drop observations from cities with a population above 250,000 to ensure that locations with unusually high district magnitude and, in some cases, additional institutional powers, do not drive my results.[15] Moreover, in order to maintain the as-if random assumption, I follow Fiva and Røhr (2018) and restrict my sample to candidates whose list rank meant that they were the last one within their party to win a seat or the first ones to be defeated.

3.2 Empirical Strategy

3.2.1 Defining the Gender Gap in the Incumbency Advantage

I first discuss the estimand of interest before introducing the estimator and empirical design. Put simply, in each country, I am interested in the gender gap (the difference between men and women) in the effect of being elected (the 'incumbency effect') on downstream outcomes. This *difference* between two causal estimates, which I call the gender gap in the incumbency advantage, is formally defined as follows:

$$\tau_M - \tau_F = (E[Y_{1i}|s_i = M] - E[Y_{0i}|s_i = M]) - (E[Y_{1i}|s_i = F] - E[Y_{0i}|s_i = F]) \quad (1)$$

where Y denotes the outcome of interest, and s_i is the candidate's gender. This set-up can also be thought of as estimating the causal moderation effect of gender on the incumbency

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[13]The Jaro-Winkler distance measures the edit distance between two strings: a lower score implies fewer edits are necessary to move from one string to another. Two identical strings will have a score of 0, whereas two strings with no characters in common will have a score of 1.

[14]Spanish electoral data records data on gender in full starting in 2007. I fit a linear regression model predicting gender on observations' first name. I then use the fitted model to predict first names' gender in 2003. I drop observations whose first name only appears in 2003, but not in subsequent years, from the data.

[15]In Appendices D.5 and E.4, I examine whether my results are robust to dropping large municipalities from my sample.

effect (Bansak, 2021).

My key downstream outcomes measure of political career trajectories are whether the candidate *runs again* in the next election, and whether they *win* in the next election. Following De Magalhaes (2015), I am interested in the unconditional effect of winning in t on election in $t + 1$ – that is, if a candidate does not run again in $t + 1$, they are coded as a '0' on re-election.[16] In addition to these main outcomes, I also estimate the effect of being elected on whether candidates advance in list rank and other outcomes illuminating whether it is the party or voters who drive any potential incumbency effect.

3.2.2 Estimating the Gender Gap Using A Difference-in-Discontinuity Design

How can we estimate the theoretical quantity of interest? A typical regression discontinuity (RD) design compares candidates who have just missed out on being elected by a few votes to those who have just crossed the threshold and found themselves elected. As long as there is no sorting around the threshold, the RD recovers the local average treatment effect of being elected. This design is widely applied in the study of incumbency effects (see, for example, Lee (2001); Eggers et al. (2015); De Magalhaes (2015); Folke, Persson, and Rickne (2016)). The RD retains its causal interpretation when restricted to a comparison within a subgroup, in which case it recovers the subgroup-specific local average treatment effect. Put differently, when fitting the regression discontinuity on observations from male candidates only, we can obtain the causal effect of being elected for male candidates. Analogously, we can obtain the causal effect of being elected for female candidates.

Note that while the incumbency effect *within* each gender can be causally identified using a regression discontinuity between bare winners and bare losers, the *difference* between the two effects is not identified. Male and female candidates around the threshold of being elected might differ from one another on a number of observable as well as unobservable characteristics. In that sense, the main objective of the paper is to estimate whether can-

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[16]Conditioning on running again in the future runs the risk of introducing post-treatment bias. See also Hyytinen et al. (2018); Cirone, Cox, and Fiva (2021).

didates' gender moderates the magnitude of the incumbency effect. To put it in terms used by Cipullo (2021), this paper does not try to evaluate whether female candidates are disadvantaged by a 'sticky floor' – i.e., the difficulty of getting elected in the first place. Rather, it studies whether those women who *do* get elected experience a 'leaky pipeline' in their political careers.

To estimate said difference in the incumbency effect between male and female candidates, I fit the following difference-in-discontinuity specification to my samples:

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\begin{aligned}
y_{it} = f(MV_{it}) &+ \beta_1 D_{it} + \beta_2 F_{it} \\
&+ f(MV_{it}, D_{it}) + f(MV_{it}, F_{it}) \\
&+ \beta_3 (D_{it} \times F_{it}) \\
&+ f(D_{it}, F_{it}, MV_{it}) + \theta_i + \phi_{it} + \epsilon_{it}
\end{aligned}
\tag{2}
$$

where MV denotes the margin of victory (the running variable), D is a dummy for whether the candidate is elected or not, and F is a dummy for whether the candidate is female. i is a subscript for the individual candidate running in an election at time t. In this setup, $\hat{\beta}_1$ recovers the incumbency effect for males, and $\hat{\beta}_3$ recovers gender gap in the incumbency effect. I also include county or province (θ_i) and year-by-party fixed effects (ϕ_{it}). Unless noted otherwise, I report robust standard errors clustered by municipality.

Throughout the paper, I present estimates using OLS with first-order polynomials. Because the estimation of the treatment effect in either group depends on the functional form of the conditional expectation function modelling the outcome at the threshold, my estimates might be biased if my functional form $f(MV)$ is misspecified. I therefore also report results using a second-order polynomial specification in Appendix B.2. Finally, the estimates from regression discontinuity may be sensitive to the chosen bandwidth around the threshold. To compute the optimal bandwidth on which I fit my specification, I use Calonico, Cattaneo and

Titiunik's (2014) approach when run on the full sample (including both men and women).[17] Again, to show robustness across modelling choices, I also estimates when the bandwidth is set to one-half and twice the optimal width in the main tables, and robustness to further bandwidth choices in Appendix B.1.

3.2.3 Identifying Bare Winners And Bare Losers In Proportional Representation

In the context of PR elections, constructing the running variable and identifying which candidates came close to barely losing or barely winning is not as straightforward as in the archetypal plurality case (Lee, 2001, 2008; Fiva and Halse, 2016; Fiva and Smith, 2018). Below, I describe how I identify close winners and close losers.[18]

Norway (open-list). I am constructing the margin of victory (running variable) following Fiva and Røhr (2018). Effectively, the strategy identifies bare winners and bare winners within each party as those candidates who have just about gained enough preference votes (or just about missed out on enough preference votes) to be elected (to be defeated).[19] The as-if random element comes from the distribution of preference votes across candidates of the same list. Following Fiva and Rohr's notation, the margin of victory for candidate i on party list l is defined as:

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[17]I follow Cipullo (2021) in this approach.

[18]Note that the setup of the running variable in the two countries identifies bare winners and bare losers in different ways. However, since my quantity of interest is the LATE estimate at the threshold, both running variables identify bare winners and bare losers in their respective electoral context. It is typical for different electoral systems to require different operationalisations of the margin of victory. See Eggers et al. (2015) for plurality, Folke (2014); Fiva and Smith (2018); Fiva and Halse (2016) for closed-list PR, Folke, Persson, and Rickne (2016); Fiva and Røhr (2018) for open-list PR. Moreover, since I am using party-by-year fixed effects in my specifications, my results in Norway are also not driven by selection of candidates into specific parties.

[19]One issue with this choice of running variable is that the observations closest to either side of the threshold are likely to have greater population and district magnitude. This follows from the distribution of personal votes across the number of candidates within a list – very tight margins (e.g. less than a percentage point) are more likely when there are many candidates with similar, small shares of personal votes. Although this issue does not confound the LATE estimate at the threshold (since units do not sort according to treatment status), it does pose a problem of adequate functional form for outcomes such as personal vote shares in $t + 1$. See Appendix D.3 for more details.

$$MV_{il} = \begin{cases} \frac{Poll_{il} - Poll_l^{S_l+1}}{PartyVotes_l} & \text{if elected} \\[2ex] \frac{Poll_{il} - Poll_l^{S_l}}{PartyVotes_l} & \text{if not elected} \end{cases} \tag{3}$$

where $Poll_{il}$ denotes candidates' personal vote share, $Poll_l^{S_l+1}$ denotes the vote share of party l's first loser, and $Poll_l^S$ denotes the vote share of party l's last winner. $PartyVotes_l$ is the total number of votes cast for party l. In other words, I construct the margin of victory using the difference in personal votes between candidate i and the vote threshold to winning a seat, normalised by the total number of votes the party obtained.

For my supplementary analysis of county-level elections in Poland, I construct the running variable in the same way.

Spain (closed-list). I construct the running variable following Folke (2014) and calculate a 'minimum distance' to winning (or losing) an extra seat for the legislator's party.[20] The as-if random element comes from the discontinuous translation from parties' vote shares to a discrete number of seats, where a small perturbation in the vote share may lead to a different candidate winning the last available seat. I compute the smallest change in the vote share distribution that would cause a party to either lose or win an additional seat. In other words, in each municipal election, I identify the closest winner (the last seat assigned) and the closest loser (the first candidate to miss out on a seat), and calculate the necessary change vote share to flip the last seat from the winner to the loser.

3.2.4 Assessing the Regression Discontinuity Assumptions

As with every regression discontinuity design, my identification assumptions may be confounded if candidates have the ability to sort themselves around the threshold, or if parties

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[20]Note, in the original application of this method, the algorithm does not account for electoral thresholds below which parties are excluded from the seat allocation altogether. In the Spanish case, there is a 4% threshold. However, because of low district magnitudes, the *effective* threshold necessary for parties to clear to win seats, is typically higher than this. Still, I exclude candidates from lists that scored less than 10% in an election from my sample to ensure that the minimum distance calculated is not affected by the legal threshold.

can anticipate the election result with high accuracy, thus successfully predicting which list ranks will be elected and which ones will not.

To allay that concern, I perform McCrary density checks on the observations around the threshold. If assignment of winners and losers in very close elections is as good as random, we should observe no difference in the frequency of observations on either side of the threshold. Appendix A.1 reports the results of these tests and demonstrates that the density of the running variable around the threshold is indeed smooth.

I also check for the continuity of the share of female candidates around the threshold. While we may expect sorting of male and female candidates in the election at-large (e.g. women might run in less successful list positions overall), if treatment assignment for candidates in the neighbourhood of the threshold is as good as random, we should also observe no jump in the share of female candidates at the threshold. Appendix A.2 confirms that this is, indeed, the case.

# 4   Main Results: Negative Gender Gap In Open-List, But Not Closed-List PR
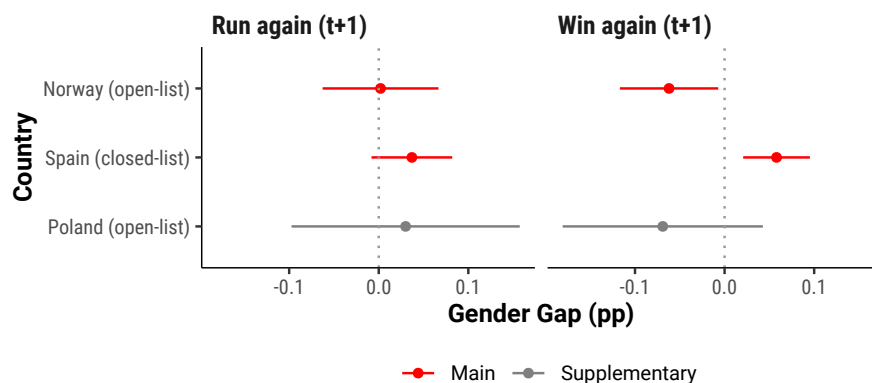
Figure 1: **Estimated Gender Gap in Incumbency Advantages Across Cases.** Point estimates from difference-in-discontinuity specifications, with 95% Confidence Intervals.

I first give a brief summary of my main findings. Figure 1 plots the difference in estimated

incumbency effects between men and women for local elections in Norway (open-list) and Spain (closed-list), along with noisier estimates from Polish county-level elections (using open-list PR, too). There is no statistically significant gender gap in the effect of winning on running again in either country. There is, however, a pronounced difference when it comes to the effect on winning again: female candidates in Norway suffer from a smaller incumbency advantage than their male colleagues (by about 7 pp), whereas female candidates in Spain experience a differentially larger incumbency advantage than men (by about 6 pp). The diminished advantage under open-list PR likely replicates to similar settings outside Norway, as the results for Poland suggest. In the remainder of this section, I parse this headline result in greater detail.

4.1 Norway (Open-List PR)

I now present detailed results from the open-list setting in Norway's municipal elections. Neither men nor women experience a meaningful effect of winning on running again. While I do find a meaningful incumbency effect on winning again, the magnitude of this advantage is significantly smaller for female candidates.
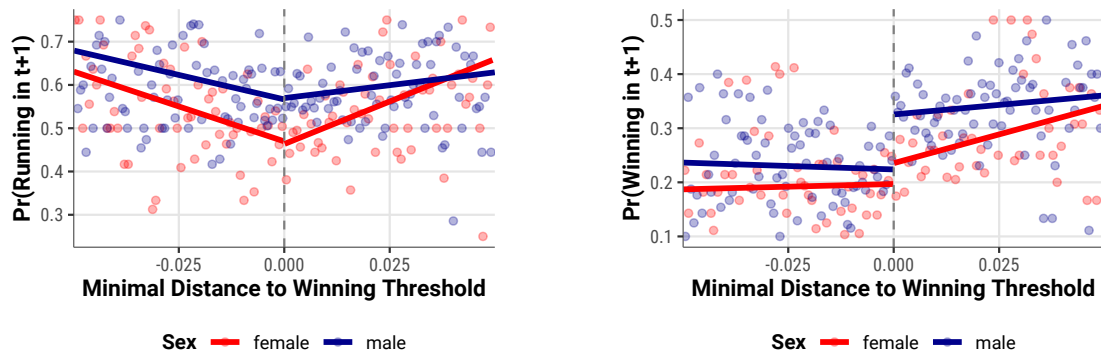
Figure 2: Effect of Winning Election on Running Again and Winning Again In Norwegian Local Elections, By Gender. The two visual regression discontinuities compare bare winners and bare losers by candidates' sex. The left panel examines the share of candidates running again in the next election. The right panel examines the share of candidates winning again (unconditionally) in the next election.

Figure 2 captures these findings in a graphical representation of the difference in dis-

17

continuities. The left panel shows the share of barely losing and barely winning candidates who run again in the next election. Women near the election threshold are, on average, about 7 percentage points less likely to run again than men in a similar position. Notably, however, we see no difference between barely winning and barely losing candidates within either gender. This suggests that women, while unconditionally less likely to run again, do not suffer from any additional disadvantage in running again compared to men once elected: losing an election does not diminish women's persistence differentially.

The right panel plots the share of candidates who win in the next election. Barely winning candidates of either gender have higher probabilities of winning in the next election compared to respective same-sex candidates who just lost. As the figure shows, however, this incumbency advantage is smaller for women. The difference between male bare winners and male bare losers is approximately 8 percentage points. The same gap between female bare losers and female bare winners shrinks to about 3-4 percentage points. The decrease in the incumbency effect appears to be mostly driven by a diminished probability of barely elected women to win office again in the next election.

Table 2 backs up the graphical intuition with formal evidence in the form of difference-in-discontinuity estimates. Columns 1 to 3 report estimates of the effect of winning on running again in $t+1$. Both the effect of being elected, as well as the gender gap coefficient, are close to zero, across all bandwidth choices.

Columns 3 to 6, meanwhile, report the effect of winning on the probability winning again in $t+1$. For men, there is an increase of about 10 pp., which is statistically significant at all conventional levels. The interaction coefficient suggests that the incumbency advantage for women is approximately 6 pp. lower, which corresponds to a 60% decrease in the magnitude of the effect. Although the precise magnitude of the difference between men and women varies between 5 and 10 pp. depending on the bandwidth, all interaction estimates are statistically significant.[21]

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[21] For further robustness checks, Appendix B.1 reports the coefficients for a wide range of bandwidths. The results are also robust to dropping all municipalities in which some personal votes for candidates outside the

Table 2: Difference-in-Discontinuity Estimates For Incumbency Advantage In Norwegian Municipalities. Women Face Diminished Incumbency Effect On Winning Again.

|	Run (t + 1)			Win (t + 1)		
	(1)	(2)	(3)	(4)	(5)	(6)
Elected	0.002	−0.010	0.016	0.107	0.102	0.109
	(0.019)	(0.016)	(0.024)	(0.017)	(0.015)	(0.021)
Female	−0.097	−0.092	−0.085	−0.027	−0.024	−0.026
	(0.021)	(0.018)	(0.026)	(0.018)	(0.015)	(0.021)
Elected x Female	0.002	0.024	−0.030	−0.062	−0.047	−0.096
	(0.033)	(0.028)	(0.039)	(0.028)	(0.024)	(0.034)
Bandwidth	0.054	0.11	0.027	0.05	0.099	0.025
BW Type	Optimal	2x Opt	0.5x Opt	Optimal	2x Opt	0.5x Opt
Outcome Mean	0.564	0.575	0.551	0.261	0.263	0.257
N (left)	4617	5529	3667	4502	5428	3549
N (right)	4666	5590	3711	4551	5489	3592

All estimates are reported with robust standard errors clustered at the municipality level in parentheses. Each observation is a candidate's election attempt. 'Elected' is an indicator for observations where the candidate obtained a seat in the municipal council. 'Female' is an indicator for observations identified as female. 'Elected' times 'Female' is the interaction between the two variables. Other coefficients not reported. Regression run on all candidates in elections between 2003 and 2015.

Together, these results constitute first evidence that female candidates in an open-list setting may suffer from a diminished incumbency advantage in future re-election attempts.

4.2   Spain (Closed-List PR)

I now turn to the results from closed-list elections in Spanish municipalities. In line with the theoretical argument, I find no evidence of a negative gender gap in incumbency effects. The effect of being elected on running again in future elections is of a similar magnitude for both men and women. For the outcome of winning again, the gender gap is actually positive: the effect of winning an election on re-election rates is likely *greater* for women than it is for men.

As before, I first show the graphical form of the difference in discontinuities, in Figure 3. In the left panel, looking at whether candidates run again in the next election, we see that candidates of both genders experience a similar increase (of about 15 pp.) in their

threshold sample are recorded as missing (Appendix D.1), as well as robust to dropping outlying cities with very high populations (Appendix D.5.1).
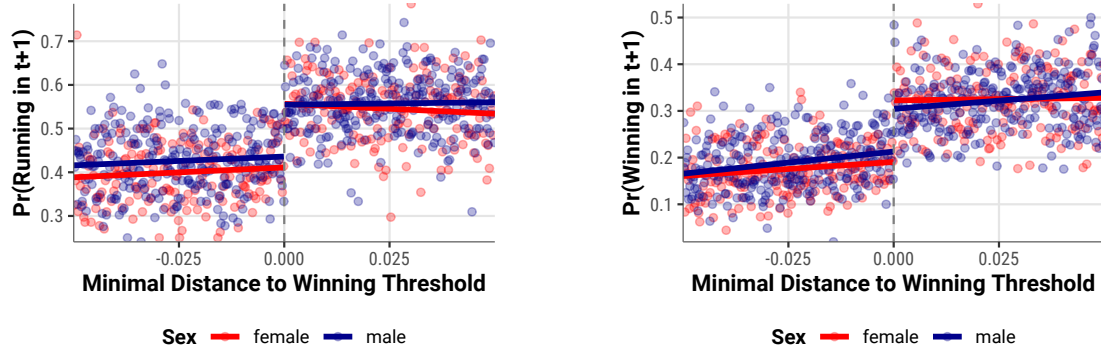
Figure 3: Effect of Winning Election on Running Again and Winning Again In Norwegian Local Elections, By Gender. The two visual regression discontinuities compare bare winners and bare losers by candidates' sex. The left panel examines the share of candidates running again in the next election. The right panel examines the share of candidates winning again (unconditionally) in the next election.

probability of running again as a result of being elected. The right-hand panel examines whether candidates win in the next election. Here, too, all candidates experience a significant increase in their winning probability when elected the first time. The effect size is about 10 percentage points. Looking closely, we note that the effect appears to be slightly larger for female candidates.

The formal estimates in Table 3 corroborate the visual inspection and offer more precise results. Once again, columns 1 to 3 report the effect of winning on running again in the next election. There is a large and significant effect of winning on running again for men – an increase of about 10 percentage points, in line with the result from Figure 3. Here, the gender gap is statistically insignificant: the effect of winning an election on running again appears to be of a very similar (or perhaps slightly larger) magnitude for women.

Women enjoy a greater incumbency advantage on the probability of being re-elected than men, as columns 4 to 6 show. Men enjoy an incumbency effect of an approximately 7 percentage point increase in their probability of winning the next election. The gender gap coefficient is positive in sign, and statistically significant at conventional levels for all bandwidth choices: women experience an approximately 6 percentage point larger incum-

Table 3: Difference-in-Discontinuity Estimates For Incumbency Advantage In Spanish Municipalities. Women enjoy a larger effect of winning on their probability to win again.

	Run (t + 1)			Win (t + 1)		
	(1)	(2)	(3)	(4)	(5)	(6)
Elected	0.109	0.119	0.100	0.072	0.095	0.076
	(0.014)	(0.010)	(0.020)	(0.012)	(0.008)	(0.017)
Female	−0.024	−0.032	−0.012	−0.032	−0.026	−0.033
	(0.016)	(0.012)	(0.022)	(0.013)	(0.009)	(0.018)
Elected x Female	0.037	0.033	0.018	0.058	0.045	0.057
	(0.023)	(0.017)	(0.032)	(0.019)	(0.013)	(0.027)
Bandwidth	0.032	0.064	0.016	0.035	0.071	0.018
BW Type	Optimal	2x Opt	0.5x Opt	Optimal	2x Opt	0.5x Opt
Outcome Mean	0.486	0.483	0.485	0.256	0.251	0.254
N (left)	14840	26294	7984	16223	28426	8726
N (right)	14729	26886	7825	16159	29072	8530

All estimates are reported with robust standard errors clustered at the municipality level in parentheses.

bency advantage.[22] This set of results suggests that women in Spanish local elections enjoy a somewhat *greater* incumbency advantage then their male colleagues – much in contrast to the findings in Norway's open-list PR setting.

I conduct a number of additional analyses on the data from Spain to confirm that my results from estimating the gender gap on the whole sample are unlikely to mask any underlying heterogeneity between parties or municipalities. First, in Appendix E.1, I leverage the large number of observations in order to estimate the treatment effect at the threshold by comparing the difference in means for observations sufficiently close to the election threshold (within 1 percentage point). The estimates are consistent with the results from Table 3. Second, in Appendix E.2, I check for any meaningful differences if I estimate the difference-in-discontinuity separately for either of Spain's two major parties. Third, in Appendix E.3, I evaluate whether the results are meaningfully different for municipalities that implemented a legally binding gender quota – mandating that at least 40% of all candidates be women – versus those that did not. Though noisy, I do not find evidence of a negative gender gap

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[22]See Appendix B.1 for robustness to bandwidth choice, and Appendix B.2 for robustness to polynomial order. With very large bandwidths, the estimated gender gap shrinks somewhat in magnitude, but remains positive. Still, these additional results remain consistent with the theoretical argument.

for women across either type of municipality. In Appendix E.4, I also find no meaningful evidence that estimates differ by cities' population size, although the positive gender gap may be attenuated towards zero in cities in the highest population tercile.

All told, the direct comparison between the results from Norway's open-list and Spain's closed-list elections is consistent with the theoretical argument that women suffer from disadvantages in incumbency effects where voters can determine individual candidates' list rankings. Still, on its own, this comparison cannot rule out that fundamental differences between Norway and Spain drive the set of results. Below, I leverage within-country and cross-country analyses to alleviate this concern.

4.3 Countries' Idiosyncracies Unlikely To Drive Gender Gap Difference

Are the divergent estimates of the gender gap the result of countries' idiosyncratic characteristics, rather than the product of electoral rules? To address this concern, I first exploit within-country variation in Norway's electoral systems: within the same country, I find no evidence of a meaningful gender gap when looking at county-level elections that use closed-list PR. Second, I extend my analysis of open-list systems to another, though noisier, case: open-list elections in Poland. I find a gender gap that is similar in magnitude and sign to estimates from Norway's open-list elections. Jointly, these these supplementary analyses strengthen the argument for the role of the electoral system vis-a-vis country-specific differences in explaining the gender gap.

4.3.1 Same Country, Different Electoral System: Likely No Gender Gap

Is the gender gap in incumbency advantages restricted to open-list PR, or is it a more general feature of Norwegian elections? I examine whether elections at the *regional* level, where voters have far less control over individual list rankings, exhibit a similar gender

Table 4: Probabilities of Winning Re-Election in Norway's Regional Elections.. Female incumbents are unlikely to experience a smaller incumbency advantage than men in this context.

	Win (in t+1)					
	(1)	(2)	(3)	(4)	(5)	(6)
Elected	0.183	0.164	0.106	0.121	0.153	0.156
	(0.036)	(0.039)	(0.052)	(0.055)	(0.059)	(0.059)
Female	−0.051	−0.056	−0.056	−0.032	−0.091	−0.092
	(0.032)	(0.036)	(0.068)	(0.072)	(0.050)	(0.050)
Elected x Female	0.015	0.015	0.019	−0.007	0.064	0.061
	(0.051)	(0.054)	(0.076)	(0.079)	(0.075)	(0.076)
R2	0.058	0.098	0.069	0.117	0.057	0.073
Parties	All	All	Left	Left	Right	Right
N	1700	1700	412	412	825	825
Outcome Mean	0.248	0.248	0.257	0.257	0.273	0.273
Region FE	Y	Y	Y	Y	Y	Y
Year FE	Y	N	Y	N	Y	N
Year x Party FE	N	Y	N	Y	N	Y

All estimates are reported with robust standard errors clustered at the region level in parentheses. Each observation is a candidate's election attempt. 'Elected' is an indicator for observations where the candidate obtained a seat in the municipal council. 'Female' is an indicator for observations identified as female. 'Elected' times 'Female' is the interaction between the two variables. Regression run on all candidates in regional elections between 2003 and 2015.

gap.[23] As the higher-level electoral setting would leave me underpowered for a difference-in-discontinuity design, I estimate a difference-in-differences specification among borderline elected and borderline losing candidates for all county elections between 2003 and 2015, and report the results in Table 4.[24] The coefficient on the gender gap (columns 1 and 2) is close to zero and statistically insignificant.[25] When splitting the sample by party family, I estimate a greater positive gender gap in right-wing parties, which is consistent with the 'social learning' hypothesis. Although careful to emphasise that these results are not well identified, and come with large uncertainty, the point estimates are consistent with the argument that the

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[23]Here, voters can still cast preference votes, but they only become meaningful in very rare cases. In practice, studies of Norwegian politics (e.g. Cirone, Cox, and Fiva (2021)) treat this tier of elections as closed-list.

[24]These estimates may be biased, as candidates away from the threshold may no longer be quasi-randomly assigned to winning or losing their election bid. Although restricting the sample to borderline elected/losing candidates, and restricting the bandwidth helps with this issue, some of the candidates may still plausibly anticipate their rank as certainly losing / winning. Still, Fiva and Halse (2016) employ the same strategy.

[25]Note that the gender gap grows positive and larger in magnitude for the subsample of candidates in right-wing parties. This is consistent with the suggestion that, if anything, party elites with initial biases against women update positively upon observing them in office.

features of open-list PR, rather than some general characteristic of Norwegian politics, drive the negative gender gap found at the local level.

4.3.2 Different Country, Same Electoral System: Gender Gap Replicates

Alternatively, is the gender-gap in Norway's open-list elections idiosyncratic to this set of elections? If the claim about the effect of electoral systems holds, the negative gender gap ought to replicate in other countries using a similar electoral system. I implement this test by fitting the main specification on county-level elections from Poland, which also use open-list PR.[26]

The estimates of the gender gap in Polish county-level elections, albeit less precise, match those from Norwegian municipalities. I report the full set of estimates in Appendix C. The results suggest that male candidates enjoy an approximately 10 percentage point higher probability of winning in the next election as a result of getting elected. Women, however, experience an incumbency advantage that is about 6 percentage points lower (compared to their male colleagues). Although, with a much smaller sample, these estimates are not statistically significant, they are consistent across multiple bandwidth specifications.

Though the uncertainty around the set of results in this section warrants caution, they are very similar to the previous set of findings from open-list PR. Overall, the finding of a gender gap in incumbency advantages replicates for the same electoral system across different countries, but not for different electoral systems within the same country. This weakens concerns about case selection driving the results and is consistent with the claim that differences in the type of proportional representation may affect the gender gap in political careers.

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[26]I restrict my sample to candidates from the two main parties in Polish politics – Civic Platform, Law and Order – running in the 2010 and 2014 elections at the county level. I leave out analysing the 2018 elections for two reasons. First, an electoral reform coming into effect for the 2018 elections extended office tenure length from four to five years. Second, Civic Platform merged with several smaller parties to form a broad opposition alliance. Both of these changes are likely to affect candidates' career trajectories.

5 Mechanisms Behind the Gender Gap in Open-List PR

What mechanism accounts for the stark difference between the open-list and closed-list cases? In this section, I examine the mechanisms that may lead to a smaller incumbency advantage for women in Norway's open-list elections. I show that the gender gap is most pronounced among candidates in right-wing parties. I also look at intermediate outcomes in the electoral process, such as list placement and preference vote shares – finding that voters in right-wing parties award a smaller increase in preference votes to female candidates as a result of being barely elected. This channel, mechanically unavailable in closed-list PR, is likely to contribute to the negative gender gap in open-list settings.

5.1 Women's Disadvantage Concentrated in Right-Wing Parties

Table 5: Difference-in-Discontinuity Estimates For Incumbency Advantage In Norwegian Municipalities, By Political Party Group. The gender gap appears to be driven by candidates in right-wing parties.

	Run (t+1)		Win (t+1)	
	(1)	(2)	(3)	(4)
Elected	0.022	0.005	0.086	0.126
	(0.031)	(0.026)	(0.027)	(0.024)
Female	−0.079	−0.044	−0.015	−0.001
	(0.034)	(0.030)	(0.027)	(0.025)
Elected x Female	−0.040	−0.014	−0.053	−0.089
	(0.049)	(0.045)	(0.039)	(0.039)
Parties	Left	Right	Left	Right
Bandwidth	0.05	0.068	0.052	0.069
Outcome Mean	0.546	0.59	0.253	0.26
N (left)	1568	2382	1580	2388
N (right)	1589	2413	1601	2419

All estimates are reported with robust standard errors clustered at the municipality level in parentheses. Each observation is a candidate's election attempt. 'Elected' is an indicator for observations where the candidate obtained a seat in the municipal council. 'Female' is an indicator for observations identified as female. 'Elected' times 'Female' is the interaction between the two variables. Other coefficients not reported. Regression run on all candidates in elections between 2003 and 2015.

Is the gender gap in the incumbency advantage persistent across parties from the entire

spectrum of political ideologies? Both parties and voters following a more socially conservative ideology might be more inclined to exhibit a negative bias towards women, thus diminishing their incumbency advantage.

I estimate the difference-in-discontinuity design separately on subsamples of candidates from left-leaning and right-leaning parties and report the results in Table 5.[27] Columns 1 and 2 report the effect of winning on running again by subsample. Although noisier than the main results, we see the same finding replicated as in Table 2. There is no meaningful effect of being elected on running again in the next election for male candidates; nor is there a statistically significant difference in the effect between genders.

Columns 3 and 4 report the effect of winning on whether the candidate is elected in the next election. In left-wing parties, both the absolute incumbency effect for men, as well as the magnitude of the gender gap are smaller. Though the point estimate still suggests a 5 pp. lower incumbency advantage for women, the gender gap coefficient is no longer statistically significant in this subsample. By contrast, the gender gap is more pronounced in right-wing parties. Here, male candidates who are bare winners enjoy an almost 13 percentage points higher chance of being re-elected in four year's time (compared to male bare losers). For female candidates, however, this incumbency advantage is estimated to be almost 9 percentage points smaller.

5.2 Voters, Rather Than Party, May Drive Gender Gap

Do party elites or voters drive the diminished incumbency advantage for women? The specific rules of Norway's open-list system in local elections allows me to investigate these two possible mechanisms further.

Recall that first, party elites draw up an *ex ante* ranking of candidates on the list, and award a *pre-advantage* to select candidates (who receive a boost in preference vote shares as

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[27]Parties classified as 'left' are Labour and the Socialist Left. Parties classified as 'right' are the Conservatives, Progress, the Christian Democratic Party, and the Liberal Party. These classifications correspond to the two 'coalition blocs' in Norwegian politics. I exclude the Centre Party, which has joined both left-wing and right-wing coalitions in recent decades.

a result).[28] However, if party elites are less likely to award these improvements to incumbent female candidates, this could explain the diminished incumbency advantage even though voters are no less likely to vote for women. Alternatively, if party elites exhibit no bias in the *ex ante* placement of women, but there is a gender gap in the increase in preference votes awarded by voters upon winning the first time, then voters' biases may explain the diminished incumbency advantage for women.
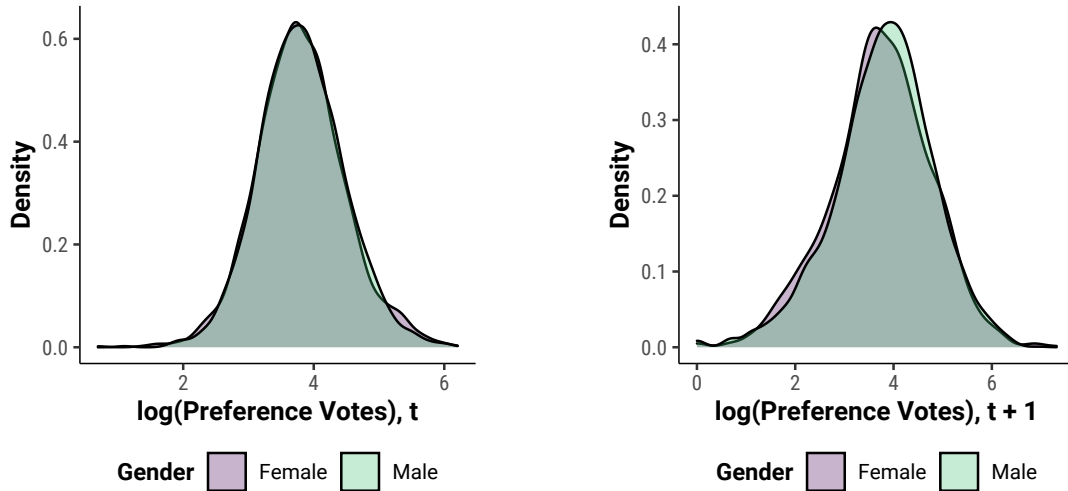
Figure 4: Distribution of Personal Votes Among Borderline Elected Candidates

Figure 4 presents a first test of gender differentials in preference vote changes. The figure plots the distribution of logged preference votes (by gender) for all candidates who were borderline elected at time t, as well as the distribution of the same candidates' preference votes in the next election $(t + 1)$. We observe that, compared to the first election, the mass of the distribution for male candidates shifts further to the right compared to female candidates. This suggests that barely elected male candidates' preference votes may increase more (compared to barely elected women) when running for re-election.

For a more formal test, I fit the difference-in-discontinuity design on additional outcomes in the next election: (1) whether candidates improve in *ex ante* list rankings; (2) whether candidates improve in *ex post* rankings; (3) whether candidates obtain parties' designated

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[28]Fiva and Røhr (2018) demonstrate that incumbents, once elected, are more likely to climb the *ex-ante* ranks and are more likely to receive the pre-advantage bonus.

pre-advantage status; (4) their vote share of all preference votes cast in the municipality in the next election. Because previous results suggest that the candidates in right-wing parties mostly drive the gender gap, I fit the specification separately on left-wing and right-wing subsamples.

Table 6: Mechanisms leading to lower incumbency advantage: Difference-in-Discontinuity Estimates On Additional Outcomes, Norway. I find no significant gender gap for party-based outcomes, but estimate a significant gender gap for outcomes determined by voters' preference rankings.

	Orig. Rank Advance		Actual Rank Advance		Pre-Ad. (t+1)		Pers.V. Share (t+1)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Elected	0.088	0.066	0.026	0.044	0.037	0.058	0.003	0.005
	(0.026)	(0.020)	(0.028)	(0.021)	(0.019)	(0.019)	(0.002)	(0.001)
Female	0.003	−0.003	−0.031	0.011	0.017	0.049	−0.003	0.000
	(0.027)	(0.023)	(0.029)	(0.023)	(0.022)	(0.021)	(0.003)	(0.002)
Elected x Female	−0.063	−0.034	−0.013	−0.062	0.001	−0.041	0.001	−0.005
	(0.038)	(0.034)	(0.039)	(0.032)	(0.031)	(0.033)	(0.004)	(0.003)
Parties	Left	Right	Left	Right	Left	Right	Left	Right
Bandwidth	0.068	0.092	0.061	0.097	0.033	0.055	0.025	0.052
Outcome Mean	0.257	0.253	0.229	0.211	0.119	0.163	0.0204	0.0175
N (left)	1655	2620	1624	2662	1421	2203	446	840
N (right)	1676	2655	1645	2698	1441	2229	458	856

All estimates are reported with robust standard errors clustered at the municipality level in parentheses. Each observation is a candidate's election attempt. 'Elected' is an indicator for observations where the candidate obtained a seat in the municipal council. 'Female' is an indicator for observations identified as female. 'Elected' times 'Female' is the interaction between the two variables. Other coefficients not reported. Regression run on all candidates in elections between 2003 and 2015.

The estimates, reported in Table 6, are, once again noisy, but offer some suggestive evidence that it is the voters in right-wing parties who deny women the same incumbency advantage as men.

In columns 1 and 2, I investigate whether winning an election renders candidates more likely to advance in ex ante list rank in the next election. Across both left- and right-wing parties, male winners enjoy an approximately 7 to 9 percentage point increase in their probability of improving their ex ante rank as a result of winning. However, I find no statistically significant gender gap, although the point estimates are still negative and substantively meaningful (-6 pp in left-wing parties, -3 pp. in right-wing parties). [29]

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[29]One explanation could be that women, while not *strictly* improving, are left in the same list position

When looking at whether candidates advanced in *ex post* ranks (columns 3 and 4) – after voters cast their preferences – the picture is a different one. In left-leaning parties, neither men nor women enjoy a statistically significant effect of being elected on their probability of advancing. By contrast, in right-wing parties, male winners are 4 percentage points more likely to improve their ex-post rank in the next election. The gender gap, on the verge of being statistically significant at conventional levels, suggests that this effect is 6 percentage points *lower* for women – that is, women who win are *less* likely to advance in ex post ranks compared to women who lose. Contrasting this with the previous columns, it suggests that most of the disadvantage that women face in right-wing parties comes from voters.

Another way of examining whether party elites are responsible for holding back female winners is to look at awarding pre-advantage status. Columns 5 and 6 suggest that men enjoy an increased probability (4 to 6 pp.) of receiving pre-advantage status when elected. In neither case, however, do we find a statistically significant gender gap in the effect of being elected on attaining pre-advantage.[30]

Finally, in columns 7 and 8, I turn to the effect of winning on the share of preference votes received in the next election.[31] For these specifications, I drop observations from municipalities flagged as having incomplete personal vote records and condition the sample on running again in the first place.[32] We can see that male candidates, upon being elected, can, on average, expect a 0.3 percentage point (0.5 in right-wing parties) higher preference vote

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because left-wing parties 'zip' their ex ante ranks.

[30]Women have a higher unconditional probability of pre-advantage status in right-wing parties (compared to left-wing parties). This is likely because of the nature of the threshold sample: left leaning parties might be more inclined to place women in higher list ranks overall.

[31]These estimates report the effect on the share of preference votes *relative to all votes cast in the municipality*. Measuring personal votes is somewhat more challenging than previously discussed binary outcomes. Appendix D.3 discusses this issue further, and presents evidence that the conclusions from these results are robust to various of operationalisations of personal vote measures.

[32]Unlike previous outcomes, it is less clear that imputing "0" personal votes for those not running again is justifiable. Following De Magalhaes (2015), conditioning is only problematic if barely elected and barely defeated candidates exhibit different probabilities of running again, which I do not observe in this context. I drop observations from municipalities with incomplete personal vote counts, because I need the total number of preference votes to calculate the denominator of the share variable. Results when including all municipalities as before (Appendix D.3.2) are broadly consistent, but a lot noisier due to the additional measurement error.

share in the next election. While the effect is small in absolute magnitude, it is meaningful in relation to candidates' average preference vote share of 2 (1.75) percentage points: the effect represents a 15% (28%) increase for the average candidate in the sample. For the interaction effect (i.e. the gender gap), we see a stark difference between the left-wing and the right-wing sample. In left-wing parties, the coefficient is close to zero and statistically insignificant, whereas in right-wing parties, it is negative, statistically significant, and drives the incumbency advantage in preference votes for women back to zero.

Overall, these results point towards right-wing voters rewarding female candidates for being elected with a smaller increase in personal votes as an important mechanism for the diminished incumbency advantage. Put differently, an increase in personal votes as a meaningful incumbency advantage mechanism may not be available to all candidates (Fiva and Røhr, 2018). That said, these results come with the caveat of large uncertainty estimates and do not constitute a 'smoking gun'. Although I cannot reject the null of no gender gap in the effect on outcomes decided by party leadership, at worst, my results suggest that both voters and party elites – perhaps responding strategically – play a role in decreasing women's incumbency advantage.

5.3   No Similar Gap In Age or Experience

We may worry that, if candidates' gender is also correlated with other characteristics (age, education, wealth) the gap in incumbency advantages may simply reflect parties' or voters' preferences for the associated attribute. If this were the case, we should observe a similar gap in incumbency advantages when using said correlates, rather than gender, as moderator in the difference-in-discontinuity setup. The data on Norwegian local elections allows me to do this with respect to age and prior experience (whether the candidate ran before or not).

I report the results in Table D.7 and Table D.8. In neither case do I find any meaningful gender gap in incumbency effects on either running again or winning again. Although this is a limited selection of covariates, it suggests that my findings are the result of a *gender* gap

in careers, rather than an age or experience gap.

5.4   Further Evidence for the Mechanism

Finally, I briefly report results from additional analyses, discussed in more detail in the Appendix. These findings from this subsection contribute additional evidence that is consistent with my theoretical argument.

Gender Gap By Population Size.   If voter-driven incumbency advantages predominantly work through name recognition, the the gender gap should attain its largest magnitude in big cities with a higher number of councillors. In small towns (say, of a population below 10,000), tracking information about a handful of candidates may be less costly; incumbents may also act in ways that directly affect voters (e.g. casework). In larger cities, however, voters are less likely to have information about an increasing number of candidates and may rely more strongly on heuristics such as name recognition and negative biases towards women.

Appendix D.5 reports the gender gap estimates for subsamples of the data binned into terciles by population tercile. The gender gap estimate is largest and statistically significant for candidates in the upper tercile of cities' population size, consistent with the implications of my theoretical argument.[33]

Survey Results.   If right-wing voters drive the gender gap in incumbency advantages, we should expect this group of voters to display more negative views towards women in politics in general. To test this claim, I use data from the 2015 Norwegian Local Election Survey. Results suggest that voters in right-wing parties were, indeed, less supportive of women's advancement in local politics. I report and discuss the results in greater detail in Appendix D.6.

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[33]At the same time, I provide evidence that extreme outliers do not drive the gender gap in Appendix D.5.1.

6 Conclusion

Do men and women have different political careers under proportional representation? Although this family of electoral systems is likely to boost the overall number of women elected to office in the first place, we know far less about whether PR also renders women's political careers more equitable in the long run – specifically, if they enjoy similar incumbency advantages to men. Any gender gap in incumbency effects may lead to less effective female representation due to shorter office tenure, fewer promotions, and higher turnover in candidates.

This paper argues that there is a crucial difference between open-list and closed-list PR systems. Under closed-list PR, voters are unable to determine individual candidates' list position: consequently, female candidates are shielded from voters' biases and the gender gap is zero or even positive. Meanwhile, under open-list PR, female candidates may enjoy diminished incumbency advantages as personal incumbency effects operate through voter-based name recognition channels, which may be vulnerable to gender stereotyping.

Empirical evidence from difference-in-discontinuity estimates in local elections in Norway and Spain supports this theoretical argument. I find no significant gender gap in the effect of winning on *running again* in either case. Importantly, I do find that women have a smaller increase in the probability of *being elected again* than men in Norway (open-list). I find no evidence for a similar differential effect in the Spanish, closed-list case – if anything, women enjoy a greater positive effect on future career outcomes. While the contrast in cross-country results remains suggestive, it is consistent with the theoretical framework. I also present additional evidence consistent with the argument that candidates' exposure to individual preference votes drives the gender gap in the incumbency advantage in the Norwegian open-list case.

All together, the results suggest that electoral rules matter not only for the *overall* share of women elected, but also whether female candidates, once elected, have political careers similar to men's. This finding may help explain why, despite an increase in the nominal share

of women, downstream outcomes such as policy might not change (Ferreira and Gyourko, 2014).

Still, closed-list PR is far from a panacea for equal representation: although I find that female candidates enjoy *larger* incumbency advantages in Spanish municipalities, women are still a far way off from gender parity in representation. Importantly, my results do not speak to the problem of 'sticky floors' (Cipullo, 2021): women may struggle to get elected in the first place, and parties might still disadvantage women *unconditionally* by placing them in lower or unwinnable ranks (Casas-Arce and Saiz, 2015). Once elected, however, they likely experience incumbency effects of a similar magnitude on their probability winning re-election as their male colleagues.

Finally, the paper points towards promising avenues for further research. Although present data constraints limit my ability to study differences in any observable characteristics between male and female candidates in the threshold sample, subsequent work will hopefully be able to do so and shed further light on the mechanisms producing the gender gap in the open-list case. Additional research is also needed to test whether these findings generalise beyond the selected cases, in particular with respect to other variants of open-list PR. Future work should also compare and contrast these findings with gender gaps in political careers under plurality. Lastly, similar to Brown et al. (2019), it should also evaluate the gender gap in women's promotion to higher-ranked offices, thus studying whether the 'leaky pipeline' is indeed responsible for women's underrepresentation in higher levels of politics.

References

Anzia, Sarah F., and Rachel Bernhard. 2019. "How Does Gender Stereotyping Affect Women at the Ballot Box? Evidence from Local Elections in California, 1995-2016.".

Ashworth, Scott, Christopher R Berry, and Ethan Bueno de Mesquita. N.d. "Sources of Women's Underrepresentation in US Politics: A Model of Election Aversion and Voter Discrimination." . Forthcoming.

Bagues, Manuel, and Pamela Campa. 2020a. "Can Gender Quotas in Candidate Lists Empower Women? Evidence from a Regression Discontinuity Design." *Journal of Public Economics* p. Forthcoming.

Bagues, Manuel, and Pamela Campa. 2020b. "Women and Power: Unpopular, Unwilling, or Held Back? A Comment." *Journal of Political Economy* 128(5): 2010–2016.

Bansak, Kirk. 2021. "Estimating Causal Moderation Effects with Randomized Treatments and Non-Randomized Moderators." *Journal of the Royal Statistical Society: Series A (Statistics in Society)* 184(1): 65–86.

Beaman, Lori, Raghabendra Chattopadhyay, Esther Duflo, Rohini Pande, and Petia Topalova. 2009. "Powerful Women: Does Exposure Reduce Bias?" *The Quarterly journal of economics* 124(4): 1497–1540.

Bernhard, Rachel, and Justin de Benedictis-Kessner. 2020. "The Boys—and Girls—Are Back in Town: Male and Female Candidates Are Similarly Dissuaded by Losing Elections." p. 25.

Broockman, David E., and Evan J. Soltas. 2020. "A Natural Experiment on Discrimination in Elections." *Journal of Public Economics* 188: 104201.

Brown, Ryan, Hani Mansour, Stephen D O'Connell, and James Reeves. 2019. Gender Differences in Political Career Progression: Evidence from U.S. Elections. In *CESifo Working Paper No. 7821*.

Calonico, Sebastian, Matias D. Cattaneo, and Rocio Titiunik. 2014. "Robust Nonparametric Confidence Intervals for Regression-Discontinuity Designs." *Econometrica* 82(6): 2295–2326.

Casas-Arce, Pablo, and Albert Saiz. 2015. "Women and Power: Unpopular, Unwilling, or Held Back?" *Journal of Political Economy* 123(3): 641–669.

Chattopadhyay, Raghabendra, and Esther Duflo. 2004. "Women as Policy Makers: Evidence from a Randomized Policy Experiment in India." *Econometrica* 72(5): 1409–1443.

Cipullo, Davide. 2021. "Gender Gaps in Political Careers: Evidence from Competitive Elections.".

Cirone, Alexandra, Gary W. Cox, and Jon H. Fiva. 2021. "Seniority-Based Nominations and Political Careers." *American Political Science Review* pp. 234–251.

Dahlerup, Drude. 2013. *Women, Quotas and Politics.* Routledge.

Dahlgaard, Jens Olav. 2016. "You Just Made It: Individual Incumbency Advantage under Proportional Representation." *Electoral Studies* 44: 319–328.

De Magalhaes, Leandro. 2015. "Incumbency Effects in a Comparative Perspective: Evidence from Brazilian Mayoral Elections." *Political Analysis* pp. 113–126.

Dettman, Sebastian, Thomas B. Pepinsky, and Jan H. Pierskalla. 2017. "Incumbency Advantage and Candidate Characteristics in Open-List Proportional Representation Systems: Evidence from Indonesia." *Electoral Studies* 48: 111–120.

Eggers, Andrew C., Anthony Fowler, Jens Hainmueller, Andrew B. Hall, and James M. Snyder Jr. 2015. "On the Validity of the Regression Discontinuity Design for Estimating Electoral Effects: New Evidence from over 40,000 Close Races." *American Journal of Political Science* 59(1): 259–274.

Eymmoud, Jean-Benoot, and Paul Vertier. 2017. "Gender Biases: Evidence from a Natural Experiment in French Local Elections." *SSRN Electronic Journal* .

Ferreira, Fernando, and Joseph Gyourko. 2014. "Does Gender Matter for Political Leadership? The Case of US Mayors." *Journal of Public Economics* 112: 24–39.

Fiva, Jon H., and Askill H. Halse. 2016. "Local Favoritism in At-Large Proportional Representation Systems." *Journal of Public Economics* 143: 15–26.

Fiva, Jon H., and Daniel M. Smith. 2018. "Political Dynasties and the Incumbency Advantage in Party-Centered Environments." *American Political Science Review* 112(3): 706–712.

Fiva, Jon H., and Helene Lie Røhr. 2018. "Climbing the Ranks: Incumbency Effects in Party-List Systems." *European Economic Review* 101: 142–156.

Fiva, Jon H, Rune J Sorensen, and Reidar Vollo. 2020. "Local Candidate Dataset.".

Folke, Olle. 2014. "Shades of Brown and Green: Party Effects in Proportional Election Systems." *Journal of the European Economic Association* 12(5): 1361–1395.

Folke, Olle, and Johanna Rickne. 2016. "Electoral Competition and Gender Differences in Political Careers." *Quarterly Journal of Political Science* 11(1): 59–102.

Folke, Olle, and Johanna Rickne. 2020. "All the Single Ladies: Job Promotions and the Durability of Marriage." *American Economic Journal: Applied Economics* 12(1): 260–87.

Folke, Olle, Torsten Persson, and Johanna Rickne. 2016. "The Primary Effect: Preference Votes and Political Promotions." *The American Political Science Review* 110(3): 559.

Golder, Sona N., Laura B. Stephenson, Karine Van der Straeten, André Blais, Damien Bol, Philipp Harfst, and Jean-François Laslier. 2017. "Votes for Women: Electoral Systems and Support for Female Candidates." *Politics & Gender* 13(March): 107–131.

Górecki, Maciej A., and Paula Kukołowicz. 2014. "Gender Quotas, Candidate Background and the Election of Women: A Paradox of Gender Quotas in Open-List Proportional Representation Systems." *Electoral Studies* 36(December): 65–80.

Hyytinen, Ari, Jaakko Meriläinen, Tuukka Saarimaa, Otto Toivanen, and Janne Tukiainen. 2018. "When Does Regression Discontinuity Design Work? Evidence from Random Election Outcomes." *Quantitative Economics* 9(2): 1019–1051.

Jankowski, Michael, and Kamil Marcinkiewicz. 2019. "Ineffective and Counterproductive? The Impact of Gender Quotas in Open-List Proportional Representation Systems." *Politics & Gender* 15(1): 1–33.

Jankowski, Michael, and Stefan Müller. 2021. "The Incumbency Advantage in Second-Order PR Elections: Evidence from the Irish Context, 1942–2019." *Electoral Studies* 71(June): 102331.

Kerevel, Yann. 2019. "Empowering Women? Gender Quotas and Women's Political Careers." *The Journal of Politics* 81(4): 1167–1180.

Lawless, Jennifer L., and Richard L. Fox. 2005. *It Takes a Candidate: Why Women Don't Run for Office.* Cambridge University Press.

Le Barbanchon, Thomas, and Julien Sauvagnat. 2019. "Electoral Competition, Voter Bias and Women in Politics." *Voter Bias and Women in Politics (November 2019)* .

Lee, David S. 2001. The Electoral Advantage to Incumbency and Voters' Valuation of Politicians' Experience: A Regression Discontinuity Analysis of Elections to the US.. Technical report National Bureau of Economic Research.

Lee, David S. 2008. "Randomized Experiments from Non-Random Selection in US House Elections." *Journal of Econometrics* 142(2): 675–697.

Lucardi, Adrián, and Juan Pablo Micozzi. 2020. "District Magnitude and Female Representation: Evidence from Argentina and Latin America." *American Journal of Political Science* .

Mansbridge, Jane. 1999. "Should Blacks Represent Blacks and Women Represent Women? A Contingent" Yes"." *The Journal of politics* 61(3): 628–657.

Mansbridge, Jane. 2003. "Rethinking Representation." *American political science review* 97(4): 515–528.

Matland, Richard E. 1998. "Women's Representation in National Legislatures: Developed and Developing Countries." *Legislative Studies Quarterly* 23(1): 109–125.

Matland, Richard E., and Donley T. Studlar. 1996. "The Contagion of Women Candidates in Single-Member District and Proportional Representation Electoral Systems: Canada and Norway." *The Journal of Politics* 58(3): 707–733.

Norris, Pippa. 1985. "Women's Legislative Participation in Western Europe." In *Routledge Studies in Political Psychology*. Vol. 4 Routledge/Taylor pp. 90–101.

Ragauskas, Rimvydas. 2019. "Party-Determined Viability and Gender Bias in Open-List Proportional Representation Systems." *Politics & Gender* pp. 1–27.

Roberts, Andrew, Jason Seawright, and Jennifer Cyr. 2013. "Do Electoral Laws Affect Women's Representation?" *Comparative Political Studies* 46(December): 1555–1581.

Thames, Frank C. 2016. "Understanding the Impact of Electoral Systems on Women's Representation." *Forthcoming, Politics & Gender* .

Thames, Frank C., and Margaret S. Williams. 2010. "Incentives for Personal Votes and Women's Representation in Legislatures." *Comparative Political Studies* 43(December): 1575–1600.

Verge, Tània, and Nina Wiesehomeier. 2019. "Parties, Candidates, and Gendered Political Recruitment in Closed-List Proportional Representation Systems: The Case of Spain." *Political Research Quarterly* 72(December): 805–820.

Wasserman, Melanie. 2020. "Gender Differences in Politician Persistence." *Review of Economics and Statistics* p. Forthcoming.

Appendix

Intended for online publication only.

Table of Contents

A RD Robustness Checks: Identification Assumptions

In this section, I discuss additional checks verifying that there is no sorting around the RD threshold.

A.1 Continuity Around Threshold

In order for the regression discontinuity design to identify the causal effect of being elected within each gender, the key assumption is continuity around the threshold – that is, observations on either side of the threshold are comparable in all respects except for the treatment assignment and the outcome.

(a) Norway

(b) Spain
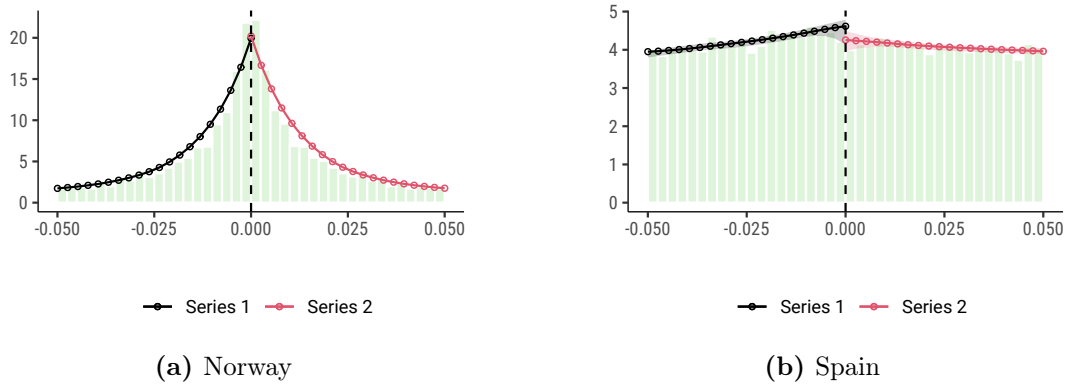
Figure A1: No Discontinuity in Running Variable Density Around Threshold. The plots show a local linear regression fitted on the density of the running variable.

A.2 Continuity in Share Of Female Candidates

Similarly, if there is no sorting around the threshold, we should observe no discontinuous jump in the share of female candidates at the threshold. Figure A2 confirms that this it the case.

(a) Norway

(b) Spain
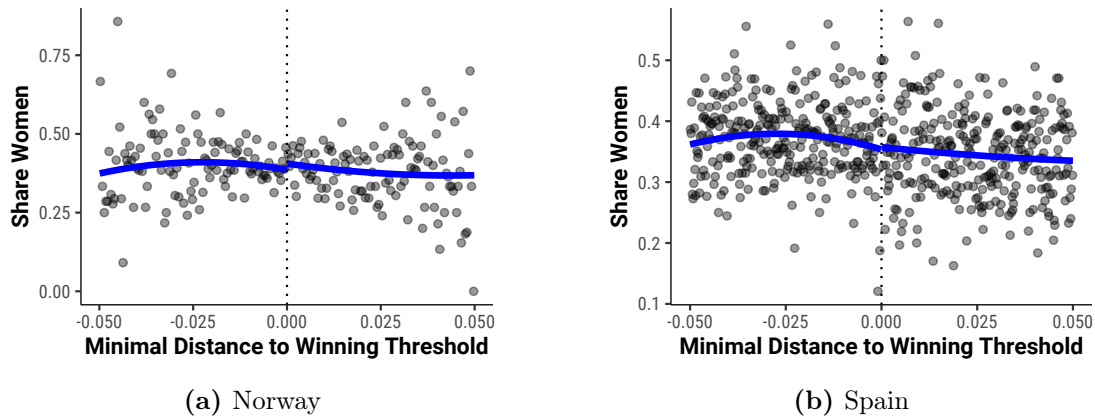
Figure A2: No Discontinuity in Share Of Female Candidates Around Threshold. The plots show a local quadratic regression predicting the share of female candidates around the threshold.

B RD Robustness Checks: Main Results

In this section, I offer a number of checks to confirm that the main results in the paper are not sensitive to different specifications of the RD design.

B.1 Bandwidth Sensitivity

Tables 2 and 3 report results of the difference-in-discontinuity specification with optimal bandwidth as selected by Calonico, Cattaneo, and Titiunik (2014) on the full sample, along with one-half and double that bandwidth. Below, I plot the coefficient estimates of interest with additional bandwidth parameters to ascertain that the results are robust to the choice of bandwidth.

B.1.1 Norway

(a) Running in $t + 1$
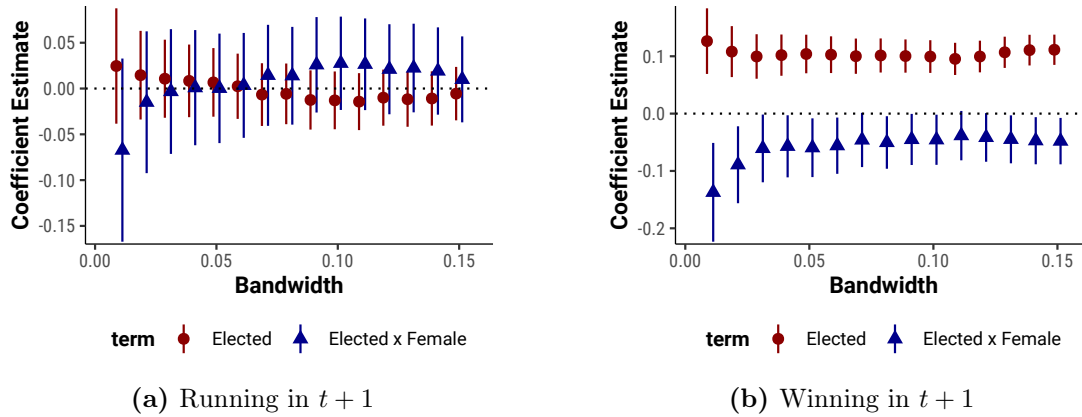
(b) Winning in $t + 1$

Figure B1: Bandwidth Sensitivity Check (Norway). The plot shows the RD coefficients for 'Elected' and 'Elected x Female' in the case of Norway for different bandwidth choices.

B.1.2 Spain
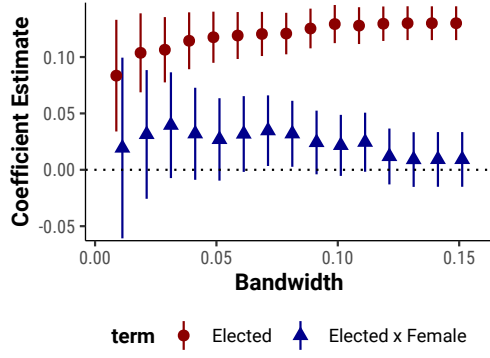
(a) Running in $t + 1$
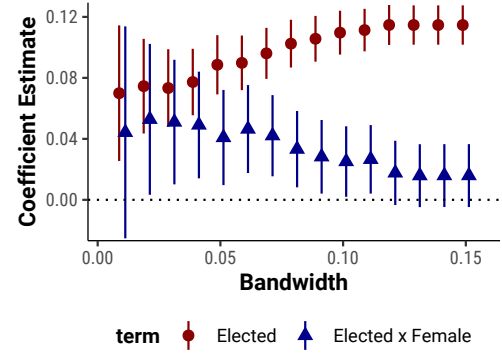
(b) Winning in $t + 1$

Figure B2: Bandwidth Sensitivity Check (Spain). The plot shows the RD coefficients for 'Elected' and 'Elected x Female' in the case of Spain for different bandwidth choices.

B.2 Functional Form

In this section, I assess the robustness of the main RD estimates with respect to functional form. Tables B1 and B2 below report the results from the main specification fitted with second-order polynomials. The results are consistent with the estimates from the linear specification.

B.2.1 Norway

Table B1: Difference-in-Discontinuity Estimates from Norway with Second-Order Polynomial.

|	Run (t + 1)			Win (t + 1)		
	(1)	(2)	(3)	(4)	(5)	(6)
Elected	0.000	−0.011	0.022	0.106	0.100	0.112
	(0.019)	(0.016)	(0.023)	(0.017)	(0.015)	(0.022)
Female	−0.083	−0.080	−0.097	−0.025	−0.020	−0.032
	(0.020)	(0.018)	(0.023)	(0.017)	(0.014)	(0.019)
Elected x Female	−0.015	0.003	−0.030	−0.074	−0.058	−0.091
	(0.032)	(0.029)	(0.038)	(0.029)	(0.025)	(0.035)
Bandwidth	0.11	0.22	0.055	0.091	0.18	0.045
BW Type	Optimal	2x Opt	0.5x Opt	Optimal	2x Opt	0.5x Opt
Outcome Mean	0.576	0.587	0.565	0.263	0.262	0.261
N (left)	5553	6537	4660	5314	6216	4384
N (right)	5614	6609	4709	5373	6283	4431

All estimates are reported with robust standard errors clustered at the municipality level in parentheses. Each observation is a candidate's election attempt. 'Elected' is an indicator for observations where the candidate obtained a seat in the municipal council. 'Female' is an indicator for observations identified as female. 'Elected' times 'Female' is the interaction between the two variables. Other coefficients not reported. Regression run on all candidates in elections between 2003 and 2015.

B.2.2 Spain

Table B2: Difference-in-Discontinuity Estimates from Spain with Second-Order Polynomial..

	Run (in t+1)			Win (in t+1)		
	(1)	(2)	(3)	(4)	(5)	(6)
Elected	0.095	0.116	0.075	0.076	0.087	0.074
	(0.020)	(0.014)	(0.029)	(0.014)	(0.010)	(0.020)
Female	−0.014	−0.014	0.008	−0.027	−0.030	−0.037
	(0.023)	(0.017)	(0.032)	(0.015)	(0.010)	(0.021)
Elected x Female	0.043	0.021	0.011	0.045	0.053	0.056
	(0.032)	(0.023)	(0.046)	(0.022)	(0.016)	(0.031)
Bandwidth	0.036	0.072	0.018	0.059	0.12	0.029
BW Type	Optimal	2x Opt	0.5x Opt	Optimal	2x Opt	0.5x Opt
Outcome Mean	0.487	0.481	0.486	0.253	0.244	0.255
N (left)	16564	28924	8917	24559	40700	13705
N (right)	16568	29555	8708	25132	40620	13587

All estimates are reported with robust standard errors clustered at the municipality level in parentheses. Each observation is a candidate's election attempt. 'Elected' is an indicator for observations where the candidate obtained a seat in the municipal council. 'Female' is an indicator for observations identified as female. 'Elected' times 'Female' is the interaction between the two variables. Other coefficients not reported. Regression run on all candidates in elections between 2003 and 2015.

C Additional Statistical Results: Poland

In this section, I report additional results from the difference-in-discontinuity specification fitted on open-list PR, county-level elections in Poland. The sample includes all threshold candidates from Poland's major two parties (Civic Platform, Law and Order) at the time of the 2010 election running for election in counties or cities with county powers. These elections are one level up from local elections (where council members are elected using plurality or plurality at-large).

The estimates yield gender gap magnitudes that are similar to those of Norway's open-list PR case, albeit less precise. For running again, the results suggest that men enjoy a 10-12 percentage point increase in their probability of running again upon being elected the first time. Here, the gender gap coefficient is positive but highly insignificant and exhibits meaningful variance across the bandwidth choices.

For winning again, the incumbency advantage for men is around 13 percentage points. The gender gap is negative and suggests that the incumbency advantage diminishes by about 7 percentage points for women.

Table C1: Difference-in-Discontinuity Estimates For Incumbency Advantage In Polish Counties and County-Like Cities. The gender gap is similar in magnitude to that of Norwegian municipalities.

	Run (t + 1)			Win (t + 1)		
	(1)	(2)	(3)	(4)	(5)	(6)
Elected	0.109	0.110	0.122	0.134	0.121	0.157
	(0.032)	(0.026)	(0.043)	(0.030)	(0.023)	(0.042)
Female	−0.026	−0.053	−0.045	−0.001	−0.027	0.054
	(0.047)	(0.037)	(0.056)	(0.035)	(0.027)	(0.049)
Elected x Female	0.030	0.048	0.001	−0.069	−0.057	−0.116
	(0.065)	(0.053)	(0.081)	(0.057)	(0.044)	(0.078)
Bandwidth	0.065	0.13	0.033	0.059	0.12	0.029
BW Type	Optimal	2x Opt	0.5x Opt	Optimal	2x Opt	0.5x Opt
Outcome Mean	0.369	0.374	0.365	0.155	0.163	0.153
N (left)	1227	1681	827	1160	1619	772
N (right)	1221	1673	822	1154	1611	767

All estimates are reported with robust standard errors clustered at the municipality level in parentheses. Each observation is a candidate's election attempt. 'Elected' is an indicator for observations where the candidate obtained a seat in the municipal council. 'Female' is an indicator for observations identified as female. 'Elected' times 'Female' is the interaction between the two variables. Other coefficients not reported. Regression run on all candidates from two main parties (PO, PiS) in county-level elections in 2010.

D   Additional Statistical Results: Norway

In this section, I report supplementary analyses and additional results from the Norwegian case.

D.1   Gender Gap Persists In Restricted Sample

Below, I report the results from Table 2 estimated on the sample restricted to municipality-years in which no personal votes are recorded as missing. There are two reasons why these adjustments should have little effect. First, most records with missing personal votes are outside the borderline sample – candidates from minor parties or in very small municipalities. Second, even if personal vote information were missing, other election details such as list rank and whether the candidate is running, and winning (again) persist. This feature of the data should therefore not affect the main conclusions. Indeed, Table D1 demonstrates that this is the case, although the uncertainty associated with the estimates increases due to a smaller sample size.

Table D1: Difference-in-Discontinuity Estimates For Incumbency Advantage In Norwegian Municipalities. Run On Restricted Sample.

	Run (t + 1)			Win (t + 1)		
	(1)	(2)	(3)	(4)	(5)	(6)
Elected	0.001	−0.004	0.016	0.100	0.095	0.099
	(0.024)	(0.020)	(0.029)	(0.021)	(0.018)	(0.025)
Female	−0.098	−0.090	−0.063	−0.032	−0.027	−0.017
	(0.024)	(0.021)	(0.029)	(0.020)	(0.017)	(0.025)
Elected x Female	0.003	0.015	−0.045	−0.061	−0.048	−0.093
	(0.038)	(0.031)	(0.045)	(0.033)	(0.028)	(0.041)
Bandwidth	0.053	0.11	0.027	0.049	0.098	0.025
BW Type	Optimal	2x Opt	0.5x Opt	Optimal	2x Opt	0.5x Opt
Outcome Mean	0.561	0.573	0.545	0.259	0.26	0.253
N (left)	3227	3853	2559	3156	3783	2486
N (right)	3272	3909	2599	3201	3839	2525

All estimates are reported with robust standard errors clustered at the municipality level in parentheses. Each observation is a candidate's election attempt. 'Elected' is an indicator for observations where the candidate obtained a seat in the municipal council. 'Female' is an indicator for observations identified as female. 'Elected' times 'Female' is the interaction between the two variables. Other coefficients not reported. Regression run on all candidates in elections between 2003 and 2015, excluding municipality-years in which at least some candidates are recorded as missing personal votes.

D.2 Additional Outcomes Robust To Functional Form Choices

Below, I replicate Table 6 with second-order polynomials. The conclusions are the unchanged, except for the gender gap in personal votes. As I discuss in Appendix D.3 below, estimation of the personal vote share can be tricky. When using alternative measures (raw personal vote counts) as an outcome, the gender gap persists even with second-order polynomials (see Table D5).

Table D2: Difference-in-Discontinuity Estimates On Additional Outcomes, Norway, With Second-Order Polynomials. The results remain broadly consistent.

	Orig. Rank Advance		Actual Rank Advance		Pre-Ad. (t+1)		Pers.V. Share (t+1)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Elected	0.092	0.084	0.037	0.065	0.041	0.047	−0.000	0.001
	(0.031)	(0.024)	(0.032)	(0.024)	(0.025)	(0.023)	(0.003)	(0.003)
Female	0.011	0.001	−0.023	0.008	0.034	0.053	−0.001	−0.000
	(0.032)	(0.023)	(0.033)	(0.023)	(0.028)	(0.021)	(0.003)	(0.002)
Elected x Female	−0.079	−0.064	−0.023	−0.069	−0.005	−0.061	0.001	0.000
	(0.048)	(0.043)	(0.046)	(0.039)	(0.042)	(0.040)	(0.004)	(0.004)
Parties	Left	Right	Left	Right	Left	Right	Left	Right
Bandwidth	0.068	0.092	0.061	0.097	0.033	0.055	0.025	0.052
Outcome Mean	0.257	0.253	0.229	0.211	0.119	0.163	0.0204	0.0175
N (left)	1655	2620	1624	2662	1421	2203	446	840
N (right)	1676	2655	1645	2698	1441	2229	458	856

All estimates are reported with robust standard errors clustered at the municipality level in parentheses. Each observation is a candidate's election attempt. 'Elected' is an indicator for observations where the candidate obtained a seat in the municipal council. 'Female' is an indicator for observations identified as female. 'Elected' times 'Female' is the interaction between the two variables. Other coefficients not reported. Regression run on all candidates in elections between 2003 and 2015.

D.3 Estimating the Effect on Personal Votes

One additional challenge in the Norwegian case is that larger municipalities are more likely to be close to the threshold, because differences in candidates' personal vote scores are likely to be smaller in districts with large district magnitude and a large number of candidates (e.g., two candidates at the threshold are more likely to be separated by just a small vote share if there are 50 other candidates on the list).

Fortunately, this does not raise concerns with the main results, where outcomes are binary, as we have seen that rates of running again and winning again are relatively constant (or linear) along the running variable (cf. Figure 2). It does, however, bring about a problem when using outcomes related to personal votes in $t + 1$. Candidates closest to the threshold in t are not only more likely to run in larger cities, they are also more likely to have smaller personal vote shares (compared to the total number of votes cast for either the party or in the municipality). While this does not violate the no-sorting condition *across* the threshold, it introduces the threat of non-linear conditional expectation functions on either side of the threshold, which makes estimation of the true LATE much more difficult.

Figures D1 and D2 illustrate this problem. Figure D1 plots the average town population for bins near the threshold. We see that candidates closest to the threshold are more likely to run in larger towns. Fortunately, in the case of raw personal votes (right panel), no significant non-linearities appear: towns near the threshold are larger, but with higher district magnitudes, threshold candidates are also placed further down the list, so their raw vote count does not change all that much. Note that any estimate of the gender gap in the effect of being elected on raw personal votes may be distorted if men and women, on average, receive different vote counts to start with. I find no evidence for this concern in the threshold sample, with the average male candidate receiving 52 personal votes in t, and the average female candidate receiving 51.

The story is different for measures of personal vote *shares*. First, there are multiple ways to express the share: either as a share of all votes cast in the town ('Total Votes'), or as a share of all votes cast in the town for the candidate's particular party ('Party Votes', following Fiva and Smith (2018)). In both cases, we observe that the outcome decreases severely close to the threshold, likely making estimation of the effect at the threshold more difficult. While an appealing operationalisation of candidates' preference votes, some of the additional estimates using share-based measures end up being overly noisy due to this issue.
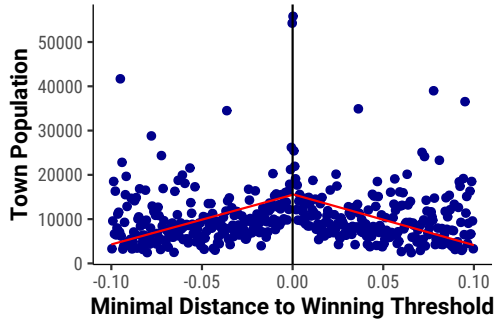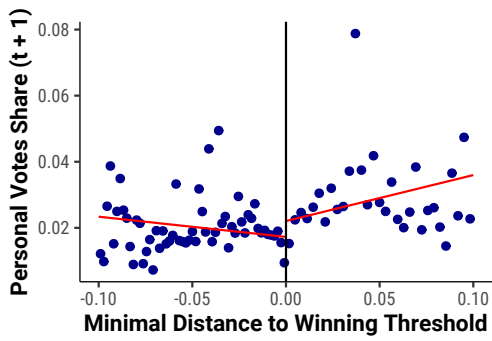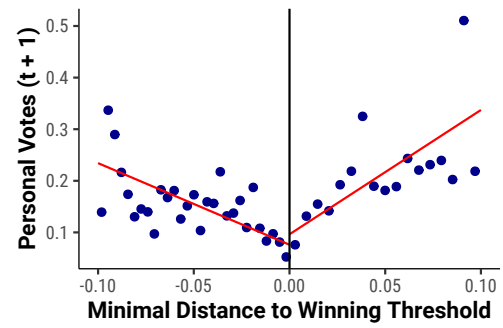
(a) Municipality Population
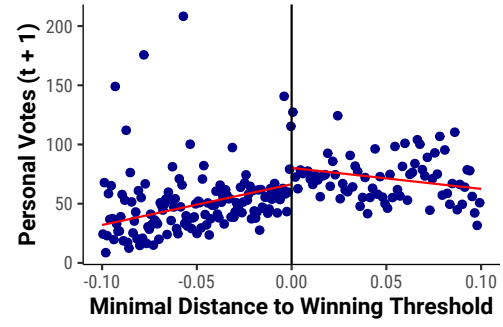
(b) Raw Personal Votes (t + 1)

Figure D1: Distribution of Municipality Population size and Raw Personal Votes around Threshold

(a) Personal Vote / Total Votes (t + 1)

(b) Personal Vote / Party Votes (t + 1)

Figure D2: Distribution of Personal Vote Shares Around Threshold

D.3.1 Robustness to Personal Vote Measurement

Because of the aforementioned challenges, I estimate the difference-in-discontinuity specification with all the different outcome operationalisations discussed above. Table D.3 reports the results. The gender gap in personal vote increases across right-wing parties, although somewhat imprecisely estimated, persists across all specifications.

Table D3: Sensitivity of Results to Different Personal Vote Measures. The gender gap estimate is consistent across preferred measures.

	Raw PV		log(Raw PV)		PV / Total Votes		PV / Party Votes	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Elected	13.842	23.573	0.243	0.340	0.003	0.005	0.012	0.031
	(6.882)	(5.948)	(0.085)	(0.067)	(0.002)	(0.001)	(0.009)	(0.010)
Female	-9.542	20.199	-0.153	-0.019	-0.003	0.000	0.006	0.004
	(8.383)	(27.847)	(0.100)	(0.101)	(0.003)	(0.002)	(0.008)	(0.011)
Elected x Female	12.549	-34.571	0.095	-0.229	0.001	-0.005	-0.009	-0.024
	(14.673)	(29.305)	(0.156)	(0.139)	(0.004)	(0.003)	(0.013)	(0.015)
Parties	Left	Right	Left	Right	Left	Right	Left	Right
Bandwidth	0.067	0.093	0.05	0.073	0.025	0.052	0.013	0.046
Outcome Mean	65.6	69.1	3.77	3.76	0.0204	0.0175	0.069	0.124
N (left)	586	1019	553	941	446	840	352	791
N (right)	604	1048	564	962	458	856	358	803

All estimates are reported with robust standard errors clustered at the municipality level in parentheses. Each observation is a candidate's election attempt. 'Elected' is an indicator for observations where the candidate obtained a seat in the municipal council. 'Female' is an indicator for observations identified as female. 'Elected' times 'Female' is the interaction between the two variables. Other coefficients not reported. Regression run on all candidates in elections between 2003 and 2015.

D.3.2 Robustness to Data Sample

All analyses on personal vote outcomes so far were restricted to candidates in municipalities where all personal votes are recorded. This is important because we want our denominators for the shares to be right. Still, for robustness's sake, I also report the estimates for the full sample in Table D4. Note that I can still extend the analyses to these additional observations because the personal vote measure(s) are not missing for the borderline candidates – they are merely missing for other (usually minor) candidates running in the municipality.

The estimates for raw personal vote and vote share (relative to total votes) remain consistent, and even gain some precision. The estimates for PV / Party Votes do change, however and are very noisy. This is, as mentioned before, likely due to the estimation challenge with this outcome in particular, where the results are sensitive to even a small degree of noise or measurement error.

Table D4: Sensitivity of Results to Different Personal Vote Measures. Including Municipalities With Incomplete Personal Vote Data.

	Raw PV		log(Raw PV)		PV / Total Votes		PV / Party Votes	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Elected	18.040	25.384	0.228	0.381	0.003	0.004	0.009	0.016
	(6.289)	(4.625)	(0.068)	(0.056)	(0.002)	(0.001)	(0.007)	(0.009)
Female	-3.911	16.047	-0.098	-0.018	-0.002	0.001	0.004	0.012
	(6.929)	(20.862)	(0.092)	(0.089)	(0.003)	(0.001)	(0.006)	(0.011)
Elected x Female	2.739	-36.455	0.014	-0.282	0.000	-0.004	-0.010	-0.006
	(11.299)	(22.658)	(0.133)	(0.127)	(0.003)	(0.002)	(0.011)	(0.014)
Parties	Left	Right	Left	Right	Left	Right	Left	Right
Bandwidth	0.059	0.087	0.038	0.068	0.022	0.048	0.012	0.039
Outcome Mean	60	64.8	3.69	3.66	0.0188	0.0168	0.0648	0.118
N (left)	856	1457	769	1341	657	1166	519	1064
N (right)	861	1463	773	1343	663	1160	530	1068

All estimates are reported with robust standard errors clustered at the municipality level in parentheses. Each observation is a candidate's election attempt. 'Elected' is an indicator for observations where the candidate obtained a seat in the municipal council. 'Female' is an indicator for observations identified as female. 'Elected' times 'Female' is the interaction between the two variables. Other coefficients not reported. Regression run on all candidates in elections between 2003 and 2015.

D.3.3 Robustness to Functional Form

Finally, I also report estimates from specifications with second-order polynomials in Table D5. The results become a lot noisier; the general pattern of results still holds up for raw and logged personal vote counts. As discussed before, the specifications using share-based measures as an outcome are much more susceptible to noise – especially with more demanding specifications such as second-order polynomials – and should therefore be treated with caution.

Table D5: Sensitivity of Results to Different Personal Vote Measures, With Second-Order Polynomials. The results become noisier, but remain consistent.

	Raw PV		log(Raw PV)		PV / Total Votes		PV / Party Votes	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Elected	6.901	36.748	0.102	0.424	-0.000	0.001	0.011	0.008
	(9.262)	(7.169)	(0.107)	(0.090)	(0.003)	(0.003)	(0.009)	(0.012)
Female	-11.687	33.684	-0.126	-0.002	-0.001	-0.000	0.005	-0.006
	(10.981)	(36.674)	(0.126)	(0.122)	(0.003)	(0.002)	(0.009)	(0.011)
Elected x Female	31.003	-59.560	0.175	-0.225	0.001	0.000	-0.008	-0.014
	(20.053)	(37.342)	(0.204)	(0.182)	(0.004)	(0.004)	(0.014)	(0.018)
Parties	Left	Right	Left	Right	Left	Right	Left	Right
Bandwidth	0.067	0.093	0.05	0.073	0.025	0.052	0.013	0.046
Outcome Mean	65.6	69.1	3.77	3.76	0.0204	0.0175	0.069	0.124
N (left)	586	1019	553	941	446	840	352	791
N (right)	604	1048	564	962	458	856	358	803

All estimates are reported with robust standard errors clustered at the municipality level in parentheses. Each observation is a candidate's election attempt. 'Elected' is an indicator for observations where the candidate obtained a seat in the municipal council. 'Female' is an indicator for observations identified as female. 'Elected' times 'Female' is the interaction between the two variables. Other coefficients not reported. Regression run on all candidates in elections between 2003 and 2015.

D.4   Rank Position and Personal Votes

Below, I plot the average number of personal votes by list rank, grouped by size of the council. We see that pre-vote rank ordering is a strong (though imperfect) predictor of the number of personal votes.
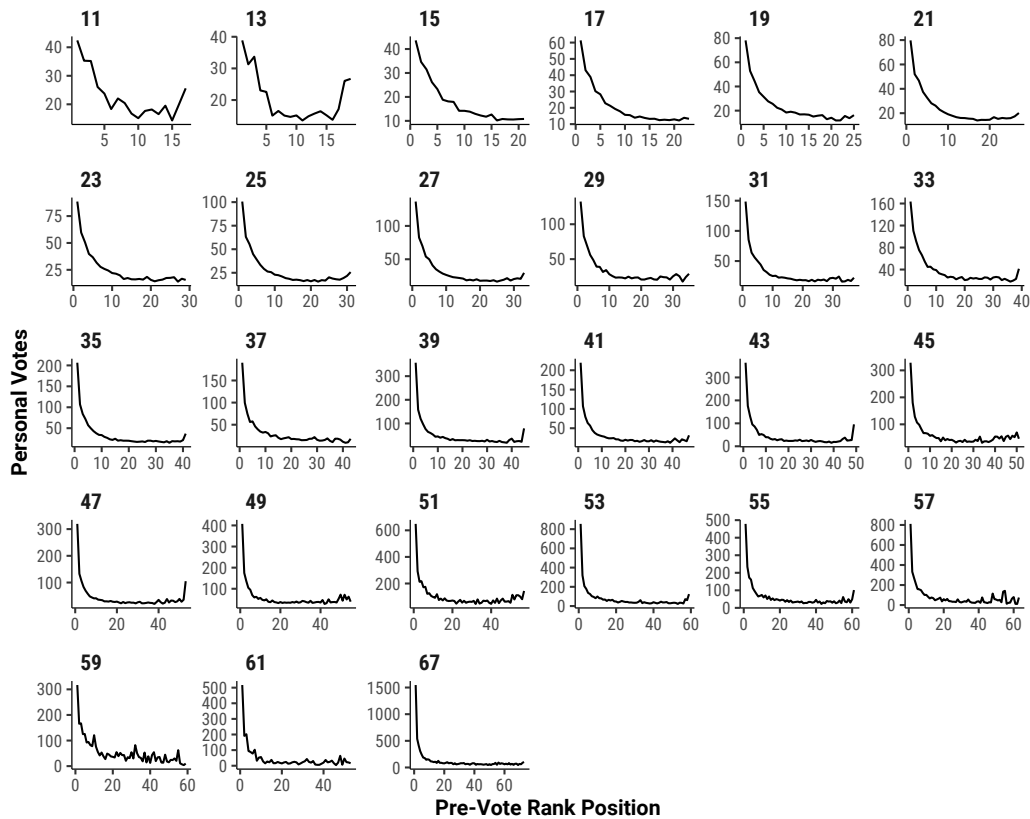
Figure D3: Average number of personal votes, by list rank and council size.

D.5 Heterogeneity By Population Size

In this section, I examine whether cities that are outliers in terms of population drive my results. Although the gender gap is concentrated among cities in the upper tercile (consistent with the name recognition mechanism), I find no evidence that the overall result is sensitive to excluding the largest cities.

D.5.1 Sensitivity to Outliers

My estimates hold up even when restricting the sample to towns below a population of 20,000. When restricting the sample to towns smaller than 10,000 population, the effect strongly moves towards zero, but remains negative. In line with Appendix D.5.2, I interpret this as evidence for name recognition mechanisms in larger municipalities driving the effect.
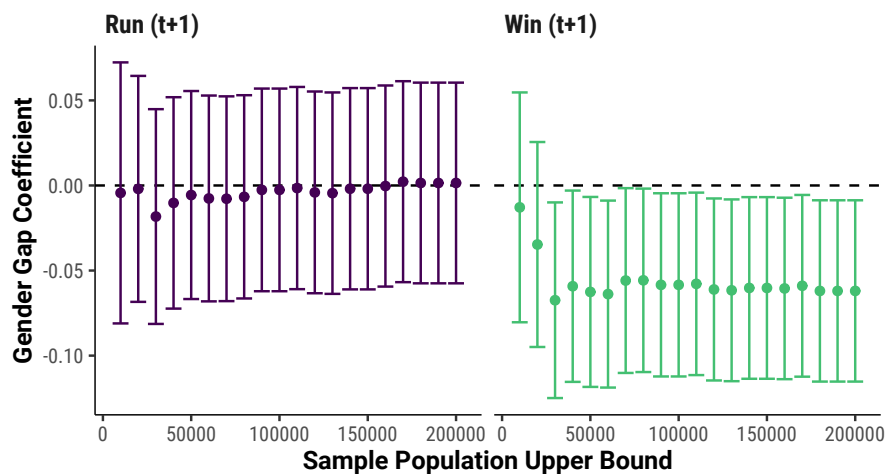

Figure D4: Gender Gap in Incumbency Effect, Norway, By Maximum Municipality Size Included.

D.5.2 Effect Magnitude by Population Tercile

Next I also estimate the gender gap on subsamples binned by population tercile. The results suggest that the negative effect in the Norwegian case is primarily driven by the upper tercile, i.e. the largest municipalities (but, as the previous appendix section suggests, not just its extreme outliers). This finding is consistent with the argument that name recognition is a key driver of personal vote incumbency advantages in Norway: in smaller municipalities (with shorter lists and fewer candidates), voters may know the handful of elected female candidates better.

(An alternative story is that the initial bias that women need to overcome in small municipalities is much greater, leading to a higher quality differential at the threshold)
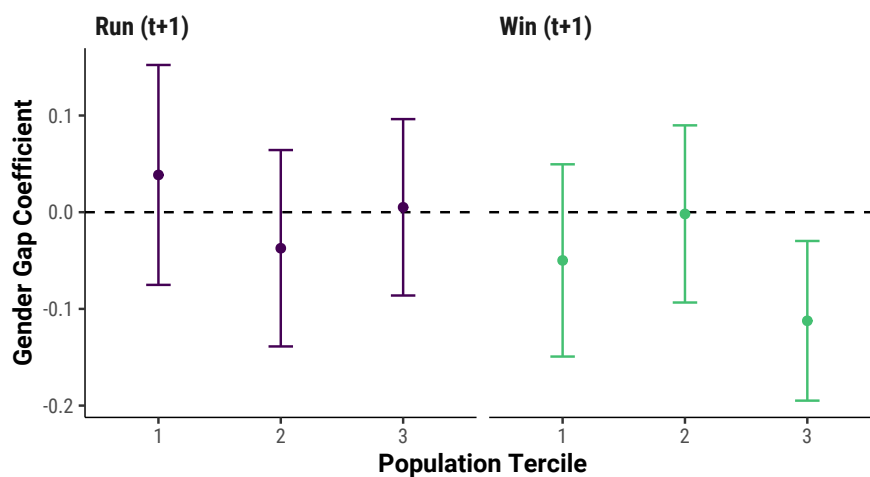
Figure D5: Gender Gap in Incumbency Effect, Norway, By Population Tercile.

D.6 Survey Evidence On Voters' Attitudes Towards Female Candidates

Next, I examine data from the 2015 Local Election Survey in Norway (conducted by the University of Oslo) to test whether right-wing voters hold more negative views about women in politics. I plot the share of respondents from each party agreeing that "Women should play a *greater* role in local [municipal] politics." The sample analysed included 882 respondents. A majority of respondents in left-leaning parties agrees with this statement, whereas the share of respondents agreeing in right-wing parties hovers around 40%.

Figure D6: Share Respondents Agreeing That Women Should Play Greater Role In Local Politics, By Party.

D.7   No Age Gap in Incumbency Effects

Is the 'gender gap' specific to this characteristic, or do other candidate characteristics also moderate the incumbency advantage? Using the same difference-in-discontinuities specification as in the main results, I check whether there is a 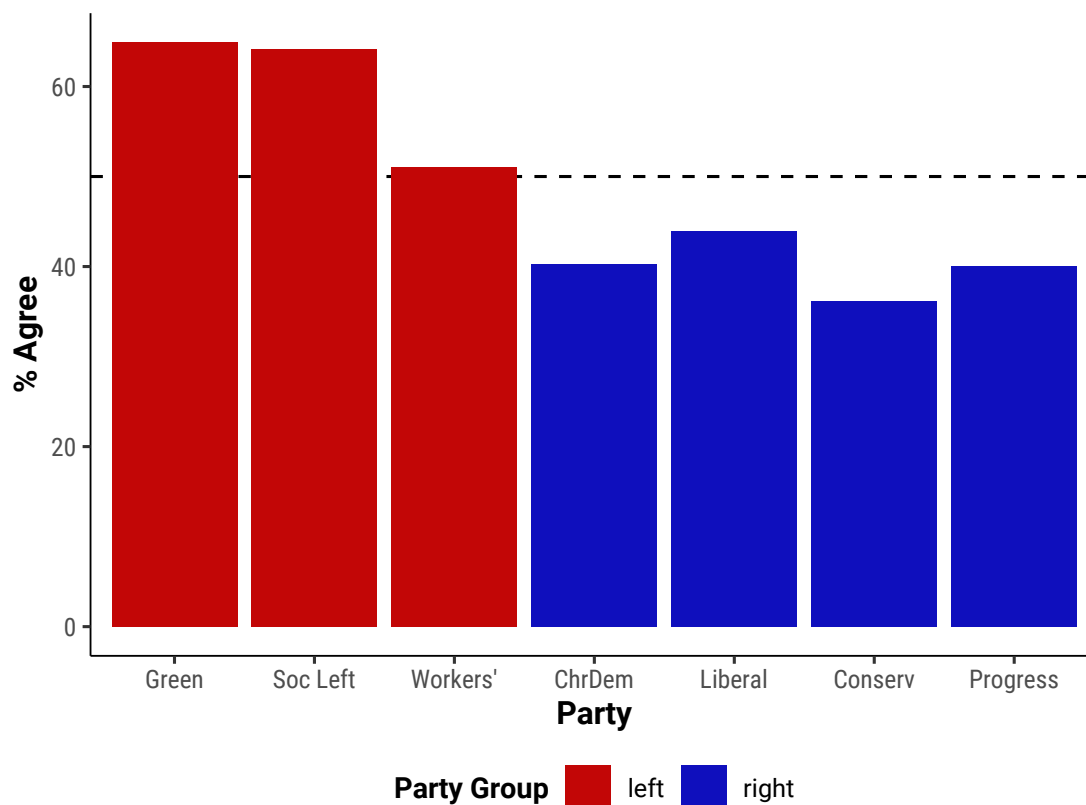meaningful difference in incumbency effects between candidates below and above the median age. Unfortunately, due to data availability, I can only provide these estimates for Norway.

Table D6:   Difference-in-Discontinuity Estimates For Incumbency Advantage In Norwegian Municipalities, By Age Group. No Meaningful Difference Between Younger And Older Candidates.

	Run (t + 1)			Win (t + 1)		
	(1)	(2)	(3)	(4)	(5)	(6)
Elected	0.007	−0.002	0.013	0.076	0.075	0.064
	(0.019)	(0.017)	(0.024)	(0.018)	(0.016)	(0.022)
Age 48+	0.098	0.088	0.108	−0.043	−0.037	−0.032
	(0.020)	(0.018)	(0.024)	(0.015)	(0.014)	(0.019)
Elected x Age 48+	−0.012	−0.002	−0.023	0.013	0.018	0.012
	(0.029)	(0.026)	(0.036)	(0.025)	(0.022)	(0.030)
Bandwidth	0.054	0.11	0.027	0.05	0.099	0.025
BW Type	Optimal	2x Opt	0.5x Opt	Optimal	2x Opt	0.5x Opt
Outcome Mean	0.564	0.575	0.551	0.261	0.263	0.257
N (left)	4617	5529	3667	4502	5428	3549
N (right)	4666	5590	3711	4551	5489	3592

All estimates are reported with robust standard errors clustered at the municipality level in parentheses. Each observation is a candidate's election attempt. 'Elected' is an indicator for observations where the candidate obtained a seat in the municipal council. 'Age 48+' is an indicator for candidates older than 47 at the time of the election. 'Elected' times 'Female' is the interaction between the two variables. Other coefficients not reported. Regression run on all candidates in elections between 2003 and 2015.

The results offer no evidence of any age-based gap in incumbency advantages.

D.8 No Experience Gap in Incumbency Effects

Next, I also code candidates on whether they have run as candidate before or not. I use this binary 'experience' variable as an additional moderator for my difference-in-discontinuity design. As with age, I find no significant differential effect in the incumbency effect based on experience.

Table D7: Difference-in-Discontinuity Estimates For Incumbency Advantage In Norwegian Municipalities, By Political Experience. No Difference Between First-Time And Multiple-Time Candidates.

	Run (t + 1)			Win (t + 1)		
	(1)	(2)	(3)	(4)	(5)	(6)
Elected	−0.010	−0.001	−0.009	0.083	0.093	0.069
	(0.019)	(0.016)	(0.023)	(0.017)	(0.015)	(0.021)
Experience	0.050	0.074	0.044	−0.026	−0.013	−0.025
	(0.020)	(0.017)	(0.026)	(0.017)	(0.015)	(0.021)
Elected x Experience	0.027	−0.003	0.032	−0.005	−0.025	0.002
	(0.032)	(0.026)	(0.040)	(0.026)	(0.022)	(0.032)
Bandwidth	0.054	0.11	0.027	0.05	0.099	0.025
BW Type	Optimal	2x Opt	0.5x Opt	Optimal	2x Opt	0.5x Opt
Outcome Mean	0.564	0.575	0.551	0.261	0.263	0.257
N (left)	4617	5529	3667	4502	5428	3549
N (right)	4666	5590	3711	4551	5489	3592

All estimates are reported with robust standard errors clustered at the municipality level in parentheses. Each observation is a candidate's election attempt. 'Elected' is an indicator for observations where the candidate obtained a seat in the municipal council. 'Female' is an indicator for observations identified as female. 'Elected' times 'Female' is the interaction between the two variables. Other coefficients not reported. Regression run on all candidates in elections between 2003 and 2015.

E Additional Statistical Results: Spain

E.1 Estimates from Difference-in-Differences Specification

The large number of observations in the Spanish case allows me to compare the outcome mean of candidates extremely close to the threshold without making additional functional form assumptions. To do so, I estimate regressions of the form

$$y_{it} = D_{it} + F_i + D_{it} \times F_i + \phi_{it}(\cdot) + \varepsilon_{it} \tag{4}$$

on all observations within 1 (0.5, 0.25) percentage point(s) of the election margin. D_{it} is a binary indicator whether the candidate i in election t was elected, and F_i is a binary indicator for whether the candidate is recorded as female. As before, I include province and party-by-year fixed effects. The results, in Table E1, yield estimates that are consistent with those obtained using the difference-in-discontinuity approach.

Table E1: . Estimates from Difference-in-Differences in Spanish Close Elections.

	Run Again			Win Again		
	(1)	(2)	(3)	(4)	(5)	(6)
Elected	0.131	0.115	0.104	0.099	0.071	0.094
	(0.014)	(0.019)	(0.028)	(0.012)	(0.017)	(0.025)
Female	−0.022	0.002	0.021	−0.016	−0.029	−0.015
	(0.016)	(0.023)	(0.033)	(0.013)	(0.019)	(0.026)
Elected x Female	0.031	0.004	−0.003	0.041	0.048	0.027
	(0.023)	(0.032)	(0.047)	(0.020)	(0.029)	(0.041)
Bandwidth	0.01	0.005	0.0025	0.01	0.005	0.0025
Mean Out	0.49	0.49	0.49	0.25	0.25	0.25
Avg # votes	26.17	13.4	6.82	26.17	13.4	6.82

Note:

All estimates are reported with robust standard errors clustered at the municipality level in parentheses. Each observation is a candidate's election attempt. 'Elected' is an indicator for observations where the candidate obtained a seat in the municipal council. 'Female' is an indicator for observations identified as female. Bandwidth indicates the range of running variable margins included in the estimation. Avg. # Votes is the average number of votes between the extreme end of the selected bandwidth and the election threshold.

In this section, I report the estimates from the main specification on different subgroups of the Spanish data. If the estimates fitted on left- and right-wing parties differ, the overall gender gap estimate in the main part of the manuscript might mask some important heterogeneities.

E.2 Heterogeneity Across Parties

First, I fit the main specification on samples from left- and right-wing parties (PSOE and PP) separately. Table E.2 reports the results with running and winning in the next election as outcomes.

There is a notable difference in the gender gap in the effect on running again: female candidates in left-wing parties experience a much smaller increase (relative to men) in their probability of running again in left-wing parties, compared to the same difference in right-wing parties. However, the estimate is also somewhat imprecise.

More importantly, we see little difference in the gender gap in the incumbency effect on winning again between the two party samples. This suggests that there is no party-specific mechanism that drives results (and is consistent with an ideology-agnostic seniority norm), and that would be masked by pooling the sample.

Table E2: Difference-in-Discontinuity Estimates For Incumbency Advantage In Spanish Municipalities, By Political Party Group. The estimates for the gender gap are similar in both left- and right-wing parties.

	Run (t + 1)		Win (t + 1)	
	(1)	(2)	(3)	(4)
Elected	0.091	0.119	0.069	0.087
	(0.024)	(0.023)	(0.020)	(0.021)
Female	−0.026	−0.006	−0.010	−0.042
	(0.026)	(0.027)	(0.021)	(0.022)
Elected x Female	0.069	0.003	0.042	0.058
	(0.036)	(0.039)	(0.032)	(0.034)
Parties	Left	Right	Left	Right
Bandwidth	0.03	0.032	0.032	0.03
Outcome Mean	0.478	0.484	0.259	0.26
N (left)	5695	5422	6017	5162
N (right)	5544	5402	5855	5139

All estimates are reported with robust standard errors clustered at the municipality level in parentheses. Each observation is a candidate's election attempt. 'Elected' is an indicator for observations where the candidate obtained a seat in the municipal council. 'Female' is an indicator for observations identified as female. 'Elected' times 'Female' is the interaction between the two variables. Other coefficients not reported. Regression run on all candidates in elections between 2003 and 2015.

E.3 Heterogeneity Across Quota Rules

Another worry is that estimating the average pooled over all municipalities masks some important heterogeneity across towns. In 2007, a gender quota started to apply to places with a population of above 5,000: lists in municipalities above this threshold must now feature at least 40% of candidates from either gender. The requirement was extended to all municipalities above 3,000 pop. in 2011.

In this section, I exploit the discontinuity in the application of this quota to compare the estimates of incumbency effects in municipalities near the population threshold. This allows me to check whether the lack of a meaningful gender gap in incumbency advantages is driven by either municipalities with or without a quota.

Ideally, to check whether the mandated quota drives these results, I would run a two-dimensional regression discontinuity with margin of victory and population size as independent assignment variables. This would allow me to check whether the estimates in Equation 2 meaningfully change at the threshold. Unfortunately, even with the amount of data from Spanish municipalities, such a design would be underpowered and consequently suffer from high uncertainty and noisy estimates.

Instead, I report results from two types of specifications. First, I fit the typical difference-in-discontinuity specification. The results offer no clear interpretation because of large uncertainty that comes with these estimates. In addition, I also offer estimates from a difference-in-difference strategy. While less clearly identified, these estimates come with lower variance. Together, I find no strong evidence that the legal gender quota in small municipalities is responsible for the lack of a gender gap in political careers in Spain.

E.3.1 Difference-in-Discontinuity Estimates

Following the introduction of the 3,000 pop. threshold in 2011, I compare candidates in municipalities between 250 and 3,000 population to candidates in municipalities between 3,001 and 6,000 population.[34] The approach assumes that municipalities within the bandwidth are comparable to one another, and any difference between the samples is driven by the quota alone.

Unsurprisingly, the estimates obtained from the difference-in-discontinuity specification come with a high degree of uncertainty: there simply are not that many observations close to the muncipality threshold *and* the electoral threshold. For each of the two outcomes, the estimates of the gender gap change signs across the two party samples. At the same time, the confidence intervals for these estimates also firmly includes null and the respective other point estimate. These results therefore offer little evidence on whether the quota plays an important role.

Table E3: Difference-in-Discontinuity Estimates For Incumbency Advantage In Spanish Municipalities, By Quota Law. The estimates for the gender gap are similar in municipalities with and without the gender quota on lists.

	Run (t+1)		Win (t+1)	
	(1)	(2)	(3)	(4)
Elected	0.127	0.113	0.039	0.160
	(0.032)	(0.068)	(0.029)	(0.063)
Female	0.055	−0.060	−0.018	0.003
	(0.039)	(0.070)	(0.033)	(0.059)
Elected x Female	−0.062	0.037	0.035	−0.029
	(0.056)	(0.102)	(0.050)	(0.095)
Pop	0-3k	3-6k	0-3k	3-6k
Bandwidth	0.03	0.031	0.029	0.029
Outcome Mean	0.475	0.522	0.247	0.272
N (left)	2839	856	2812	801
N (right)	2947	780	2912	739

All estimates are reported with robust standard errors clustered at the municipality level in parentheses. Each observation is a candidate's election attempt. 'Elected' is an indicator for observations where the candidate obtained a seat in the municipal council. 'Female' is an indicator for observations identified as female. 'Elected' times 'Female' is the interaction between the two variables. Other coefficients not reported. 'Pop' indicates the population of a candidate's municipality at time t. Regression run on all candidates in elections between 2011 and 2015. Observations in municipalities that crossed the 3,000 population threshold in between elections are excluded.

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[34]I exclude candidates from municipalities that cross the population threshold in between elections in this sample. The choice of bandwidth in this exercise is such that I have enough power to say something meaningful. Estimates that restrict the bandwidth to a narrower slice to municipalities around the 3,000 threshold end up being extremely noisy.

E.3.2 Difference-in-Differences Estimates

An alternative approach is to estimate a regression akin to a triple difference-in-differences design using barely losing / barely winning candidates within a selected vote share bandwidth around the threshold of victory. This design no longer estimates the LATE right at the threshold of being elected, but may reduce variance by making fewer functional form assumptions.

In Table E.3, I report the estimates with different bandwidth choices for candidates' margin of victory, keeping the window of municipalities at 1,000 to 5,000. They are estimated somewhat more precisely than the results from the difference-in-discontinuity specification. For both the simple interaction (capturing the gender gap in cities below the threshold), as well as the double interaction (capturing the *additional* gender gap in cities above the threshold), the estimates are close to and statistically indistinguishable from zero. While these results need to be treated with the appropriate caution, I find no convincing evidence of a meaningful effect of the quota on the (lack) of a gender gap in Spanish local elections.

While these results do not represent clear-cut evidence, they are nonetheless consistent with the argument that elections using closed-list PR exhibit fewer disadvantages for women's political careers, regardless of whether a gender quota is enforced on lists.[35] They are also consistent with Bagues and Campa (2020a), who find that the introduction of the gender quota in Spanish municipalities has little effect on downstream policy outcomes.

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[35]One potential explanation for the lack of noticeable differences could be that the Spanish gender quota law is not a particularly strict one: the gender gap might be affected by more stringent requirements such as zipped lists.

Table E4: Difference-in-Difference Estimates For Incumbency Advantage In Spanish Municipalities, By Quota Law. The estimates for the gender gap are similar in municipalities with and without the gender quota on lists.

	Win (t+1)			
	(1)	(2)	(3)	(4)
Elected	0.122	0.148	0.120	0.148
	(0.023)	(0.016)	(0.023)	(0.016)
Female	0.012	0.008	0.012	0.008
	(0.025)	(0.016)	(0.025)	(0.016)
Quota	−0.015	0.032	−0.105	−0.023
	(0.030)	(0.023)	(0.130)	(0.087)
Elected x Female	−0.030	−0.010	−0.028	−0.010
	(0.038)	(0.026)	(0.038)	(0.026)
Elected x Quota	0.086	−0.000	0.087	−0.001
	(0.047)	(0.035)	(0.047)	(0.035)
Female x Quota	−0.012	−0.042	−0.012	−0.043
	(0.046)	(0.033)	(0.046)	(0.033)
Elected x Female x Quota	−0.013	0.029	−0.014	0.029
	(0.070)	(0.050)	(0.070)	(0.050)
Pop Window	1-5k	1-5k	1-5k	1-5k
Margin Window	0.025	0.05	0.025	0.05
Linear Pop Trend	N	N	Y	Y
N	3285	6374	3285	6374

All estimates are reported with robust standard errors clustered at the municipality level in parentheses. Each observation is a candidate's election attempt. 'Elected' is an indicator for observations where the candidate obtained a seat in the municipal council. 'Female' is an indicator for observations identified as female. 'Quota' is an indicator for candidates in cities with a population greater than 3,000. Regression run on all candidates in elections between 2011 and 2015. Observations in municipalities that crossed the 3,000 population threshold in between elections are excluded.

E.4 Heterogeneity By Population Size

In the case of Spain, the results remain consistent throughout the range of upper bounds.
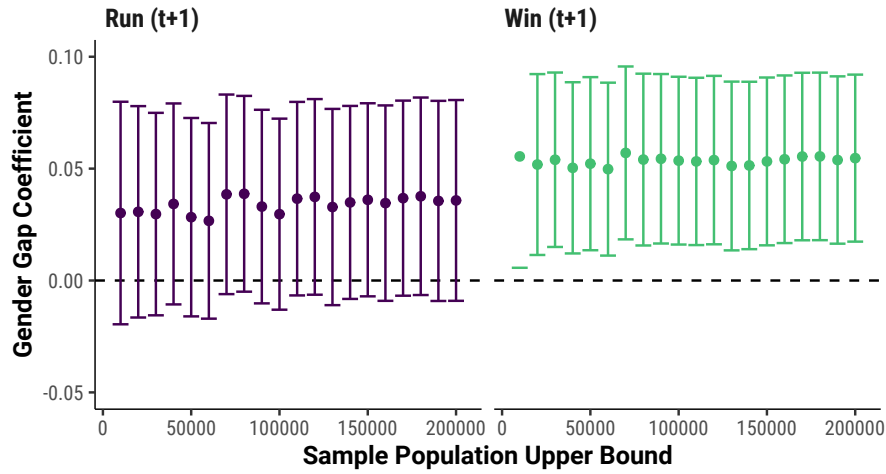
E.4.1 Sensitivity to Outliers

Figure E1: Gender Gap in Incumbency Effect, Spain, By Maximum Municipality Size Included.

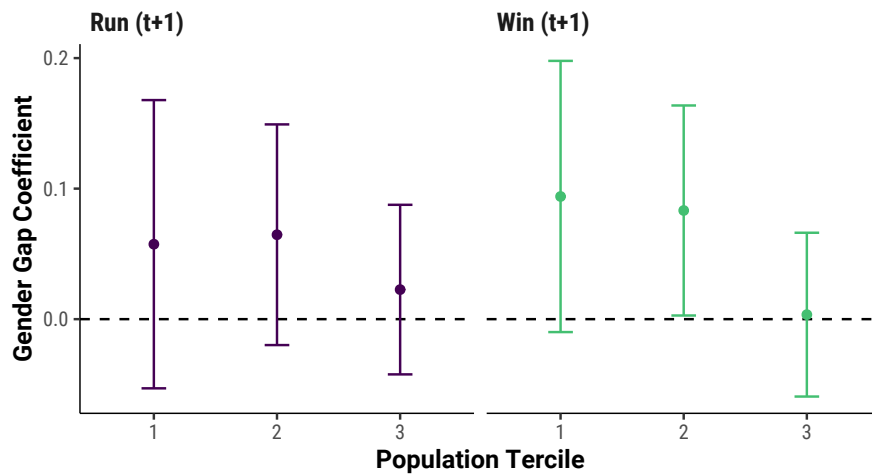### E.4.2 Effect Magnitude By Population Tercile

Figure E2: Gender Gap in Incumbency Effect, Spain, By Population Tercile.

F   Descriptive Statistics

In this section, I report key summary statistics for both cases.

Table F1: Summary Statistics For Borderline Sample, Norway.

	Mean	SD	Min	Max
Share Female	0.39	0.49	0.00	1.00
Elected	0.50	0.50	0.00	1.00
Population	11950.16	20058.80	214.00	244620.00
Total Seats	27.28	10.11	11.00	85.00
Running (t+1)	0.60	0.49	0.00	1.00
Winning (t+1)	0.26	0.44	0.00	1.00

Table F2: Summary Statistics For Borderline Sample, Spain.

	Mean	SD	Min	Max
Share Female	0.38	0.48	0.00	1.00
Elected	0.50	0.50	0.00	1.00
Population	12070.60	26552.11	251.00	248150.00
Total Seats	12.56	5.27	7.00	27.00
Running (t+1)	0.49	0.50	0.00	1.00
Winning (t+1)	0.25	0.44	0.00	1.00