Up the Political Ladder:
Gender Parity in the Effects of Electoral Defeats

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Women remain underrepresented in elective offices, particularly at the highest levels of politics (Inter-Parliamentary Union, 2020). A large literature points to low female representation among candidates as a possible explanation for their underrepresentation among officeholders. Much of this work focuses on gender differences the propensity to *ever* run for office.[1] Recent evidence highlights the disparate trajectories of male and female candidates, even conditional on running. For example, Wasserman (2020) finds that women are substantially more likely than men to drop out of politics due to an initial electoral defeat at the local level. As of yet, there is little evidence on whether this gender gap in persistence extends to higher levels of politics.

This paper investigates whether an electoral loss causes differential attrition of female first-time candidates for U.S. state legislative offices. State and local politics differ in important ways, and these differences lead to an ambiguous prediction regarding whether gender gaps at the local level will carry over to the state level. Relative to local politics, state races entail more involvement of political parties and require more campaign funding. If political parties differentially withdraw their support for female candidates who lose, greater party involvement at the state level could amplify the attrition of female candidates after a defeat. Candidates for state offices are more likely to have prior political experience, however, which may reduce the extent to which candidates, voters, and political parties differentially penalize female candidates for losses (Carroll and Sanbonmatsu, 2013; Hall and Snyder, 2015).[2]

In order to address the fact that losses are not randomly assigned to candidates, the paper employs a close election regression discontinuity design, following Lee (2008). This methodology focuses the analysis on candidates who barely won or barely lost—elections in which a loss is arguably assigned by chance—in order to estimate the causal effect of losing on subsequent political involvement. Using this empirical strategy, I estimate whether the effects of losing on the propensity to run again for elective office differ for male and female candidates.

The paper's main finding is that a narrow defeat causes similar responses among female and male candidates. An electoral loss leads to considerable attrition, and men's and women's rates of running again for state legislative office are statistically indistinguishable. This result is distinct from the finding in Wasserman (2020), which estimates a substantial gender gap in politician persistence due to an electoral loss among first-time candidates for local offices in California. I discuss possible explanations for these findings, focusing on differences between local and state politicians in the extent of their prior political experience.

I. Data and Definitions

The data used in this paper are state legislative elections returns from 1967 to

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[1] See, for example, Lawless and Fox (2010).

[2] Bohren et al. (2019) demonstrates theoretically and empirically that gender differences in evaluations dissipate when the individual being evaluated has accrued context-specific experience.

2010, compiled by Klarner et al. (2013).[3] For each candidate, I determine the first election observed as the first time a candidate appears in the data set. In order to avoid including candidates who have previously run and lost prior to the data set start date, I start the sample in 1972, five years after the data set start date. I define a candidate's subsequent political participation as running for any state legislative office within four years of the initially observed run for office. Subsequent participation is limited to running in a general election, since primary elections are not consistently included in the data set. This restriction implies that subsequent participation is only captured if the candidate obtains sufficient political party support to advance past the primary election stage. Gender is assigned based on candidate first name, using U.S. Census and Social Security Administration (SSA) name files.[4]

The running variable for the regression discontinuity analysis is margin of victory, defined for winning candidates (losing candidates) as the difference in the vote shares of last winner (first loser) and the first loser (last winner). For the majority of winning candidates, margin of victory is the difference in the vote shares of the candidate who wins the most votes and the runner-up. For multi-member districts, margin of victory is the difference in the vote share of the last winner and first runner-up. For example, for a district in which two state legislative members are elected, margin of victory is defined as the difference in the vote shares of the candidate ranked two (last winner) and the candidate ranked three (first runner-up). Margin of victory is positive for winning candidates and negative for losing

candidates.

The sample for the regression discontinuity analysis is constructed as follows: I drop write-in candidates and elections with incomplete information. I restrict the sample to candidates' initial electoral attempts that are in general election races with more candidates running than there are elected positions available. I drop incumbents (appointed or elected). I limit the sample to candidates who are observed running for the first time prior to 2006, to allow a four year window after the initial run to observe subsequent participation. I further limit the sample to candidates who are the last winner or the first runner-up. This leaves 63,150 first-time candidates for state legislature.

Table 1—: Candidate Summary Statistics

	(1) Male	(2) Female
First Election Information		
Office - Upper House	0.21	0.18
Office - Lower House	0.79	0.82
Party Affiliation - Democrat	0.43	0.53
Party Affiliation - Republican	0.51	0.42
Party Affiliation - Other	0.06	0.05
Election Year	1988	1991
Electoral Outcomes		
Elected in *t*	0.26	0.26
Run again within *t+4*	0.36	0.35
Run again & win within *t+4*	0.23	0.23
Unique Races	43,907	12,643
Observations	50,058	13,092

Note: This table reports summary statistics for the sample of marginal candidates used in the regression discontinuity analysis.

Table 1 reports summary statistics for the analysis sample, by gender. Male candidates are more likely to be Republicans, while female candidates are more likely to be Democrats. There are few gender differences in the office

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[3]This data set is available for download on ICPSR website: `https://www.icpsrweb.ICPSR/studies/34297`

[4]If a name is at least 90 percent male (female), then the name is considered male (female). Some candidates use a first initial in place of a first name. For these candidates, I use their middle name for assignment. Candidates whose names are gender ambiguous or are not present in the Census/SSA name files are dropped. This restriction drops eight percent of candidates.

contested. Women comprise 21 percent of first-time candidates for state legislature. Conditional on running for office, female candidates are just as likely as male candidates to win.

II. Empirical Strategy

In order to estimate the effect of an initial electoral loss on candidates' subsequent political participation, differentially for men and women, I follow the empirical strategy in Wasserman (2020) and use the following regression specification:

$$(1) \quad Y_{i,t+4} = \alpha + \beta L_{it} + \delta F_i + \gamma(F_i \times L_{it}) + f(MV_{it}) + L_{it} \times f(MV_{it}) + F_i \times f(MV_{it}) + F_i \times L_{it} \times f(MV_{it}) + \epsilon_{it}$$

where MV_{it} is the margin of victory for candidate i who initially runs in year t, L_{it} is an indicator taking on a value of one if the candidate lost the initial election, and zero otherwise, and F_i is an indicator variable that takes on a value of one if the candidate is female, and zero otherwise. $Y_{i,t+4}$ represents whether the candidate runs again for any state legislative office within four years of the initial run. The coefficient β represents the effect of losing on the propensity to run again for men. The coefficient δ represents the difference in the propensity to run again among male and female candidates who barely won their first election. The main coefficient of interest is γ, which represents the differential effect of losing, for women relative to men.

Non-parametric RD specifications use local linear regressions and an optimal bandwidth selector from Calonico et al. (2014) to test the sensitivity of the results by varying the bandwidth around the margin of victory threshold. I also implement parametric RD specifications with a second-order polynomial in margin of victory on the full analysis sample. Additional controls include state fixed effects, election year fixed effects, political party fixed effects, and legislative chamber (upper/lower) fixed effects. The point estimates of the coefficients of interest are insensitive to the inclusion of these controls. I cluster standard errors at the state level.

III. Results

I present graphical evidence of the effect of losing on the propensity to run again. Figure 1 is a bin spatter plot of the probability of running again for state legislature on the y-axis against the margin of victory on the x-axis, with bin width equal to 0.0125 percentage points. The dashed vertical line represents the threshold for winning, with candidates who won to the right of the threshold and candidates who lost to the left of the threshold. The solid diamonds represent female candidates and the hollow circles represent male candidates. On either side of the threshold, a local polynomial is separately fit for male and female candidates.

Figure 1. : Relationship between the Probability of Running Again and Margin of Victory, by Gender
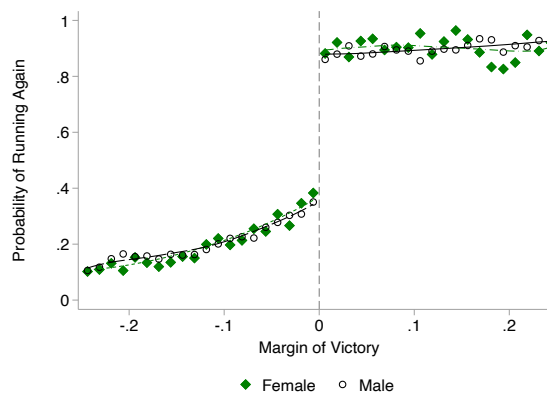
Note: This graph is a bin scatter plot of the probability of running again within four years of a candidate's initial election on the y-axis plotted against the candidate's margin of victory/loss in the initial election on the x-axis. Bins are of width 0.125 percentage points.

The figure reveals a substantial discontinuity at the winning threshold for both men and women. Among candidates who barely won, nearly 90 percent run again within the next four years. Among candidates who barely lost, less than 40 percent of candidates run again. As an indication of the similar

responses of male and female candidates to an electoral defeat, the male and female series are visually indistinguishable from one another. It is also evident that among candidates who lost, the margin of the loss contributes to their decision to run again: candidates who experienced a close defeat are more likely to run again than those who lost by a considerable margin.

Table 2 Panel A quantifies the effect of losing on running again by reporting the results from the estimation of equation (1). Columns 1-3 report results using a local linear regression with the sample determined by the optimal bandwidth, twice the optimal bandwidth, and half the optimal bandwidth, respectively. Column 4 reports the results using a second-order polynomial in margin of victory and the full sample of marginal candidates. The coefficient on L_{it} is between 50 and 59 percentage points, indicating that for male candidates, there is the large deterrence effect of losing on the propensity to run again for state legislature within four years. The coefficients on the interaction term $(F_i \times L_{it})$ are close to zero, implying no differential effect of losing on female candidates' propensity to run again. Among candidates who narrowly won, women are slightly more likely to run again within the next four years (coefficient on F_i), but this contrast is not consistently statistically significant across specifications. In summary, both the regression and graphical analyses confirm the attrition of candidates after an electoral loss is of similar magnitude for men and women.[5]

I also examine whether a narrow defeat has implications for candidates' probability of winning. Table 2 Panel B reports the results of estimating equation (1) using the unconditional probability of winning an election within the next four years as the dependent variable. This outcome takes on a value of one if the

candidates runs again for office and wins, and zero otherwise. The main effect of losing on the unconditional probability of winning is slightly smaller, but male and female candidates continue to have similar electoral outcomes. The results on the probability of running again paired with the results on the unconditional probability of winning, imply that conditional on actually running again, men and women have similar chances of winning.

IV. Discussion

This paper investigates whether male and female first-time candidates for state legislature respond differently to an electoral defeat in their decisions to run again for office. The main finding is that male and female candidates respond similarly to losing an election. Why does the gender gap in persistence disappear at higher levels of politics? One explanation relates to candidates' prior officeholding experience. While the candidates analyzed in this paper are running for state legislative office for the first time, 40 percent of state legislators and approximately 30 percent of state senate candidates had elective experience prior to running for state office, with similar rates among men and women (Carroll and Sanbonmatsu, 2013; Hall and Snyder, 2015). Female candidates who have already succeeded in politics may be less deterred by an electoral loss relative to those who do not have prior experience. Alternatively, political parties or voters may be less likely to penalize female candidates with prior experience for losing (Bohren et al., 2019).

Consistent with the notion that officeholding experience may attenuate the gender gap in persistence, Wasserman (2020) documents that a gender gap in persistence is not present among experienced local politicians. In addition, Brown et al. (2020) explore the divergent paths of male and female candidates for U.S. state legislatures who run in mixed gender elections, including those who have already accrued experience at the

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[5]The Online Appendix contains covariate balance tests and histograms of margin of victory. Based on McCrary tests, there is no evidence of significant discontinuities at the winning threshold.

Table 2—: Estimates of Effect of Losing, by Gender

	Panel A. Run Again				Panel B. Run Again and Win			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
	Optimal bw =0.097	2×Optimal bw	0.5×Optimal bw	Full sample	Optimal bw =0.092	2×Optimal bw	0.5×Optimal bw	Full sample
Female × Lost	0.001	-0.011	0.005	-0.005	-0.023	-0.014	-0.033	-0.002
	(0.029)	(0.017)	(0.033)	(0.014)	(0.031)	(0.023)	(0.039)	(0.017)
Lost	-0.522***	-0.545***	-0.502***	-0.593***	-0.455***	-0.499***	-0.444***	-0.568***
	(0.025)	(0.021)	(0.027)	(0.020)	(0.031)	(0.025)	(0.038)	(0.023)
Female	0.023	0.029***	0.023	0.014*	0.016	0.009	0.038	0.000
	(0.015)	(0.010)	(0.019)	(0.008)	(0.025)	(0.020)	(0.027)	(0.016)
Winner mean	0.888	0.893	0.882	0.896	0.709	0.752	0.671	0.800
Polynomial Order	1	1	1	2	1	1	1	2
Observations	16,331	29,390	8,939	63,150	15,652	28,166	8,531	63,150

Note: This table reports the results of the estimation of equation (1). Panel A reports results for the outcome of whether the candidate runs again for office within four years. Panel B reports results for the outcome of whether the candidates runs again and wins. Columns 1-3 report estimates from local linear regressions with the sample restricted based on the optimal bandwidth calculated from Calonico et al. (2014). Column 4 reports estimates using a second-order polynomial in margin of victory on the full sample. Standard errors, in parentheses, are clustered at the state level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

state legislative level. They find that female candidates who barely win are more likely to run again than their male counterparts. These findings, combined with the evidence in Wasserman (2020) and the present paper, suggest an important role of prior officeholding experience in determining subsequent gender gaps in political careers.

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