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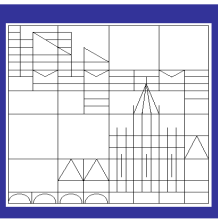

Does the election of a female leader clear the way for more women in politics?

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Abstract

Women remain underrepresented in politics and it remains unclear how this might change. In this paper, we investigate whether female council candidates receive more preferential votes when a female mayor has been recently elected into office. We hand-collect data for 109,017 candidates in four open-list local council elections (2001-2016) in all 426 municipalities of a German state. Based on RDD estimations for close mixed-gender races, we show that female council candidates advance more from their initial list rank when the mayor is female. This effect spreads to neighboring municipalities and leads to a rising share of female council members.

Keywords: Female leaders, gender, political labor market, discrimination, preferential voting

Despite notable progress during the past few decades, women remain underrepresented in politics across the globe.[1] In 2016, less than a quarter (22.8 percent) of all national parliamentarians were female and only nine women served as head of government (UN Women, 2016). These figures are more than symbolic given the evidence that female politicians are more likely to implement policies that reflect womens' preferences (Aidt and Dallal, 2008; Andersen et al., 2008; Bertocchi, 2011; Chattopadhyay and Duflo, 2004; Clots-Figueras, 2011; Funk and Gathmann, 2015). Research also associates female politicians with more investments in children and less corruption (Clots-Figueras, 2012; Dollar, Fisman and Gatti, 2001; Miller, 2008).

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[1]The same is true for exposed and influential positions in the corporate and academic sector (Bertrand, 2009; Ginther and Kahn, 2014).

To identify strategies that are effective in increasing the number of women in political office, one first needs to establish why women are underrepresented. One possible explanation is that women face systematic discrimination in the political arena. While discrimination can come from various sources, voters are those who elect candidates into office in a democracy. Hence, it is a plausible conjecture that anti-female *voter bias* is the main reason. Such a bias may exist if (risk-averse) voters are unfamiliar with female politicians and are therefore cautious about voting for a woman. Alternatively, a significant portion of voters may hold traditional views on the role of women in society and consequently regard women as unsuitable for leadership positions.

Ideally, research would investigate the magnitude of anti-female voter bias and develop effective strategies to combat it. However, these efforts must overcome significant econometric and institutional confounds (Fox and Lawless, 2004). First, parties often wield significant influence over the political process. Thus, female underrepresentation could also be due to anti-female *party bias*: party leaders may field fewer female candidates or place them in unfavorable spots on party lists (Esteve-Volart and Bagues, 2012). Second, even if party leaders are willing to promote female candidates, they may anticipate anti-female voter bias. Therefore, party leaders may be less willing to field female candidates in competitive races, thereby reinforcing anti-female stereotypes (e.g. women being unable to win truly competitive races). Third, women may be reluctant to run for office if they expect discrimination – why bother to run if the chances of success are slim? Fourth, what type of women run for office likely depends on perceived biases – highly-qualified women may rather pursue other career paths where they expect to encounter less discrimination, leaving only relatively less qualified women interested in running for political office. These less qualified women are in turn less likely to win elections, which could further reinforce anti-female voter and party bias.

In this paper, we combine a large hand-collected dataset, a unique institutional setting, and a quasi-experimental empirical design to advance our understanding of female underrepresentation in politics. We also explore the viability of one specific strategy to increase the share of women in politics across various offices: encouraging women to run for high-profile offices, such as mayor or similar executive offices. Our data include local council elections in the German state of Hesse, where councilors are elected according to an open-list electoral rule. Parties field lists on which candidates are ranked according to party preferences, as determined by the party leader. In an open-list system, voters can, in addition to voting for parties, give preferential votes to individual candidates and thus change the candidate ranking. Hence, voters determine not only how many seats each party receives but also wield influence over which candidates receive a seat. This implies that the difference between the initial (preelection) candidate rank and her final (postelection)

candidate rank identifies the differences between party preferences and those of voters. Our setting therefore has the advantage that we can credibly disentangle party and voter bias.

Our dataset includes information on the gender, party affiliation, initial list rank, final list rank, success in obtaining a council seat, and individual characteristics (age, incumbency, education, employment status, occupation) of 109,017 candidates who competed for local council seats in the 2001, 2006, 2011 and 2016 elections in the 426 Hessian municipalities. We combine this dataset on council elections with official data on mayor elections. Mayors are high-profile influential politicians within their municipalities.

We identify the causal effect of a female mayor on the subsequent electoral position of other female candidates by exploiting close mixed-gender mayoral elections (following Lee, Moretti and Butler, 2004). Based on this regression discontinuity, we find that female mayors cause voters to give preferential votes to female council candidates. This effect translates to a 4 percentage point higher share of female council members. For a municipality with the median council size (31 seats), this implies that 1.2 additional women are elected to the council. We also find that female mayors have positive effects on the performance of female council candidates in neighboring municipalities. Including these spillover effects, a single female mayor leads to altogether about 4.3 additional women being elected to a local council.

One important reason for the electoral gains of female candidates may be that exposure to a female mayor diminishes anti-female biases of voters.[2] To explore this explanation, we analyze this and other mechanisms. First, party leaders may respond to female mayors by changing the initial list ranks of female council candidates. We show that changes in the initial ranks of female candidates do not explain their rank advancements. Second, different types of women may be placed on party lists if there is a female mayor, either by their choice or the party's. However, we observe only small differences in observable characteristics of female candidates in municipalities with and without female mayors. Third, we find no change in the number of female candidates placed on ballots or changes in aggregate voter turnout as mechanisms. While there are additional channels that we cannot address due to data limitations – for instance, female candidates may exert more effort in their campaign when there is a female mayor – these results are consistent with the

[2]Anecdotal evidence from Germany suggests the existence of such biases. According to Scholz (2004, p. 162), typical statements by voters about women in local politics include (our translation): "A man just makes a better impression and can keep things more under control.", "people will be more inclined to take orders from a man than a woman", "I just prefer a man. I don't know why, it's just a feeling", or "It has always been the case that men were at the helm". There are also accounts of how the election of women to prominent offices may diminish anti-female voter biases. For example, the assumption of the chancellorship of Germany by Angela Merkel is often portrayed as important for how female politicians are perceived by voters in Germany. See e. g. `https://causa.tagesspiegel.de/politik/die-merkel-republik-wie-hat-die-kanzlerin-das-land-veraendert/merkel-muss-immer-wieder-stereotype-aufbrechennbsp.html`.

interpretation that the electoral gains of female candidates under female mayors are at least in part due to a reduction in voter bias.

This paper contributes to the literature in three ways. First, this paper contributes to the literature on women in politics. Most closely related are studies that explore how an initial female electoral victory affects womens' future political participation and success. Bhalotra, Clots-Figueras and Iyer (2017) study whether the election of women as members of an Indian state legislature in first-past-the-post elections spawns an increase in female candidacy in subsequent elections for the same office.[3] They observe an increase in female candidacy, primarily because female incumbent legislators are more likely to run again than male incumbents. Our paper extends this literature by placing the focus on changes in how voters perceive female candidates after having been exposed to female leadership. Given our open-list setting, we can also isolate the effect of exposure to female leadership on voters from effects that work through parties' placement of female candidates and changes in candidate characteristics.

Second, we contribute to the literature on the effects of explicit policy interventions, such as quotas, on female representation as well as party and voter bias. Esteve-Volart and Bagues (2012) show that the introduction of quotas has substantially increased the share of female Senators in Spain, ostensibly because quotas act as a counterweight against anti-female biases harbored by party leaders.[4] Quotas even seem to have positive effects on female representation if they are repealed after some time. Beaman et al. (2009) show that in Indian villages where in previous terms female council leadership was randomly assigned, women are much more likely to run for and win council seats. Similarly, Bhavnani (2009) shows that women are more likely to win municipal council seats in Indian constituencies that were reserved for women after the reservation is removed. In the latter study, this long-term effect materializes because women elected through the quota are able to acquire influence over future party nominations. Our results, in contrast, do not show changes in how parties place women but instead suggest improvements in how voters view them. An explanation for these diverging results may be that exposure to female politicians who attained office through quotas has different effects than exposure to women who attained office competitively. In particular, voters may be more likely to update their views about female politicians if those women won their office in a competitive election against men.[5]

[3] Broockman (2014) explores a similar research question, but focuses on geographical spillovers from constituencies where women won to female candidacy in neighboring constituencies.

[4] See also Casas-Arce and Saiz (2015).

[5] Nevertheless, there is evidence that quotas, too, can decrease voter bias (Beaman et al., 2009; DePaloa, Scoppa and Lombardo, 2010).

Third, our study highlights the relatively benign context for women in politics in Germany. Most research on exposure to female leadership in politics focuses on countries that are perceived as relatively male-dominated such as India or Italy.[6] Exposure to female leadership may have different effects in less biased environments. In Germany, even as women continue to be underrepresented, female political participation is generally encouraged. In fact an explicit consensus has emerged across all major parties that it is important to increase the share of women in politics – a consensus, however, that may not be shared by all voters. Some voters, in particular men, may be unhappy about the continued efforts that parties ostensibly put in to increase female representation. It has been argued that in such environments, exposure to a female leader may cause a backlash against female rank-and-file candidates (Schwarz, 2010). Given this theoretical ambiguity, it is an important finding that spillovers for female representation across offices are positive. While we obtain this result only for the German context, the political system and voter attitudes in Germany are arguably representative for developed countries in general, and thus our results are pertinent to discussions about gender quality in the electoral politics of these countries as well.[7]

The remainder of this paper is structured as follows. Section I discusses the institutional background. Section II describes the data. Section III presents the empirical strategy. Section IV reports the main estimation results and robustness tests. Section V provides evidence on mechanisms. Section VI presents results on heterogeneity and spillovers. Section VII concludes.

I. Background

A. Municipalities and local politics

Hessian municipalities decide on various regulations (e.g. closing hours, traffic rules) and provide a broad range of public goods (e.g municipal daycare, civil protection, various social services). Despite federal and state-level mandates in some policy domains, municipalities enjoy substantial autonomy in the provision of public goods which are mostly financed with a mix of state-level transfers and own-source revenues (e.g. revenues from local business and property taxes). Overall, the municipal administration has substantive influence over the day-to-day lives of citizens.

According to the municipal code of Hesse (*Hessische Gemeindeordnung*), the local council monitors the local administration and makes the most important local political decisions. Council

[6]Especially in India discrimination against women has been historically prevalent, both in politics and more generally in society (see for example `http://www.bbc.com/news/world-asia-india-20863860`).

[7]However, our results may not generalize to less benign contexts. For an exposure effect to work, it must be in principle feasible for women to obtain political office. Where women are either prohibited from political participation by law or strict societal norms, this effect is unlikely to be relevant.

members thus wield significant political power but at the same time the mayor remains an important political office. The mayor is usually a full-time official supported by two further officials who work in an honorary capacity. She is present at the council meetings and is entitled to voice her opinion even though she does not have a vote.

The party landscape is fairly complex. Both the mainstream national parties – CDU (socially and fiscally conservative), SPD (left-wing), Greens (socially liberal), FDP (fiscally conservative, socially liberal), Left Party (socialists) – as well as a large number of small and/or municipality-specific parties compete in mayor and local council elections.[8]

B. Mayor elections

Since the mid-1990s mayors in Hesse are directly elected every six years. There is no uniform statewide date for mayor elections. A mayor election is held when the incumbent steps down because his term ends, because he wants to pursue other activities, because he reaches the pension age or because of unforeseen circumstances such as death or illness (Hessami, 2017).

Candidates are typically supported by a party (there are also independent candidates) and run against each other in at most two rounds. Each voter has one vote in each round. In the first round, all voters in a municipality vote for their preferred candidate. If no candidate receives more than 50 percent of the votes, there is a run-off election with the winner and the runner-up of the first round. Whoever wins the absolute majority in the second round is elected as the mayor.

C. Open-list council elections

Unlike mayor elections, council elections in Hesse are held at a uniform statewide date every five years in March. The number of seats in the council depends on the size of the municipal population and may vary from 11 to 105 (Baskaran and Lopes da Fonseca, 2016). The local council is elected according to an open-list electoral rule (also sometimes called preference or preferential voting).[9] 79 days before a council election the election supervisor publishes an official invitation for parties

[8]Female and male voters show no clear ideological pattern in their support for the various parties. In the last federal election in 2013, women were more likely than men to vote for the CDU and the Green Party while men were more likely than women to vote for the SPD, FDP, Left Party, and various fringe parties.

[9]There is considerable heterogeneity across German states in terms of the electoral formula applied to local council elections. In some states, there are closed-list elections where voters can only choose one party list (Berlin, NRW, Saarland, and Schleswig-Holstein), whereas in other states some form of open-list election is applied. Specific details such as how many votes each voter has and whether individual candidates can receive several votes differ across states.

and voter associations to submit ordered candidate lists and a number of supporting documents.[10] All documents have to be received until 69 days before the election. The official lists which each contain at most as many candidates as there are council seats are announced and published by the election supervisor at the latest 48 days before the election.

Voters have as many votes as there are council seats. There are various options how voters can cast these votes. The simplest option is to make one cross for an entire party list. All votes would be distributed to the candidates on this list in the order of their ranking. That is, in a municipality with 25 seats, each candidate on a party list that has 25 candidates would receive one vote. If the list has fewer than 25 candidates, the top-placed candidates would receive additional votes. For example, if a party list in a municipality with 25 council seats has only 20 candidates, the first five candidates would receive two votes while the other 15 candidates would receive one vote. A second option is to select a party list but to cross individual candidates off that list. For the final vote tally, crossing-out a candidate works as if the party did not field these candidates. If there are 25 candidates on the list and a voter crosses out two candidates (e.g. those placed on ranks nine and ten) the two top-placed candidates would receive two votes and all other candidates (except those placed on ranks nine and ten) would receive one vote. A third option is to vote for specific candidates (even across party lists). Voters can assign up to three votes to each candidate (*cumulating votes*) and candidates can be from different party lists (*cross voting*).[11] Voters widely use the higher flexibility awarded to them by the open-list system (Mehr Demokratie e. V., 2011).

While votes can only be collected by individual candidates (even if voters make a cross for the entire list), seats are distributed across parties in proportion to the total number of votes gained by the candidates of a list. That is, if all candidates on a list together receive 30 percent of all votes, the party fielding that list would receive about 30 percent of the seats in the council. Which candidates from that party fill the seats will depend on the number of votes per candidate.[12]

[10] Voter associations are local groups of voters that are allowed to submit candidate lists for elections but do not have the status of a party. Typically, they are organized as associations (*eingetragener Verein*). For simplicity, we do not distinguish between voter associations and parties in the following and refer to both as parties.

[11] The restriction that only up to three votes can be cumulated on one candidate implies that parties should field lists where the number of candidates is at least one third of the number of seats. If a party fields fewer candidates, it will not receive all votes if a voter chooses to vote for the list in its entirety.

[12] Note that, therefore, both the performance of the list as a whole as well as the performance of the individual candidate matters for whether a given candidate receives a seat. Candidates who gained many personal votes may still end up with no seat if their list performed poorly and vice versa.

D. Intraparty selection and ranking of council candidates

The initial list rank of a candidate influences the likelihood that she is elected. First, there are mechanical reasons: if there are fewer candidates on a list than council seats, the top-placed candidates are more likely to receive a second or a third vote if a voter chooses to vote for the list as a whole. Similarly, if a voter decides to cross out individual candidates, those at the top will receive more votes if the voter otherwise votes for the list as a whole. Second, there are psychological reasons: voters in open-list systems are more likely to vote for top-placed candidates, either because they interpret the list rank as a cue about candidate quality or because they simply want to minimize their cognitive effort (Chen et al., 2014).[13] It is thus important to understand how the selection and ranking of candidates is carried out.

Typically three to six months before the election in March each party holds a member's assembly. There are no explicit regulations on how the candidate list is voted upon nor are there any official quotas (for gender or otherwise). The only restriction is that it has to take place democratically and in a secret vote. Any member can nominate a candidate and any candidate can present herself and her agenda to the assembly. Candidates have to be at least 18 years old and must have lived in that municipality at least during the last six months before the election. A minimum of three members being present at the assembly suffices for the vote to be secret and valid.

In practice, many different voting procedures are used to arrive at an ordered candidate list. The following three procedures are most common: (i) two or more candidates run against each other and the winner is put on the list; the ones who lost the vote may compete against other candidates to get on the list eventually; (ii) the first procedure is only applied to the first few spots; party leaders provide proposals for e.g. spots 4-10 or 11-15 on which members can vote yes or no; (iii) party leaders draft a complete candidate list on which members can vote yes or no. Thus, while certain democratic principles are upheld in the voting procedures, party leaders have substantial agenda-setting powers. By making sure that preferred candidates are placed on favorable spots party leaders can substantially increase the probability that these candidates enter the council.

[13] The fact that initial ranks are positively correlated with final ranks (a high-ranked candidate tends to mechanically receive more votes even if voters do not prefer her) implies that we cannot interpret a candidate's number of votes (or her final rank) as a proxy for voter preferences. Voter preferences over candidates are captured more accurately by rank improvements (i. .e. by how much initial and final ranks differ) as they require true preferential voting.

II. Data

A. Mayor elections

i. Data source and coverage

Information on mayor elections in all 426 municipalities is available as of 1993 from the Statistical Office of Hesse. The dataset provides information on the names, gender, and party affiliations of all candidates, the number of valid votes per candidate, and the election date.

ii. Descriptive statistics

Mayor elections are distributed quite evenly over time since the timing is exogenously determined by historic factors (see Section B). According to column one in Table A.1 in the online appendix, altogether 1721 mayor elections were held in the 426 municipalities during the period 1993-2015.[14] Column two reports the number of elections in which one of the two candidates with the most votes was a woman (mixed-gender races) which amounts to 268 elections. Column three shows that there were 55 mixed-gender races where the winner had a margin of victory below 10 percent. Female and male victories are relatively balanced within this margin: 29 versus 26.

B. Council elections

i. Data source and coverage

The Statistical Office of Hesse provides comprehensive administrative data on the 2016 council elections in the 426 Hessian municipalities: names, gender, initial list ranks and final list ranks of all candidates. For the pre-2016 elections with an open list system (2001, 2006, 2011), no such administrative data is available. We thus hand-collected this data from various Internet sources such as municipalities websites as well as e-mail communication with the mayors, their administrative assistants and high-ranking officials in the local administration. We describe in more detail how we collected this data in Section A.1 of the online appendix.

Figure 1 illustrates our sample coverage. For 2016 we have administrative data on 39,411 candidates from 426 municipalities. Since we hand-collected data on the previous elections, the sample coverage declines as we go back in time. For 2011, 2006 and 2001 the sample comprises 277, 219 and 199 municipalities and 26,722, 21,968 and 20,916 candidates, respectively.[15] In total,

[14] We do not consider mayor elections in 2016 since they were too late to affect council elections in March 2016.

[15] Assuming that the total number of candidates in the period 2001-2011 is roughly similar to that in 2016, our hand-collected data covers in 2011 about 68 percent, in 2006 about 56 percent, and in 2001 about 53 percent of the

our sample includes 109,017 candidates of which 28,480 are female (26.1 percent).[16] The share of female candidates is roughly constant between 2001 and 2016. Among the large national parties, the share of women is largest for the Green Party (43 percent) and the Left Party (36 percent). The SPD, CDU, and FDP have around 25, 22, and 27 percent female candidates, respectively.

In a second step, we have – using the same data collection strategy – hand-collected information on candidates' occupation and year of birth (see Table 1 for summary statistics). Using candidates' names and occupations, we also inferred their educational attainment.[17] We managed to obtain this information for 54,676 candidates for age, for 55,416 candidates for employment status, for 48,729 candidates for educational attainment, and for 49,399 candidates for occupation.

ii. Descriptive statistics

A candidate's initial rank has a significant effect on her chance of entering the council. Specifically, a smaller initial rank is more advantageous for a candidate because small ranks likely receive more personal votes for mechanical and psychological reasons (i. e. a candidate would prefer rank one to two, two to three, etc.). However, since municipalities with larger councils have larger lists, rank ten in a municipality like *Abtsteinach*, which only had 15 seats in 2016, is a significantly worse position than rank ten in *Frankfurt*, which had 93 seats in 2016. To make ranks comparable, we normalize in the following the raw list rank by dividing it by the number of council seats.

Table A.2 in the online appendix compares initial normalized list ranks of men and women. The t-tests indicate that on average women are placed better than men.[18] A fortiori, this would suggest no party bias against women. However, this conclusion is premature given that list ranks of women may be endogenous to perceived voter bias or male and female candidates' characteristics.

universe of candidates. Sample attrition is due to data not being available (see Section A.1). There is no systematic relationship between attrition and mayor gender (on this point, see also the McCrary plot reported in Figure A.2 which shows no discontinuity in density when female mayors are barely elected).

[16] Candidates are reelected to the council at a rate of about 53 percent in our sample.

[17] Candidates with a doctoral or professor title in front of their name or who state that their occupation is professor are coded as "phd". Candidates who have an occupation that requires a university degree (doctors, engineers, architects, teachers, lawyers, high-level public officials) or who have stated such a degree as their occupation (e.g Dipl.-Ing. or M.A.) are coded as "university". All other candidates are coded as "highschool". The education variables are set to missing for candidates with occupations where the educational attainment is ambiguous.

[18] The size of the difference is 1.7 ranks in a council with 100 seats or, alternatively, about 0.6 ranks in a municipality with the median council size of 31 seats.

Next, we present descriptive evidence on our main outcome used in the RDD regressions: a candidate's improvement in ranks.[19] The normalized rank improvement is defined as follows:

$$\text{(1)} \qquad \textit{rank improvement} = \left(\frac{\textit{initial rank} - \textit{final rank}}{\textit{council size}} \right) \times 100$$

As mentioned above, a smaller initial rank is better in the sense that a candidate is ex ante more likely to enter the council. A small final rank signifies that a candidate has received a relatively large number of personal votes (the candidate who has a final rank of one has received the most personal votes among all candidates on her party list). Hence, if a candidate's final rank is larger than her initial rank (and the rank change is thus negative), a candidate is demoted by voters relative to her placement by the party. If a candidate's final rank is smaller than the initial rank, she performs well with the voters relative to her initial placement. Thus, a candidate who collects many preferential votes and obtains a rank after the election that is smaller than her initial rank is coded with a positive value for the rank improvement measure. As above for the initial list ranks, we make rank improvements comparable by normalizing the raw rank improvement through division by the council size. For better readability, we multiply the normalized rank improvement by 100.[20]

In row two of Table A.2 in the online appendix, we compare normalized rank improvements of women and men. We find that on average women lose while men gain ranks.[21] This result may suggest that voters are biased against female candidates. Yet, this conclusion would again be premature as it relies only on observational evidence that may be confounded by the initial placement by parties or omitted variables. Nevertheless, it provides a further motivation to explore whether exposure to female leadership changes voters' perceptions of female candidates.

III. Empirical strategy

A. Baseline specification

We want to explore whether the election of a woman to the mayor's office increases the likelihood that voters give preferential votes to female candidates in the local council election. As discussed

[19] The electoral success of a woman is ultimately determined by her final list rank. However, the final list rank is not a useful measure to assess voter preferences because the final list rank of a candidate is significantly influenced by her initial rank for mechanical and psychological reasons (see footnote 13).

[20] Note that the normalized rank improvement is a within-party measure and neglects across-party effects of female mayors (i.e. the possibility that voters vote for entirely different parties when the mayor is a woman rather than a man). We discuss the relevance of such across-party effects in Section A.3 of the online appendix.

[21] The size of the difference is about 0.7 ranks in a municipality with 100 seats, which translates to a difference of about 0.2 in a municipality with the median council size of 31 seats.

before, the extent to which the final rank of a candidate differs from her initial rank is a first-order proxy for how much voters prefer a candidate. Thus, we use a candidate's rank improvement (see Equation 1) as our main dependent variable.

Second, whether a woman or a man is elected as mayor is not random. Municipalities that elect a female mayor may be more friendly toward female politicians in general. Thus, broader cultural differences rather than the specific effect of a female mayor may influence how voters evaluate female council candidates. To identify a causal effect, we implement a regression discontinuity design with close mixed-gender mayor elections.[22] We compare the rank improvement of women in municipalities where a woman barely won against a man with outcomes in municipalities where a man barely won against a woman. The underlying assumption, as usual in RD designs, is that the two types of municipalities are identical in all respects except mayor gender.

Following Gelman and Imbens (2016), we rely on local linear and quadratic regressions with optimal bandwidths for the subsample of mixed-gender mayor elections. The empirical model is:

$$\begin{aligned} \textit{rank improvement}_{k,i,t} = & \alpha + \beta \textit{female mayor}_{i,t} \\ & + f(\textit{vote margin})_{i,t} + \textit{female mayor}_{i,t} \times g(\textit{vote margin})_{i,t} + \varepsilon_{k,i,t}, \end{aligned} \tag{2}$$

where $\textit{rank improvement}_{k,i,t}$ is the normalized rank improvement of candidate k in the local election in year t in municipality i.[23] $\textit{female mayor}_{i,t}$ is a dummy variable that is one if a female candidate has won the previous mayor election in municipality i and is thus in office during the council election in year t, i.e.

$$\begin{gathered} \textit{female mayor}_{i,t} = 1 \text{ if } \textit{vote margin}_{i,t} > 0 \\ 0 \text{ else.} \end{gathered}$$

vote margin is the margin of victory of the top female mayor candidate in the previous mayor election (in cases where there was a run-off election, we use the result of the run-off election). $f()$ and $g()$ are linear or quadratic functions of *vote margin* whose slope may vary at the RDD threshold, i.e. when the vote margin is 0.

[22] We report OLS results in Table A.3 in the online appendix. The estimates suggest an insignificant and small positive effect of female mayors on womens' rank improvement. However, as mentioned above, these estimates are likely biased, for example because of systematic differences in voter preferences.

[23] One concern is that if women are placed high on party lists, there is not much scope for them to experience a positive rank improvement. However, at the same time women who are placed at the bottom of lists cannot be pushed down much further. In our sample, women are neither predominantly placed at the bottom nor at the top of party lists.

We report five different models using different bandwidths. Model (1) uses the CCT optimal bandwidth according to Calonico, Cattaneo and Titiunik (2014). Model (2) uses one half of the optimal CCT bandwidth. Model (3) uses the double of the optimal CCT bandwidth. Model (4) uses the IK bandwidth (Imbens and Kalyanaraman, 2012). Model (5) reports a local quadratic regression using the optimal CCT bandwidth. All models use heteroscedasticity-robust and municipality-level clustered standard errors for hypothesis tests.

B. Validity of the RD design

i. Pretreatment municipality characteristics

One strategy to validate whether our RD design achieves local randomization is to explore whether municipalities where a female mayor candidate (barely) won against a man are similar to those where a male candidate (barely) won against a woman, i. e. whether the characteristics of treated and control municipalities are balanced. In Table A.4 in the online appendix, we report t-tests where we relate mayor gender to municipality characteristics in the year prior to a mayor election.

For all mixed-gender races, the share of women in local public employment is 8 percent higher while in the manufacturing sector it is 8 percent lower in municipalities with female mayors. For close mixed-gender elections, we find only one significant difference: municipalities with female mayors have larger populations than municipalities with male mayors. Yet, the effect is only barely significant and may be explained by the highly skewed distribution of city sizes.

We next analyze whether these imbalances in municipality characteristics result in discontinuous rank improvements of female council candidates at the RDD threshold. We construct the "predicted normalized rank improvements" of council candidates by regressing normalized rank improvements on all municipality characteristics reported in Table A.4. We then use the predicted values as the dependent variable in RDD regressions as specified in Equation 2. Since predicted rank improvements do not vary across candidates within a local election (as municipality characteristics do not vary), we have one observation per election. The RDD plot in Figure A.1 indicates no significant discontinuity. We collect the corresponding regression results in Table A.5. The estimated coefficients are numerically small and generally insignificant.[24]

[24]The largest estimate is in Model (3), where we observe a coefficient of 0.86 that is significant at the 10 percent level. However, this model uses a bandwidth that is twice as large as the optimal bandwidth.

ii. Discontinuity in density

Another test checks whether there is a discontinuity in the density of the running variable at the threshold. If yes, it could be argued that agents are able to precisely manipulate the running variable, calling into question the assumption of local randomization. Figure A.2 in the online appendix presents a McCrary plot to explore this issue. We find no significant discontinuity in the density of the margin of victory at the threshold.

A related test investigates whether women are more or less likely to win close mayor elections. Table A.1 shows that the likelihood of a woman winning a close election is roughly similar to that of a man winning a close election. We also provide a more formal test in Table A.6 in the online appendix. We find that men are generally more likely to win mixed-gender races but this imbalance disappears for close elections with a margin of victory below 10 percent.

iii. Confoundedness with mayor ideology

A further concern are confounding effects due to the identity of mayors. Male and female mayors may systematically differ in their party affiliation. For instance, female mayor candidates may be mostly from left-wing parties. Hence, any result we obtain when estimating Equation 2 may be due to the ideology rather than the gender of the mayor. For example, voters may be more likely to vote for a female council candidate if they believe that women are more able to cooperate with a left-wing mayor (irrespective of mayor gender). However, we do not find significant differences for the ideology of female and male mayors (see Table A.7 in the online appendix).

IV. Main results

A. Baseline results

i. Graphical evidence

We first explore the effect of female leadership on the normalized rank improvement of female council candidates with a standard RDD plot. In Figure A.3, we plot the rank improvements of female candidates at different values for the margin of victory. At a margin of victory of zero, we observe a clear discontinuity, indicating that female council candidates perform better in municipalities where a woman closely won the last mayor election against a man than in municipalities with a close male victory. Consistent with this result, the polynomial smooth – based on the raw data – shows a significant jump at the threshold. The jump in the bin average is about 3.7 ranks

(per 100 seats) which indicates that in a municipality with 31 seats (median council size), women gain around 1.1 ranks if there is a female mayor (compared to when there is a male mayor).

ii. Regression results

Next, we explore the effect of female mayors on the performance of female candidates in a regression framework (Table 2). Confirming the graphical evidence, the results from all regressions with different bandwidths and polynomials indicate that female council candidates perform better in municipalities with female mayors.[25] The estimates using the optimal CCT bandwidth (Model I) suggest an average effect of about 3.7 ranks per 100 council seats (or, alternatively, 1.1 ranks in a municipality with a median council size of 31 seats).[26]

Another way to assess whether the observed rank improvements are economically meaningful is to explore whether female mayors lead to higher female representation in the council. We hence estimate a model similar to Equation 2 using a sample that covers all elected candidates (men and women) and a dummy as dependent variable that is one if an elected candidate is female. The results in Table 3 suggest that a female mayor raises the share of women in the council by four percentage points. Based on this estimate, we calculate that a female mayor increases the number of female council members by about 1.2 women in a municipality with a median council size of 31. However, the coefficient is insignificant, indicating that the estimates are relatively noisy.[27] This is plausible as rank changes will be pivotal in determining entry to the council only for a limited number of female candidates, i. e. those that barely gain or miss a seat (marginal candidates). We explore in Section VI whether the effects on representation vary for subsets of female candidates.

Overall, our results are consistent with the interpretation that exposure to female leadership diminishes anti-female voter bias. We explore the validity of this explanation and alternative mechanisms in more detail in Section V.

[25]The number of elections used in the RDD regressions in Model (2), which rely on a bandwidth of 10 percent, is smaller than the number of mayor elections with a margin of victory of 10 percent reported in Table A.1 (46 vs. 55). The reason is that the RDD regressions focus on rank improvements in council elections while the figures in Table A.1 refer to mayor elections. The data on council elections is hand-collected and hence does not include all elections.

[26] The magnitude of the estimates can also be assessed by comparing them to the mean rank improvements of the female candidates included in each RDD sample (see the row entitled Mean (SD) in Table 2). This comparison also shows that female mayors have a substantial effect.

[27]The noise in the estimates is confirmed by the corresponding RDD plot (see Figure A.3 in the online appendix).

B. Robustness

i. Placebo test

One way to establish the robustness of the baseline results is to analyze whether past outcomes can be explained by contemporaneous values of the treatment variable. If the female mayor dummy has a significant effect on the rank improvements of women in past elections, this would call our baseline estimates into question. We report results from this placebo test in Figure A.4 and Table A.8 in the online appendix. Specifically, we relate the gender of a mayor in council election year t to the normalized rank improvement of women candidates in the council election held in year t-5.[28] As expected, we find no significant effect of the current mayor's gender on rank improvements of women in the previous council election: the effect is substantially smaller than in the baseline regressions and even changes signs across bandwidths.[29]

ii. Scaling of outcome variable

As a second robustness test, we analyze whether the estimated effect for the relative rank improvements of female council candidates is sensitive to the normalization of the outcome variable. Table A.10 in the online appendix reports results with two alternative scalings (see Figure A.5 in the online appendix for the corresponding RDD plots). In panel A, we use the raw rank improvement rather than the normalized value. In panel B, we circumvent issues of normalization and use a dummy that is one if a female candidate has a strictly positive rank improvement. The estimates using both alternative scalings indicate that the baseline results are robust. The estimated treatment effects are consistently positive and significant: we find that a woman gains about 1.3 to 2.1 ranks more and that the likelihood that she witnesses a positive change is about 10 to 22 percentage points higher if she runs in a municipality that has a female mayor.

[28] We use all council elections since the introduction of the open list system in 2001 for which data is available.

[29] In contrast, when we relate the rank improvements of female council candidates in the *next* election to the gender of the current mayor (see Table A.9), we find a significant discontinuity (which is larger than in the baseline regressions and may indicate that the effect of a female mayor grows over time). We also report results from another specification to explore the relevance of unobserved trends (Table A.11). Using the standard RDD specification, we explicitly control for the average rank improvements of female candidates in the last council election. The results suggest that while there is a small correlation between past rank improvements and rank improvements in the current election, the estimates for the female mayor dummy are similar to those reported in Table 2.

V. Mechanisms

Our previous results show that female council candidates are perceived more favorably by voters (i.e. they advance relative to their initial rank) in female-led municipalities. What remains unclear, however, is why this is the case. So far, the results are consistent with the interpretation that exposure to female leadership diminishes anti-female voter bias. Given that voters are ultimately responsible for any rank improvement, this is the most plausible mechanism. However, a change in womens' initial list ranks is a possible confounding factor. Parties may place women on less favorable spots if there is a female mayor (e.g. due to a backlash effect). In this case, voters may give them more votes to even out the perceived increase in party bias (rather than because voter bias has declined). Another potential confounding factor are changes in the number or types of female candidates. Finally, it may be that a change in turnout – i.e. a shift in the composition of the voter pool – (rather than a genuine reduction in anti-female voter bias) drives our main result.

A. Change in party bias

i. Change in initial list placements

To explore whether female mayors have an effect on how parties place female candidates on the ballot, we study whether the initial rank of female candidates responds to mayor gender. Specifically, do women receive on average better (or worse) list placements if the mayor is female?

Figure 3 analyzes this issue graphically using a standard RDD plot. There is no significant discontinuity at the threshold – female candidates receive neither better nor worse placements in municipalities with female mayors.[30] This conclusion is confirmed by regression results reported in Table 4. In panel A, none of the estimated treatment effects are significant for the full sample. In terms of magnitude, the coefficients are generally between 1 and 2. Compared to the mean list placement of women in each of the RDD samples, which is around 37, these are relatively minor adjustments. The only exception is Model (2) where the estimate is about 6. This would suggest that women candidates are demoted by up to 6 ranks in municipalities with female mayors.

In order to analyze what extent adjustments in initial rank of this size can explain the rank improvements observed in our baseline regressions, we estimate the correlation between initial rank and rank improvements of female council candidates. We find that a one rank worse initial place-

[30]Moreover, the slope of the plot is relatively flat in the margin of victory of the female mayor candidate, indicating that the placement of women council candidates does not change with the margin of victory of the female mayor candidate. This pattern can be explained, for example, by the strong commitment for gender-balanced representation across virtually all parties in Germany: local party leaders likely want to have a reasonably gender-balanced list even in municipalities where voters are less open toward female politicians (and vice versa).

ment is on average associated with an improvement by 0.1 ranks. Accordingly, even adjustments of a magnitude of 6 in initial ranks explain at most 0.6 of the 3.7 rank improvements observed in our main regressions. This is further confirmed by Table A.12 in the online appendix, where we collect RDD results relating the predicted rank improvement based on initial rank to mayor gender (Figure A.6 presents the corresponding RDD plot). None of the estimated coefficients are economically meaningful or statistically significant.

We also explore whether changes in list placements depend on whether female candidates are from the same party as the mayor. In Panels B and C of Table 4, we report results where we split the sample into female candidates from the mayor's party and female candidates from other parties. If female mayors use their direct leverage as party leaders to improve (or worsen) list ranks of female candidates, the results should differ. The estimated effect of female mayors on initial list ranks of female candidates is in both cases insignificant and of a similar magnitude as in Panel A.

ii. Change in the number of female candidates

A further reason why female mayors may improve womens' electoral outcomes is a change in the gender composition of party lists. First, in municipalities with female mayors more women may be encouraged to run in council elections due to the female mayor's success. Second, a reduction in anti-female party bias may manifest itself in an increased willingness to put women on the list. A higher number of women on party lists may then give voters more options to vote for women, thereby improving the average performance of female candidates.

One way to investigate this channel is to study whether a given candidate on the ballot is more likely to be female in municipalities with female mayors than in municipalities with male mayors. In Table 5, we report regressions where we relate a dummy variable for the gender of a candidate on the ballot to the gender of the mayor in her municipality (Figure A.7 in the online appendix shows the corresponding RDD plot). We find no significant differences and thus conclude that a higher share of female candidates on the ballot cannot explain the baseline findings.

B. Change in type of candidates

Another mechanism that could explain the baseline estimates is that different types of women run for council seats in female-led municipalities. Potential female candidates and party leaders may anticipate a reduction in voter bias in municipalities that have elected a female mayor, motivating more qualified women to run or, alternatively, encouraging party leaders to put more qualified women on the ballot. Our baseline results would then be an aggregate of the reduction in voter bias,

the higher qualification of female candidates, and the increased likelihood that voters will elect qualified female candidates. Alternatively, a female mayor may lead to a change in the selection of male candidates. If qualified male council candidates are less likely to run in municipalities with female mayors, women candidates would ceteris paribus witness a higher rank improvement.[31]

We estimate RDD regressions using candidate characteristics (age, educational attainment, type of employment, and employment status of female candidates) as dependent variables (see Tables A.13 and A.14 for female and male candidates, respectively). We find a few differences for female candidates: they are more likely (by about 6.4 percentage points) to be lawyers and less likely (by about 4.4 percentage points) to be self-employed if their municipality is led by a woman. Male candidates are more likely to be architects (1.6 percentage points), businessmen (6.3 percentage points), and lawyers (4.9 percentage points), while they are less likely to be teachers (4.7 percentage points) in female-led municipalities.

To explore to what extent these differences explain the baseline estimate, we use OLS estimations to derive predicted rank improvements for female and male candidate based on their characteristics. We then use the predicted rank improvements as the dependent variable in RDD regressions of the type specified in Equation 2. The results are collected in Table 6 (for the corresponding RDD plots see Figure A.8). While the estimates are significant in some specifications, the changes in the characteristics of female council candidates can at most explain 0.5 of the 3.7 rank improvements. The changes in the characteristics of male candidates do not significantly affect rank improvements of female candidates. Overall, while average candidate quality in a municipality appears to rise when there is a female mayor (female council candidates have, from the voters' perspective, more desirable characteristics while male characteristics are similar), differences in candidate characteristics are arguably not the main reason for their rank improvements.

C. Reduction in voter bias due to change in turnout

Another channel that could explain the baseline results is that more pro-female voters turn out in council elections, thus improving the electoral performance of women. Alternatively, a demobilization of anti-female voters may occur. Thus, the improvement in list ranks by women would not be due to a reduction in voter bias of existing voters, but due to a change in the voter pool. While the bias of the average voter would still decline, the transmission channel would be different.

To fully rule out this channel, we would require information on the composition of the voting population. Such data is, however, not available at the local level. Therefore, we focus on

[31] Other outcomes are also possible. Besley et al. (2017), for example, show that when (more competent) women become available as candidates, party leaders may replace mediocre with better-qualified males.

aggregate turnout: the absence of changes in aggregate turnout makes it more likely that the composition of the voting population has not changed. We hence estimate the effect of female mayors on municipality-level turnout. Using the specification in Equation 2, we replace the dependent variable with the turnout rate in municipality i in election t. The results in Table 7 indicate that there are no significant effects of female mayors on turnout. This is confirmed by the RDD plot in Figure A.9 in the online appendix which shows no discontinuity at the threshold.

VI. Extensions

A. Incumbent vs. nonincumbent female candidates

In this section, we analyze whether the treatment effect varies with the incumbency status of female council candidates (i. e. whether or not she was a member of the previous council).[32] If it is mainly exposure to female mayors which reduces anti-female bias, new and relatively unknown female candidates, i. e. nonincumbents, should benefit the most. That is, voters who are biased against women only because they are relatively unfamiliar with female politicians should discriminate less against female candidates whom they have already witnessed as effective politicians.

We explore this question by estimating our RDD model allowing for heterogeneous effects for incumbent and nonincumbent female candidates.[33] We hence estimate a fully interacted specification based on Equation 2 (see Table 8).[34] The dependent variable in Panel A is the rank improvement of female candidates (in line with Table 2). In Panel B, we report results for female representation in the council (in line with Table 3).

We observe a significantly negative interaction effect in both panels, suggesting that the treatment effect varies with incumbency status. According to Panel A, while incumbent female councilors do benefit from a female mayor (about 2.6 according to Model (1)), nonincumbent women experience a significantly larger rank improvement (about 4.3). Panel B suggests that the rank improvements experienced by nonincumbent women translate into a significantly higher representation of these women in the council. While the share of nonincumbent women in the council

[32] We address additional heterogeneous effects in Section A.2 in the online appendix.

[33] We infer incumbency status from a fuzzy match of candidate names. We acknowledge that we may not identify all incumbents, for example if female council members get married and change their surnames. However, note that the average age of female candidates in our sample is 51 years and hence this concern is hardly relevant. Also, we cannot identify incumbents in councils where we have no data on the previous council election results (all council members in these councils are hence coded as nonincumbents), but the results are similar when we restrict the sample to municipalities where we have data on the current and the previous election.

[34] We interact the female mayor dummy and the margin of victory (control function) with the incumbency dummy.

increases by about 8 percentage points, the effect is essentially zero for incumbent women – the interaction effect is significantly negative and of a similar order of magnitude as the base effect.

These results show that particularly nonincumbent and thus unknown female candidates benefit from female mayors. All of the 1.2 additional women who enter the council if the mayor is female in the median municipality (see Section IV) appear to be nonincumbents. Hence, female mayors ostensibly make it easier for new women candidates to obtain their first political office.

B. Spillovers to neighboring municipalities

Exposure to a female mayor may also reduce voter bias in neighboring municipalities. There are many interactions between inhabitants of neighboring municipalities and news of events – such as the election of a female mayor – likely travels across administrative borders when local media markets are integrated. We thus estimate models where we replace the dependent variable in Equation 2 with the rank improvement of female candidates in all municipalities that are contiguous to municipality i. This allows us to compare the rank improvement of female candidates in municipalities that are contiguous to municipalities with a closely elected female or male mayor.[35]

The results are collected in Table 9 (see Figure A.10 in the online appendix for the corresponding RDD plot). We find that the effect of female mayors reaches beyond municipality borders. Female council candidates in municipalities that are contiguous to a municipality with a female mayor perform better than female candidates in municipalities that that are contiguous to a male-led municipality. The magnitude of the effect is about 1.6 ranks (per 100 seats), which translates to a 0.5 rank improvement in a municipality with a median council size. Hence, the effect is a little less than half as large as in the baseline regressions, indicating a degree of spatial decay.[36]

Using the relationship between rank improvements and female representation that follows from the results reported above, we calculate that a female mayor increases the share of women in a neighboring council by about 2 percentage points. As each index municipality has about five neighbors and assuming that each neighboring municipality has the median council size of 31, it

[35]There may be municipalities that neighbor both a female- and a male-led municipalities or that neighbor multiple female- or male-led municipalities. Female candidates from such municipalities have duplicate observations in the regressions, but the value of the control function and the treatment status will differ.

[36]These results also serve to rule out another possible explanation for the baseline results. Voters may be more likely to vote for women in female-led municipalities if they believe that female councilors work better with female mayors. Yet, municipalities that are contiguous to female-led municipalities are in most cases led by a male mayor. Our evidence for spillovers to neighboring municipalities in rank improvements hence indicates that our baseline results do not come about because voters expect female councilors to work better with female mayors. In any case, given that the mayor has little direct influence over policy decisions (see Section A), how well the mayor and the council collaborate is presumably not a major concern for voters in our setting.

follows that a female mayor leads on average to 3.1 additional women in neighboring councils (in addition to the 1.2 additional women in the index municipality).

C. External validity

An important question is whether our results apply to municipalities not included in the RDD sample. To answer this question, we compare characteristics of municipalities that had at least one mixed-gender mayor election with municipalities that had exclusively single-gender elections. Table A.15 shows that municipalities where female mayor candidates are competitive are indeed different from single-gender municipalities. They have more inhabitants, a larger size of government (as measured by tax revenues per capita and local government employment), higher employment, and a higher share of women in the work force. Thus, mixed-gender municipalities are on average more urban, which is likely correlated with a more open attitude toward women in politics.

Assuming that one reason for the rank improvements of women in female-led municipalities is indeed a decline in anti-female voter bias, the finding that mixed-gender municipalities are more open toward female politicians may indicate that our RDD estimates are lower bounds. If female mayors diminish anti-female voter bias even in contexts where such biases are comparatively small, the effect of female mayors is probably larger in contexts where such biases are more pronounced. On the other hand, it is also possible that the views of voters in more traditional municipalities are less malleable and that, therefore, our estimates are upper bounds.

VII. Conclusion

We study the effect of female mayors on electoral outcomes of female candidates in open-list council elections. Female candidates advance more relative to their initial rank if the mayor of their municipality is female. Even though we cannot rule out all competing mechanisms, we conclude that one plausible explanation for the rank advancements is that exposure to successful female politicians reduces voter bias against female politicians. The effect is larger for nonincumbent (relatively unknown) female candidates, spreads to neighboring municipalities, and translates to a higher number of women being elected to the councils. Overall, our results indicate that exposing voters to successful female politicians can be an important means to increase female representation in politics. Women who manage to obtain a key political office seem to have wider spillovers for the likelihood of women attaining offices in other branches of government.

That such demonstration effects can be effective in diminishing voter biases against women has been shown previously with regard to quotas. Yet, quotas remain controversial and it is unclear

whether they can fundamentally transform voters' perceptions about female politicians. There may be, for example, stigma attached to female politicians who obtain reserved offices. Such concerns appear to be less relevant if a woman obtains an important political office by winning a competitive election against a man. Yet, previous research has also shown that for such elections demonstration effects remain limited because (male) party leaders may cause a backlash against female candidates (Bhalotra, Clots-Figueras and Iyer, 2017). Against this backdrop, it is important to note that according to our findings, a backlash against women candidates must not necessarily materialize and that, therefore, demonstration effects of women winning competitive elections can be powerful.

Table 1: SUMMARY STATISTICS FOR CANDIDATE CHARACTERISTICS

	All candidates					**Female candidates**				
Variable	Count	Mean	SD	Min	Max	Count	Mean	SD	Min	Max
Rank improvement (normalized)	109017	0.067	13.253	-89.189	97.297	28480	-0.459	11.934	-89.189	97.297
Initial list rank (normalized)	109017	40.102	26.775	0.000	100.000	28480	38.816	26.087	0.000	100.000
Age	54676	51.581	13.781	18.000	102.000	13923	51.035	13.603	18.000	96.000
High school	48729	0.651	0.477	0.000	1.000	11734	0.672	0.470	0.000	1.000
University	48729	0.282	0.450	0.000	1.000	11734	0.277	0.448	0.000	1.000
Phd	48729	0.068	0.251	0.000	1.000	11734	0.051	0.220	0.000	1.000
Architect	49399	0.009	0.092	0.000	1.000	11832	0.007	0.083	0.000	1.000
Businesswoman/-man	49399	0.076	0.265	0.000	1.000	11832	0.064	0.245	0.000	1.000
Engineer	49399	0.055	0.229	0.000	1.000	11832	0.014	0.117	0.000	1.000
Lawyer	49399	0.031	0.174	0.000	1.000	11832	0.035	0.184	0.000	1.000
Civil administration	49399	0.077	0.267	0.000	1.000	11832	0.058	0.234	0.000	1.000
Teacher	49399	0.052	0.221	0.000	1.000	11832	0.078	0.268	0.000	1.000
Employed	55416	0.715	0.452	0.000	1.000	14043	0.698	0.459	0.000	1.000
Self-employed	55416	0.058	0.235	0.000	1.000	14043	0.036	0.187	0.000	1.000
Student	55416	0.044	0.206	0.000	1.000	14043	0.052	0.221	0.000	1.000
Retired	55416	0.144	0.351	0.000	1.000	14043	0.113	0.316	0.000	1.000
Housewife/-husband	55416	0.023	0.150	0.000	1.000	14043	0.088	0.283	0.000	1.000

Notes: This table shows summary statistics for various candidate characteristics, both for all candidates and only female candidates. Note that the values on occupation and employment status do not sum up to 100% as there are various "other" occupations and types of employment that we do not explicitly report. Average normalized rank improvement is not exactly 0 because of missing observations. A normalized rank improvement of almost 100 is possible if e. g. in a municipality with 35 seats a candidate advances from rank 35 to rank 1 (or vice versa).

Table 2: BASELINE RESULTS: RANK IMPROVEMENT OF FEMALE CANDIDATES

	(1)	(2)	(3)	(4)	(5)
Female mayor	3.712***	3.322**	2.836***	3.124***	3.293**
	(0.971)	(1.469)	(0.545)	(0.610)	(1.529)
Bandwidth type	CCT	CCT/2	2CCT	IK	CCT
Bandwidth size	20.10	10.05	40.20	35.59	19.93
Polynomial	Linear	Linear	Linear	Linear	Quadratic
N	2878	1784	5232	4803	2842
Elections	77	46	155	139	76
Municipalities	56	37	102	94	55
Mean (SD)	0.41 (10.95)	0.73 (10.75)	0.27 (11.33)	0.21 (11.37)	0.41 (11.00)

Notes: a) This table reports estimates from sharp regression discontinuity designs that relate the gender of the incumbent mayor to a measure for the performance of female candidates in the election for the local council in the same municipality.
b) The dependent variable is the normalized rank improvement $\left(\frac{initial\ rank - final\ rank}{council\ size} \times 100\right)$ of a female council candidate.
c) The sample covers all female candidates for local council elections in Hessian municipalities where in the last mayor election the top-two candidates were of opposite gender (mixed-gender races).
d) The treatment variable is a dummy that is one if the margin of victory of the female candidate in the last mixed-gender mayor election was positive.
e) We report local linear (Model 1-4) and local quadratic (Model 5) regressions for various bandwidths: optimal CCT (Model 1, 5), one half of the optimal CCT (Model 2), twice the optimal CCT (Model 3), and optimal IK (Model 4).
f) The row entitled Mean (SD) reports the mean and standard deviation of the dependent variable for each regression. Stars indicate significance levels at 10%(*), 5%(**) and 1%(***). Heteroscedasticity and cluster-robust standard errors in parentheses. The unit of clustering is the municipality of the candidate.

Table 3: BASELINE RESULTS II: SHARE OF WOMEN AMONG CANDIDATES ELECTED TO THE COUNCIL

	(1)	(2)	(3)	(4)	(5)
Female mayor	0.041	0.045	0.038	0.042	0.050
	(0.041)	(0.042)	(0.035)	(0.043)	(0.045)
Bandwidth type	CCT	CCT/2	2CCT	IK	CCT
Bandwidth size	23.90	11.95	47.80	21.75	25.50
Polynomial	Linear	Linear	Linear	Linear	Quadratic
N	3463	2033	6135	3138	3796
Elections	96	55	178	87	107
Municipalities	72	44	116	64	77
Mean (SD)	0.27 (0.45)	0.27 (0.45)	0.26 (0.44)	0.27 (0.45)	0.27 (0.44)

Notes: a) This table reports estimates from sharp regression discontinuity designs that relate the gender of the incumbent mayor to the likelihood that an elected member of the local council in the same municipality is female.
b) The dependent variable is a dummy that is one for council members who are women.
c) The sample covers all elected candidates for local council elections in Hessian municipalities where in the last mayor election the top-two candidates were of opposite gender (mixed-gender elections).
e) See notes (d)-(f) in Table 2.

Table 4: MECHANISM I: INITIAL LIST PLACEMENT OF FEMALE CANDIDATES

	(1)	(2)	(3)	(4)	(5)
Panel A: All female candidates					
Female mayor	2.056	6.027	1.161	1.283	2.538
	(5.587)	(7.016)	(4.013)	(5.414)	(6.314)
nBandwidth type	CCT	CCT/2	2CCT	IK	CCT
Bandwidth size	14.52	7.26	29.04	17.17	26.12
Polynomial	Linear	Linear	Linear	Linear	Quadratic
N	2406	1434	3807	2574	3721
Elections	63	36	113	69	110
Municipalities	47	30	79	52	78
Mean (SD)	37.28 (25.71)	36.98 (25.78)	37.72 (25.88)	37.32 (25.77)	37.65 (25.91)
Panel B: Mayor and candidate from same party					
Female mayor	-1.291	-4.842	3.923	2.914	-2.933
	(3.766)	(4.163)	(3.249)	(4.214)	(4.542)
Bandwidth type	CCT	CCT/2	2CCT	IK	CCT
Bandwidth size	17.49	8.74	34.97	22.23	25.14
Polynomial	Linear	Linear	Linear	Linear	Quadratic
N	512	285	931	657	754
Elections	52	29	100	68	79
Municipalities	40	25	69	51	58
Mean (SD)	47.73 (28.75)	47.59 (28.32)	47.44 (28.94)	48.47 (28.87)	48.13 (28.99)
Panel C: Mayor and candidate from different parties					
Female mayor	3.230	10.851	1.682	2.401	3.970
	(5.961)	(7.494)	(4.199)	(5.418)	(6.645)
Bandwidth type	CCT	CCT/2	2CCT	IK	CCT
Bandwidth size	13.18	6.59	26.36	17.43	24.52
Polynomial	Linear	Linear	Linear	Linear	Quadratic
N	1861	1038	2980	2062	2799
Elections	59	29	111	69	100
Municipalities	45	24	78	52	74
Mean (SD)	34.94 (24.39)	34.37 (24.48)	34.94 (24.32)	34.73 (24.30)	34.83 (24.33)

Notes: a) This table reports estimates from sharp regression discontinuity designs that relate the gender of the incumbent mayor to the initial placement of female candidates on the party lists in the election for the local council in the same municipality.
b) The dependent variable is the normalized initial rank of a female candidate $\left(\frac{initial\ rank}{council\ size} \times 100\right)$.
c) The sample in Panel A covers all female candidates for local council elections in Hessian municipalities where in the last mayor election the top-two candidates were of opposite gender (mixed-gender races). Panel B limits the sample to all female candidates who belong to the same party as the mayor. Panel C limits the sample to all female candidates who belong to a different party than the mayor.
d) See notes (d)-(f) in Table 2.

Table 5: MECHANISM II: SHARE OF WOMEN ON PARTY LISTS

	(1)	(2)	(3)	(4)	(5)
Female mayor	0.036	0.013	0.037	0.036	0.025
	(0.032)	(0.033)	(0.024)	(0.032)	(0.036)
Bandwidth type	CCT	CCT/2	2CCT	IK	CCT
Bandwidth size	18.41	9.20	36.82	18.36	21.69
Polynomial	Linear	Linear	Linear	Linear	Quadratic
N	9053	5885	17009	9053	10670
Elections	72	43	145	72	86
Municipalities	53	35	96	53	63
Mean (SD)	0.29 (0.46)	0.29 (0.46)	0.29 (0.45)	0.29 (0.46)	0.29 (0.46)

Notes: a) This table reports estimates from sharp regression discontinuity designs that relate the gender of the incumbent mayor to the gender of candidates on party lists in the election for the local council in the same municipality.
b) The dependent variable is a dummy that is one if a candidate is female.
c) The sample covers all candidates for local council elections in Hessian municipalities where in the last mayor election the top-two candidates were of opposite gender (mixed-gender races).
d) See notes (d)-(f) in Table 2.

Table 6: MECHANISM III: PREDICTED RANK IMPROVEMENTS BASED ON CANDIDATE CHARACTERISTICS

	(1)	(2)	(3)	(4)	(5)
Panel A: Female candidates					
Female mayor	0.459***	0.212	0.335***	0.530***	0.251
	(0.138)	(0.144)	(0.096)	(0.151)	(0.169)
Bandwidth type	CCT	CCT/2	2CCT	IK	CCT
Bandwidth size	18.37	9.19	36.74	21.94	21.52
Polynomial	Linear	Linear	Linear	Linear	Quadratic
N	1103	753	2027	1325	1284
Elections	49	29	105	62	60
Municipalities	35	23	66	45	44
Mean (SD)	0.11 (1.58)	0.17 (1.57)	0.10 (1.60)	0.12 (1.57)	0.12 (1.58)
Panel B: Male candidates					
Female mayor	-0.017	-0.092	0.005	-0.115	-0.104
	(0.147)	(0.184)	(0.112)	(0.145)	(0.174)
Bandwidth type	CCT	CCT/2	2CCT	IK	CCT
Bandwidth size	19.20	9.60	38.40	15.20	24.61
Polynomial	Linear	Linear	Linear	Linear	Quadratic
N	2927	1870	5441	2598	3707
Elections	53	30	111	46	73
Municipalities	37	24	69	34	54
Mean (SD)	0.16 (1.73)	0.13 (1.72)	0.19 (1.76)	0.12 (1.70)	0.19 (1.76)

Notes: a) This table reports estimates from sharp regression discontinuity designs that relate the gender of the incumbent mayor to the predicted rank improvement of a candidate based on her characteristics in local council elections in the same municipality. We estimate an OLS model that relates various candidate characteristics (age, education, employment) to rank improvements and then calculate the predicted normalized rank improvement for each candidate (See Table A.13 and A.14 for a full list of characteristics). We want to establish to what extent changes in candidate characteristics explain the rank improvements of women observed in Table 2.
b) The dependent variable is the predicted normalized rank improvement.
c) Panel A reports estimates for a sample consisting of female candidates and Panel B for a sample of male candidates in Hessian municipalities where in the last mayor election the top-two candidates were of opposite gender (mixed-gender races).
d) See notes (d)-(f) in in Table 2.

Table 7: MECHANISM IV: VOTER TURNOUT IN COUNCIL ELECTIONS

	(1)	(2)	(3)	(4)	(5)
Female mayor	-0.816	-0.042	-2.789	-2.756	-0.354
	(3.313)	(4.122)	(2.537)	(2.525)	(3.784)
Bandwidth type	CCT	CCT/2	2CCT	IK	CCT
Bandwidth size	17.41	8.70	34.82	35.40	29.32
Polynomial	Linear	Linear	Linear	Linear	Quadratic
N	69	41	138	138	115
Elections	69	41	138	138	115
Municipalities	52	34	93	93	81
Mean (SD)	51.18 (6.66)	50.45 (6.88)	51.69 (6.02)	51.69 (6.02)	51.71 (6.15)

Notes: a) This table reports estimates from sharp regression discontinuity designs that relate the gender of the incumbent mayor to the turnout for local council elections in the same municipality.
b) The dependent variable is the share of voters who participate in the local election out of all eligible voters.
c) See notes (c)-(f) in Table 2.

Table 8: EXTENSION I: EFFECT HETEROGENEITY, INCUMBENT VS. NONINCUMBENT FEMALE COUNCIL CANDIDATES

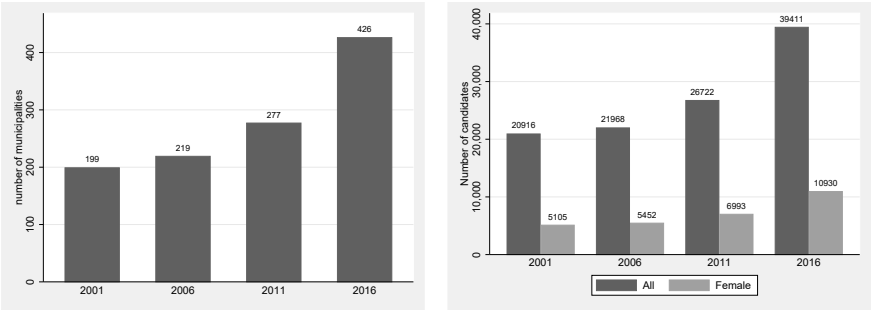
	(1)	(2)	(3)	(4)	(5)
Panel A: Rank improvements					
Female mayor	4.251***	3.862**	3.123***	3.450***	3.799**
	(1.074)	(1.651)	(0.586)	(0.656)	(1.741)
Incumbent	2.116**	2.636***	0.789	0.904	2.528**
	(0.970)	(0.915)	(0.935)	(0.996)	(1.116)
Female mayor × Incumbent	-3.787**	-2.497	-2.488**	-2.806**	-2.298
	(1.565)	(1.655)	(1.260)	(1.326)	(1.953)
Bandwidth type	CCT	CCT/2	2CCT	IK	CCT
Bandwidth size	20.10	10.05	40.20	35.59	19.93
Polynomial	Linear	Linear	Linear	Linear	Quadratic
N	2878	1784	5230	4801	2842
Elections	77	46	155	139	76
Municipalities	56	37	102	94	55
Mean (SD)	0.41 (10.95)	0.73 (10.75)	0.28 (11.33)	0.21 (11.37)	0.41 (11.00)
Panel B: Female share of council					
Female mayor	0.075*	0.120***	0.057*	0.086**	0.136***
	(0.039)	(0.038)	(0.032)	(0.040)	(0.043)
Incumbent	0.031	0.086**	0.017	0.041	0.087*
	(0.032)	(0.044)	(0.024)	(0.033)	(0.045)
Female mayor × Incumbent	-0.103*	-0.203***	-0.061	-0.129**	-0.225***
	(0.058)	(0.078)	(0.043)	(0.062)	(0.086)
Bandwidth type	CCT	CCT/2	2CCT	IK	CCT
Bandwidth size	23.90	11.95	47.80	21.75	25.50
Polynomial	Linear	Linear	Linear	Linear	Quadratic
N	3462	2032	6132	3137	3795
Elections	96	55	178	87	107
Municipalities	72	44	116	64	77
Mean (SD)	0.27 (0.45)	0.27 (0.45)	0.26 (0.44)	0.27 (0.45)	0.27 (0.45)

Notes: a) See note (a) in Table 2.
b) The dependent variable in Panel A is the normalized rank improvement $\left(\frac{initial\ rank - final\ rank}{council\ size} \times 100\right)$ of a female council candidate. The dependent variable in Panel B is is a dummy that is one for council members who are women.
c) The sample in Panel A covers all female candidates for local council elections and in Panel B all (female and male) elected candidates in Hessian municipalities where in the last mayor election the top-two candidates were of opposite gender (mixed-gender races).
d) The treatment variable is a dummy that is one if the margin of victory of the female candidate in the last mixed-gender mayor election was positive. To study effect heterogeneity, we interact the treatment dummy as well as the control function with a dummy for whether a council candidate is an incumbent.
e) See notes (e)-(f) in Table 2.

Table 9: EXTENSION II: SPILLOVERS IN RANK IMPROVEMENT TO NEIGHBORING MUNICIPALITIES

	(1)	(2)	(3)	(4)	(5)
Female mayor	1.631**	2.081**	1.052**	1.624**	1.950**
	(0.794)	(0.895)	(0.516)	(0.791)	(0.851)
Bandwidth type	CCT	CCT/2	2CCT	IK	CCT
Bandwidth size	15.40	7.70	30.81	15.57	27.88
Polynomial	Linear	Linear	Linear	Linear	Quadratic
N	13461	7079	23999	13595	22494
Elections	64	37	120	65	111
Municipalities	48	31	82	49	78
Mean (SD)	0.35 (10.29)	0.29 (10.48)	0.27 (10.36)	0.33 (10.28)	0.27 (10.40)

Notes: a) This table reports estimates from sharp regression discontinuity designs that relate the gender of the incumbent mayor in a given municipality to a measure for the performance of female candidates in the election for the local council in neighboring municipalities.
b) See note (b) in Table 2.
c) The sample covers all female candidates for local council elections in Hessian municipalities that neighbor a municipality where in the last mayor election the top-two candidates were of opposite gender (mixed-gender races).
d) The treatment variable is a dummy that is one if the margin of victory of the female candidate in a neighboring municipality in the last mixed-gender mayor election was positive.
e) See note (e)-(f) in Table 2.



(a) MUNICIPALITIES **(b)** CANDIDATES

Figure 1: Sample coverage. These two figures show the full coverage in terms of municipalities and council candidates of our sample for each council election between 2001 and 2016. Subfigure (a) pertains to municipalities and Subfigure (b) to candidates.

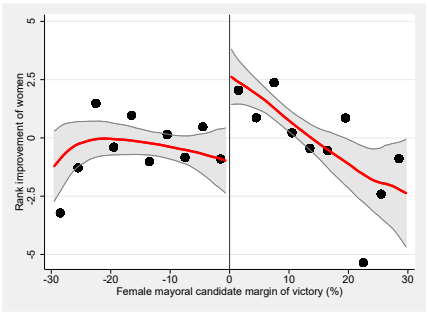


Figure 2: Rank improvement of female candidates. This graph shows a RDD plot for the (normalized) rank improvement of female candidates in the council elections when the current mayor is female or male. The running variable is the margin of victory of a female candidate for the mayor's office in mixed-gender races (where the top two candidates are female and male). Observations to the right of the threshold are under a female mayor. Each dot is the local average of the gains of women in bins of three percent for the margin of victory. The solid lines are from a local linear smooth of the underlying observations. The gray-shaded area are the 95 percent confidence intervals.

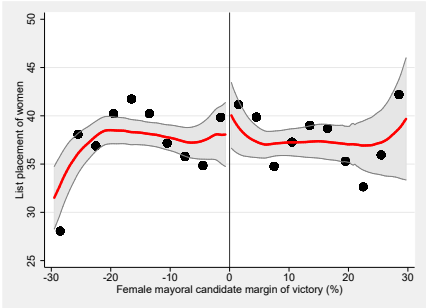


Figure 3: Initial list ranks of female candidates. This graph shows a RDD plot for the (normalized) initial list rank of female candidates in the council elections when the current mayor is female or male. The running variable is the margin of victory of a female candidate for the mayor's office in mixed-gender races (where the top two candidates are female and male). Observations to the right of the threshold are under a female mayor. Each dot is the local average of the gains of women in bins of three percent for the margin of victory. The solid lines are from a local linear smooth of the underlying observations. The gray-shaded area are the 95 percent confidence intervals.

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Online Appendix

A.1. Details on the collection of the council election data

First, we browsed the official websites of all 426 municipalities for initial party lists as well as election results. Several municipalities have posted this information for some or even all local elections during the period 2001-2016 (usually in PDF or Word format) on their websites. Party lists include information on the name of a candidate (from which we infer gender), the list rank, the date or year of birth (from which we infer age) as well as the current employment (from which we infer education). We downloaded the information and, with the help of several research assistants, copy-pasted or entered the data by hand into Excel files.

In a second step, we sent preformatted Excel files (one Excel file per election) to all municipalities (specifically the mayor's office or a high-ranking official in the local administration) or which the relevant information was not posted online for all or some elections. We kindly asked that mayors or high-ranking officials in the local administration (more specifically their staff) fill in the information in the Excel files and send it back to us. In many cases, they indeed entered the data into the Excel files. In other cases, the municipalities sent us PDF or Word files or scans of paper documents, which we or our research assistants then copy-pasted or entered into the preformatted Excel files.

In a final step, we merged all of these Excel files (by municipal codes and election years) into one datafile. We also invested a significant amount of time – given that much of the data had been entered by hand – in checking the plausibility of numerical variables (whether candidate lists were consecutively numbered and complete, whether those candidates with the lowest final ranks were indeed those that entered the council, etc.) and accounted for any errors (we corrected errors whenever possible and if not set the data point to missing).

We attempted to collect data for all municipalities and elections and hence the reason for any missing data is that data was not made available to us. We could not obtain the data for various reasons: smaller municipalities were less likely to post election results or candidate lists online or send us any information (either by not responding to our email(s) at all or telling us that they did not have the staff / time to work on our request). Information on earlier elections was also more difficult to obtain (for example because the papers were already archived and thus not easily accessible or even shredded).

Overall, there were 283 local council elections held during the tenure of a mayor that had been elected in a mixed-gender mayor election.[37] We were able to collect data on 214 of these 283 elections (about 75 percent). Of the 283 local elections, 194 were held under a male and 89 under a female mayor. Of the 194 elections under a male mayor, we have data on 147 elections, i. e. about 75 percent. Of the 89 local elections that were held under a female mayor, we have data on 67 elections, which is also about 75 percent. Consequently, there is no systematic relationship between mayor gender and sample attrition.

A.2. Further extensions

Do female council candidates benefit more from female mayors who have been in office for a longer period? To explore this question, we estimate RDD models that include an interaction between a variable capturing the number of years a mayor has been in office prior to the relevant council election and the female mayor dummy. The results are collected in Table A.16. While the estimate for the interaction effect is positive and significant in some specifications, it is unstable across bandwidths. In particular, according to Model (1), which uses the optimal bandwidth, the interaction effect is insignificant and numerically small. These results indicate that it is mainly the presence of a female mayor as such rather than the length of her tenure that is important for the rank improvements of female council candidates.

Do certain types of female mayors have a larger effect on rank improvements of female candidates? In Table A.17, we report results from interaction models for three mayor characteristics: age, education (whether she has a university degree or not), and prior employment (whether she has prior civil administration experience or not).[38] While we find no significant interaction effects for education and prior employment, the estimates suggest a significant interaction for age. Younger female mayors have a more positive effect on female rank improvements. This finding is consistent with the interpretation that the main reason for the rank improvements is a decline in anti-female voter bias. Voters may be particularly skeptical against younger women, and if such a women succeeds in the mayor election, then the bias against women in general may decline more than if an older women wins the election.

Finally, we study in Table A.18 whether the effect of female mayors increases with the share of female mayors in neighboring municipalities. The results suggest no significant interaction effect, indicating that there is no spatial cumulation effect of female mayors. Once a municipality

[37] This number is larger than the number reported for mixed-gender mayor elections (which is 268) in Table A.1. The reasons is that the tenure of a mayor is six years while that of the council is five years. Thus, a mayor can have up to two local council elections during her tenure.

[38] See Hessami (2017) for a detailed description of the data on mayor characteristics.

has a female mayor, the number of female mayors in neighboring municipalities appears to be irrelevant for the performance of female council candidates.[39]

A.3. Across-party effects

The rank improvement measure is a within-party measure as it captures how the rank of female candidates changes in their party relative to their initial placement. However, female mayors may have further effects that would not be captured by this measure. Specifically, rather than influencing for which candidates voters cast their vote on a given list, female mayors may lead voters to switch to entirely different lists. Such across-party effects may either compound or counteract the rank improvements experienced by female council candidates and thus lead to overall more or less female representation.[40]

In our context, across-party effects are arguably less important than within-party effects because voters are likely to express any change in attitudes toward female candidates by voting for those women that are on the list of the party that they would prefer anyway for ideological reasons or because they support its municipality-specific policy goals. However, across-party effects need to be explored for a comprehensive assessment of the effect of female mayors.

Table A.19 thus reports results from RDD specifications where we relate the vote share of all competing parties in a municipality to the gender of its mayor. To explore whether parties with more women on the list receive more votes in municipalities with female mayors, we interact the female mayor dummy with the share of women on the list of a party. The results show no significant interaction, indicating that across-party effects are not important in our context.

[39] We also find in Table A.18 that the effect of the share of female mayors in neighboring municipalities has an insignificant or small negative effect on the rank improvement of female candidates in municipality *i*. This is not inconsistent with the spillover results in Table 9 (which show a positive effect of a female mayor in municipality *i* to neighboring municipalities) as in the specification in Table A.18, the share of female-led neighbors is not quasi-random.

[40] For example, if some voters have become more biased against female candidates in response to a female mayor, they may either vote for the men on their otherwise preferred list or switch to a list that has fewer women in the first place. In the latter case, we may end up observing both positive rank improvements for women (because voters who do not switch are relatively profemale) and less female representation (as the switchers vote for parties with fewer women).

A.4. Appendix Tables

Table A.1: SUMMARY STATISTICS ON MAYOR ELECTIONS

Year	All mayor elections	Mixed-gender elections	Close mixed-gender elections (female victories)
1993	86	6	1 (1)
1994	85	8	1 (1)
1995	82	7	2 (2)
1996	90	8	0 (0)
1997	51	3	1 (1)
1998	58	7	1 (0)
1999	84	11	2 (1)
2000	79	14	3 (3)
2001	87	13	5 (4)
2002	82	15	4 (2)
2003	60	10	2 (1)
2004	55	9	1 (1)
2005	84	15	6 (3)
2006	72	13	1 (0)
2007	80	13	1 (0)
2008	88	14	4 (1)
2009	58	14	2 (1)
2010	58	11	3 (2)
2011	84	12	2 (2)
2012	82	19	2 (1)
2013	73	16	4 (1)
2014	84	16	2 (0)
2015	59	14	5 (1)
Total	1721	268	55 (29)

Notes: This table reports the number of mayor elections in Hesse in each year between 1993 and 2015. Column two reports the total number of mayor elections. Column three reports the number of mayor elections where the two top candidates were male and female. Column four reports the number of mixed-gender mayor elections where the margin of victory was below 10% as well as the number of female victories in close mixed-gender elections in parentheses.

Table A.2: DIFFERENCES IN INITIAL LIST PLACEMENT AND RANK IMPROVEMENT, FEMALE VS. MALE CANDIDATES

	Female candidate	Male candidate	Diff.	Std. Error	Obs.
Initial list rank (normalized)	38.816	40.556	1.740***	0.185	109017
Rank improvement (normalized)	-0.459	0.252	0.711***	0.091	109017

Notes: This table reports the results for t-tests that investigate whether there are significant differences in the normalized rank improvement or the normalized initial list placements of female and male candidates. Stars indicate significance levels at 10%(*), 5%(**) and 1%(***).

Table A.3: OLS ESTIMATIONS: RANK IMPROVEMENT OF FEMALE CANDIDATES

	(1)	(2)	(3)	(4)
Female mayor	0.941	0.846	-0.060	-0.259
	(0.596)	(0.532)	(0.363)	(0.300)
Year FE	No	Yes	No	Yes
Municipality FE	No	No	Yes	Yes
N	28480	28480	28480	28480
Municipalities	426	426	426	426
Mean (SD)	-0.46 (11.93)	-0.46 (11.93)	-0.46 (11.93)	-0.46 (11.93)

Notes: a) This table reports estimates from OLS regressions that relate the gender of the incumbent mayor to a measure for the performance of female candidates in the election for the local council in the same municipality.
b) See note (b) in Table 2.
c) The sample covers all female candidates for local council elections in Hessian municipalities.
d) The treatment variable is a dummy that is one if the incumbent mayor is female.
e) See note (f) in Table 2.

Table A.4: VALIDITY TEST I: DIFFERENCES IN MUNICIPALITY CHARACTERISTICS WITH FEMALE AND MALE MAYORS

	Female mayor	Male mayor	Diff.	Std. Error	Obs.
All mixed-gender elections					
Log(population)	9.384	9.211	0.173	0.122	268
Log(land area)	3.632	3.611	0.021	0.100	268
Log(debt p.c.)	-0.364	-0.513	0.148	0.118	268
Log(tax revenues p.c.)	-0.392	-0.430	0.039	0.053	268
Log(total employment p.c.)	-1.627	-1.540	-0.087	0.076	268
Log(female share, total employment)	-0.833	-0.850	0.017	0.029	268
Log(local gov. employment p.c.)	-5.129	-5.158	0.030	0.051	268
Log(female share, local gov. employment)	-1.076	-1.156	0.080*	0.047	265
Log(manufacturing / total employment)	-1.137	-1.060	-0.076	0.068	268
Log(female share, manufacturing)	-1.553	-1.471	-0.082**	0.041	268
Mixed-gender elections with MOV$<$ 10%					
Log(population)	9.821	9.219	0.602*	0.3054	55
Log(land area)	3.972	3.771	0.201	0.1966	55
Log(debt p.c.)	-0.264	-0.253	-0.011	0.2472	55
Log(tax revenues p.c.)	-0.306	-0.327	0.020	0.1169	55
Log(total employment p.c.)	-1.332	-1.490	0.158	0.1544	55
Log(female share, total employment)	-0.887	-0.885	-0.002	0.0594	55
Log(local gov. employment p.c.)	-4.929	-5.080	0.151	0.1477	55
Log(female share, local gov. employment)	-1.044	-1.146	0.102	0.0995	55
Log(manufacturing / total employment)	-1.042	-0.981	-0.062	0.1282	55
Log(female share, manufacturing)	-1.576	-1.484	-0.092	0.1007	55

Notes: This table reports the results for t-tests that investigate whether there are significant differences in the characteristics of municipalities with male and female mayors where one women and one man were in the top two ranked candidates. Stars indicate significance levels at 10%(*), 5%(**) and 1%(***).

Table A.5: VALIDITY TEST I: DISCONTINUITY IN PREDICTED RANK IMPROVEMENT BASED ON MUNICIPALITY CHARACTERISTICS

	(1)	(2)	(3)	(4)	(5)
Female mayor	0.422	0.408	0.855*	0.847	0.114
	(0.776)	(1.086)	(0.500)	(0.516)	(1.000)
Bandwidth type	CCT	CCT/2	2CCT	IK	CCT
Bandwidth size	18.81	9.40	37.61	35.68	24.76
Polynomial	Linear	Linear	Linear	Linear	Quadratic
N	71	44	143	136	101
Elections	71	44	143	136	101
Municipalities	52	35	96	94	74
Mean (SD)	-0.45 (1.18)	-0.52 (1.20)	-0.54 (1.16)	-0.53 (1.17)	-0.50 (1.17)

Notes: a) This table reports estimates from sharp regression discontinuity designs that relate the gender of the incumbent mayor to the predicted rank improvement of a candidate based on the characteristics of her municipality in local council elections in the same municipality. We estimate an OLS model that relates various municipality characteristics (demographic, fiscal, and gender composition of the labor force, etc. – see Table A.4 for a full list) to rank improvements and then calculate the predicted normalized rank improvement for each candidate. We want to establish to what extent imbalances in municipality characteristics can explain the rank improvements of women observed in Table 2.
b) The dependent variable is the predicted normalized rank improvement.
c) See notes (c)-(f) in Table 2.

Table A.6: VALIDITY TEST II: MIXED-GENDER MAYOR ELECTIONS AND FEMALE VICTORIES

	Mean	Std. Error	p-value	Obs.
Panel A: Full				
Female	0.313	(0.028)		
Male	0.687	(0.028)		
Diff	-0.373***	(0.057)	0.000	268
Panel B: Margin <= 25%				
Female	0.405	(0.044)		
Male	0.595	(0.044)		
Diff	-0.190**	(0.088)	0.032	126
Panel C: Margin <= 10%				
Female	0.527	(0.068)		
Male	0.473	(0.068)		
Diff	0.055	(0.136)	0.690	55

Notes: This table shows t-tests for whether women are more or less likely to win (close) mayoral elections. Panel A uses the full set of municipality-year pairs where the top-two candidates were of mixed gender, Panel B uses municipality-year pairs where the absolute margin of victory was below 25%, Panel C uses a margin of victory below 10%.

Table A.7: VALIDITY TEST III: DIFFERENCES IN IDEOLOGY OF FEMALE AND MALE MAYORS

	Female mayor	Male mayor	Diff.	Std. Error	Obs.
All mixed-gender elections					
CDU	0.310	0.315	-0.006	0.061	268
SPD	0.440	0.386	0.055	0.065	268
Other	0.250	0.299	-0.049	0.060	268
Mixed-gender elections with MOV$<$ 10%					
CDU	0.448	0.308	0.141	0.132	55
SPD	0.276	0.308	-0.032	0.125	55
Other	0.276	0.385	-0.109	0.128	55

Notes: This table reports the results for t-tests that investigate whether there are significant differences in the ideological alignment of male and female mayors in mayor elections where one women and one man were in the top-two ranked candidates. Stars indicate significance levels at 10%(*), 5%(**) and 1%(***). The "other" category comprises mostly mayors that have run as independents or were supported by municipality-specific voter initiatives.

Table A.8: ROBUSTNESS TEST I: RANK IMPROVEMENT OF FEMALE CANDIDATES IN PREVIOUS COUNCIL ELECTION

	(1)	(2)	(3)	(4)	(5)
Female mayor	0.800	-0.670	1.789	1.022	-0.870
	(1.348)	(1.758)	(1.151)	(1.334)	(1.889)
Bandwidth type	CCT	CCT/2	2CCT	IK	CCT
Bandwidth size	15.71	7.85	31.42	17.22	17.73
Polynomial	Linear	Linear	Linear	Linear	Quadratic
N	1603	951	2662	1672	1737
Elections	55	31	101	59	61
Municipalities	43	28	76	46	47
Mean (SD)	0.49 (10.99)	0.58 (11.16)	0.02 (11.80)	0.45 (11.12)	0.50 (11.30)

Notes: a) This table reports estimates from sharp regression discontinuity designs that relate the gender of the incumbent mayor to a measure for the performance of female candidates in the previous election for the local council in the same municipality.
b) The dependent variable is the normalized rank improvement $\left(\frac{\textit{initial rank}-\textit{final rank}}{\textit{council size}} \times 100\right)$ of a female council candidate in the previous local election.
c) The sample covers all female candidates for local council elections in Hessian municipalities where in the last mayor election the top-two candidates were of opposite gender (mixed-gender races).
d) The treatment variable is a dummy that is one if the margin of victory of the female candidate in the last mixed-gender mayor election was positive.
e) See notes (e)-(f) in Table 2.

Table A.9: EXTENSION IV: RANK IMPROVEMENT OF FEMALE CANDIDATES IN NEXT COUNCIL ELECTION

	(1)	(2)	(3)	(4)	(5)
Female mayor	5.037***	4.772***	3.256***	5.066***	5.168***
	(1.120)	(1.297)	(0.793)	(1.172)	(1.363)
Bandwidth type	CCT	CCT/2	2CCT	IK	CCT
Polynomial	Linear	Linear	Linear	Linear	Quadratic
N	2092	1451	3892	2028	2386
Elections	51	32	100	47	58
Municipalities	43	27	71	40	46
Mean (SD)	0.40 (10.73)	0.53 (10.39)	0.30 (10.51)	0.50 (10.72)	0.41 (10.74)

Notes: a) This table reports estimates from sharp regression discontinuity designs that relate the gender of the incumbent mayor to a measure for the performance of female candidates in the election for the local council after the next election in the same municipality.
b) The dependent variable is the normalized rank improvement $\left(\frac{\textit{initial rank}-\textit{final rank}}{\textit{council size}} \times 100\right)$ of a female council candidate in the local election after the next election.
c) The sample covers all female candidates for local council elections in Hessian municipalities where in the mayor election in t-1 or t-2 (depending on the timing of mayor and council elections) the top-two candidates were of opposite gender (mixed-gender races).
d) The treatment variable is a dummy that is one if the margin of victory of the female candidate in the last mixed-gender mayor election was positive.
e) See notes (e)-(f) in Table 2.

Table A.10: ROBUSTNESS TEST II: ALTERNATIVE SCALINGS OF RANK IMPROVEMENT

	(1)	(2)	(3)	(4)	(5)
Panel A: Non-normalized rank improvement of women					
Female mayor	2.130***	1.365**	1.667***	2.058***	1.298*
	(0.627)	(0.621)	(0.442)	(0.606)	(0.723)
Bandwidth type	CCT	CCT/2	2CCT	IK	CCT
Bandwidth size	19.31	9.66	38.63	17.35	15.49
Polynomial	Linear	Linear	Linear	Linear	Quadratic
N	2842	1767	5017	2574	2433
Elections	76	45	150	69	64
Municipalities	55	36	98	52	48
Mean (SD)	0.42 (4.63)	0.67 (4.81)	0.32 (4.62)	0.46 (4.59)	0.50 (4.58)
	(1)	(2)	(3)	(4)	(5)
Panel B: Dummy for positive rank improvement					
Female mayor	0.215***	0.109	0.188***	0.180***	0.103
	(0.074)	(0.074)	(0.056)	(0.066)	(0.090)
Bandwidth type	CCT	CCT/2	2CCT	IK	CCT
Bandwidth size	18.11	9.05	36.21	14.24	14.81
Polynomial	Linear	Linear	Linear	Linear	Quadratic
N	2669	1650	4863	2406	2433
Elections	72	42	144	63	64
Municipalities	53	35	96	47	48
Mean (SD)	0.40 (0.49)	0.44 (0.50)	0.40 (0.49)	0.41 (0.49)	0.41 (0.49)

Notes: a) This table reports estimates from sharp regression discontinuity designs that relate the gender of the incumbent mayor to two alternative measures for the performance of female candidates in the election for the local council in the same municipality.
b) The dependent variable in Panel A is the (non-normalized) rank improvement (*initial rank* − *final rank*) of a female council candidate. The dependent variable in Panel B is a dummy that is one if a candidate experiences a positive rank improvement.
c) See notes (c)-(f) in Table 2.

Table A.11: ROBUSTNESS III: PRO-FEMALE TRENDS AND RANK IMPROVEMENTS OF FEMALE CANDIDATES

	(1)	(2)	(3)	(4)	(5)
Female mayor	3.095***	3.220**	2.091***	2.425***	3.172**
	(1.061)	(1.380)	(0.673)	(0.718)	(1.467)
Average female rank improvement $_{t-1}$	0.228*	0.244	0.273***	0.248***	0.229**
	(0.118)	(0.159)	(0.072)	(0.073)	(0.114)
Bandwidth type	CCT	CCT/2	2CCT	IK	CCT
Bandwidth size	20.10	10.05	40.20	35.59	19.93
Polynomial	Linear	Linear	Linear	Linear	Quadratic
N	1852	1060	3347	3084	1852
Elections	54	31	104	91	54
Municipalities	40	26	69	63	40
Mean (SD)	0.32 (11.26)	0.31 (10.88)	0.06 (11.52)	0.04 (11.38)	0.32 (11.26)

Notes: a) See notes (a)-(f) in Table 2.
b) We account in these regressions for differences in trends in the openness toward female politicians across municipalities by controlling for the average normalized rank improvement of female candidates in the previous local election.

Table A.12: MECHANISM I: DISCONTINUITY IN PREDICTED RANK IMPROVEMENT BASED ON INITIAL LIST RANK

	(1)	(2)	(3)	(4)	(5)
Female mayor	0.221	0.648	0.125	0.138	0.273
	(0.601)	(0.755)	(0.432)	(0.582)	(0.679)
Bandwidth type	CCT	CCT/2	2CCT	IK	CCT
Bandwidth size	14.52	7.26	29.04	17.17	26.12
Polynomial	Linear	Linear	Linear	Linear	Quadratic
N	2406	1434	3807	2574	3721
Elections	63	36	113	69	110
Municipalities	47	30	79	52	78
Mean (SD)	0.04 (2.76)	0.01 (2.77)	0.09 (2.78)	0.04 (2.77)	0.08 (2.79)

Notes: a) This table reports estimates from sharp regression discontinuity designs that relate the gender of the incumbent mayor to the predicted rank improvement of a candidate based on her initial list placement in local council elections in the same municipality. We estimate an OLS model that relates the initial normalized list placement to normalized rank improvements and then calculate the predicted normalized rank improvement for each candidate. We want to establish to what extent changes in initial list placements can explain the rank improvements of women observed in Table 2.
b) The dependent variable is the predicted normalized rank improvement.
c) See notes (c)-(f) in Table 2.

Table A.13: MECHANISM III: CHARACTERISTICS OF FEMALE CANDIDATES

Panel A: Age & highest educational attainment

	(1)	(2)	(3)	(4)
	Age	High school	University	Phd
Female mayor	-1.334	-0.084	0.061	0.028
	(3.334)	(0.093)	(0.062)	(0.044)
Bandwidth type	CCT	CCT	CCT	CCT
Bandwidth size	22.18	18.39	18.69	19.37
Polynomial	Linear	Linear	Linear	Linear
N	1675	1157	1157	1213
Elections	63	60	60	63
Municipalities	46	46	46	47
Mean (SD)	51.48	0.67	0.26	0.07
	(13.71)	(0.47)	(0.44)	(0.25)

Panel B: Type of employment

	(1)	(2)	(3)	(4)	(5)	(6)
	Architect	Businesswoman	Engineer	Lawyer	Civil administration	Teacher
Female mayor	0.005	-0.066	-0.013	0.064**	-0.013	-0.015
	(0.007)	(0.047)	(0.028)	(0.026)	(0.027)	(0.030)
Bandwidth type	CCT	CCT	CCT	CCT	CCT	CCT
Bandwidth size	19.44	19.75	17.76	13.97	17.92	24.03
Polynomial	Linear	Linear	Linear	Linear	Linear	Linear
N	1220	1220	1162	1037	1163	1501
Elections	63	63	59	51	60	81
Municipalities	47	47	45	40	46	62
Mean (SD)	0.01	0.06	0.02	0.04	0.05	0.08
	(0.08)	(0.24)	(0.13)	(0.20)	(0.23)	(0.27)

Panel C: Employment status

	(1)	(2)	(3)	(4)	(5)
	Employed	Self-employed	Student	Retired	Housewife
Female mayor	-0.085	-0.044**	0.032	0.047	0.006
	(0.079)	(0.019)	(0.054)	(0.049)	(0.041)
Bandwidth type	CCT	CCT	CCT	CCT	CCT
Bandwidth size	18.92	21.21	15.35	20.60	21.50
Polynomial	Linear	Linear	Linear	Linear	Linear
N	1401	1626	1288	1530	1626
Elections	51	63	47	59	63
Municipalities	37	46	35	42	46
Mean (SD)	0.67	0.04	0.06	0.11	0.10
	(0.47)	(0.20)	(0.23)	(0.32)	(0.30)

Notes: a) This table reports estimates from sharp regression discontinuity designs that relate the gender of the incumbent mayor to measures for the characteristics of female candidates in the election for the local council in the same municipality. The purpose of this results is to establish whether female mayors lead to different types of candidates running for office.
b) The dependent variables are: age (in years), educational attainment (dummy variables for the highest degree), the type of employment (dummy variables for different jobs), and the employment status (dummy variables for a given status).
c) The sample covers all female candidates for local council elections in Hessian municipalities where in the last mayor election the top-two candidates were of opposite gender (mixed-gender races).
d) We report local linear regressions using CCT optimal bandwidths.
e) See notes (d) and (f) in Table 2.

Table A.14: MECHANISM III: CHARACTERISTICS OF MALE CANDIDATES

Panel A: Age & highest educational attainment

	(1)	(2)	(3)	(4)
	Age	High school	University	Phd
Female mayor	-1.710	-0.004	-0.002	0.018
	(2.388)	(0.087)	(0.053)	(0.084)
Bandwidth type	CCT	CCT	CCT	CCT
Bandwidth size	21.75	17.28	23.02	16.69
Polynomial	Linear	Linear	Linear	Linear
N	4045	2919	3775	2840
Elections	65	65	88	63
Municipalities	47	50	67	48
Mean (SD)	52.69	0.61	0.31	0.09
	(14.33)	(0.49)	(0.46)	(0.29)

Panel B: Type of employment

	(1)	(2)	(3)	(4)	(5)	(6)
	Architect	Businessman	Engineer	Lawyer	Civil administration	Teacher
Female mayor	0.016*	0.063*	-0.011	0.049**	-0.007	-0.047*
	(0.008)	(0.033)	(0.025)	(0.022)	(0.023)	(0.027)
Bandwidth type	CCT	CCT	CCT	CCT	CCT	CCT
Bandwidth size	14.94	16.81	18.67	13.83	23.93	12.39
Polynomial	Linear	Linear	Linear	Linear	Linear	Linear
N	2837	2871	3081	2760	3988	2540
Elections	61	63	68	58	90	53
Municipalities	46	48	51	44	69	43
Mean (SD)	0.01	0.08	0.08	0.04	0.07	0.04
	(0.10)	(0.28)	(0.27)	(0.19)	(0.26)	(0.20)

Panel C: Employment status

	(1)	(2)	(3)	(4)
	Employed	Self-employed	Student	Retired
Female mayor	-0.085	0.004	0.012	0.049
	(0.059)	(0.035)	(0.016)	(0.044)
Bandwidth type	CCT	CCT	CCT	CCT
Bandwidth size	13.85	17.65	14.70	12.08
Polynomial	Linear	Linear	Linear	Linear
N	3092	3445	3179	2745
Elections	45	51	47	39
Municipalities	34	37	35	32
Mean (SD)	0.70	0.07	0.05	0.17
	(0.46)	(0.25)	(0.22)	(0.38)

Notes: a) This table reports estimates from sharp regression discontinuity designs that relate the gender of the incumbent mayor to measures for the characteristics of male candidates in the election for the local council in the same municipality. The purpose of this results is to establish whether female mayors lead to different types of candidates running for office.
b) The dependent variables are: age (in years), educational attainment (dummy variables for the highest degree), the type of employment (dummy variables for different jobs), and the employment status (dummy variables for a given status).
c) The sample covers all male candidates for local council elections in Hessian municipalities where in the last mayor election the top-two candidates were of opposite gender (mixed-gender races).
d) We report local linear regressions using CCT optimal bandwidths.
e) See notes (d) and (f) in Table 2.

Table A.15: EXTENSION III: CHARACTERISTICS OF MIXED-GENDER AND SINGLE-GENDER ELECTION MUNICIPALITIES

	Mixed-gender	Single-gender	Diff.	Std. Error	Obs.
Log(population)	9.250	8.902	0.349***	0.082	426
Log(land area)	3.646	3.699	-0.053	0.068	426
Log(debt p.c.)	-0.410	-0.379	-0.032	0.068	426
Log(tax revenues p.c.)	-0.458	-0.569	0.111***	0.034	426
Log(local gov. employment p.c.)	-5.138	-5.228	0.090***	0.033	426
Log(female share, local gov. employment)	-1.157	-1.294	0.137***	0.040	421
Log(total employment p.c.)	-1.578	-1.703	0.125**	0.055	426
Log(female share, total employment)	-0.842	-0.890	0.048**	0.021	426
Log(manufacturing / total employment)	-1.013	-0.907	-0.106**	0.042	426
Log(female share, manufacturing)	-1.455	-1.475	0.020	0.029	426

Notes: This table compares characteristics of municipalities that had at least one mixed-gender mayor election during the sample period with municipalities that had only single-gender (typically male vs. male candidate) elections. The statistics are calculated based on the average of each characteristics in a given municipality across all mayor election years in the period 1993-2015.

Table A.16: EXTENSION IV: RANK IMPROVEMENT OF FEMALE CANDIDATES AND TENURE OF MAYORS

	(1)	(2)	(3)	(4)	(5)
Female mayor	2.623*	1.089	4.055***	4.184***	0.136
	(1.578)	(1.724)	(1.190)	(1.284)	(1.549)
Tenure	0.122	0.030	0.148*	0.157*	0.060
	(0.107)	(0.147)	(0.085)	(0.092)	(0.176)
Female mayor × Tenure	0.286	0.645***	-0.214	-0.213	0.962***
	(0.255)	(0.240)	(0.151)	(0.161)	(0.267)
Bandwidth type	CCT	CCT/2	2CCT	IK	CCT
Bandwidth size	20.10	10.05	40.20	35.59	19.93
Polynomial	Linear	Linear	Linear	Linear	Quadratic
N	2878	1784	5232	4803	2842
Elections	77	46	155	139	76
Municipalities	56	37	102	94	55
Mean (SD)	0.41 (10.95)	0.73 (10.75)	0.27 (11.33)	0.21 (11.37)	0.41 (11.00)

Notes: a) See notes (a)-(c) in Table 2.
b) The treatment variable is a dummy that is one if the margin of victory of the female candidate in the last mixed-gender mayor election was positive. To study effect heterogeneity, we interact the treatment dummy as well as the control function with a count variable capturing the length of tenure (in years) of the mayor.
c) See notes (e)-(f) in Table 2.

Table A.17: EXTENSION V: RANK IMPROVEMENTS OF FEMALE CANDIDATES AND PERSONAL CHARACTERISTICS OF (FEMALE) MAYORS

	(1)	(2)	(3)	(4)	(5)
Panel A: Age					
Female mayor	13.310***	11.589	12.327***	13.289***	22.238**
	(4.767)	(7.131)	(3.542)	(4.086)	(9.298)
Age	0.072	0.025	0.051	0.074	0.228
	(0.068)	(0.119)	(0.056)	(0.068)	(0.154)
Female mayor × Age	-0.197**	-0.154	-0.194***	-0.209***	-0.361**
	(0.100)	(0.145)	(0.072)	(0.081)	(0.182)
Bandwidth type	CCT	CCT/2	2CCT	IK	CCT
Bandwidth size	20.10	10.05	40.20	35.59	19.93
Polynomial	Linear	Linear	Linear	Linear	Quadratic
N	1951	1095	3418	3169	1915
Elections	57	34	116	103	56
Municipalities	40	28	76	67	39
Mean (SD)	0.21 (11.38)	0.22 (11.66)	0.02 (12.03)	-0.01 (11.96)	0.20 (11.46)
Panel B: University degree					
Female mayor	3.383**	3.023	1.737	1.860	4.255**
	(1.503)	(1.842)	(1.122)	(1.201)	(2.144)
University degree	1.107	0.722	0.188	0.133	2.038
	(1.127)	(1.323)	(0.843)	(0.895)	(1.634)
Female mayor × University degree	0.633	2.242	1.011	1.079	0.727
	(1.741)	(2.233)	(1.366)	(1.453)	(2.522)
Bandwidth type	CCT	CCT/2	2CCT	IK	CCT
Bandwidth size	20.10	10.05	40.20	35.59	19.93
Polynomial	Linear	Linear	Linear	Linear	Quadratic
N	1886	1000	3295	3032	1850
Elections	53	30	111	97	52
Municipalities	38	25	74	65	37
Mean (SD)	0.27 (11.25)	0.35 (11.08)	0.10 (11.90)	0.08 (11.83)	0.26 (11.32)
Panel C: Prior civil administration experience					
Female mayor	2.748*	3.530*	2.267**	2.507**	3.188
	(1.598)	(1.933)	(1.082)	(1.177)	(1.982)
Administration	-1.000	-0.941	0.437	0.681	-3.173
	(1.419)	(1.448)	(0.889)	(0.943)	(2.132)
Female mayor × Administration	1.857	2.784	0.186	0.047	5.449**
	(2.074)	(2.189)	(1.346)	(1.399)	(2.705)
Bandwidth type	CCT	CCT/2	2CCT	IK	CCT
Bandwidth size	20.10	10.05	40.20	35.59	19.93
Polynomial	Linear	Linear	Linear	Linear	Quadratic
N	2000	1114	3475	3212	1964
Elections	58	35	117	103	57
Municipalities	41	29	77	68	40
Mean (SD)	0.21 (11.54)	0.25 (11.63)	0.05 (12.07)	0.02 (12.01)	0.21 (11.61)

Notes: a) See notes (a)-(c) in Table 2.
b) The treatment variable is a dummy that is one if the margin of victory of the female candidate in the last mixed-gender mayor election was positive. To study effect heterogeneity, we interact the treatment dummy as well as the control function with a count variable capturing the age (in years) of the mayor (Panel A), a dummy variable for whether she has a university degree (Panel B), and a dummy variable for whether she has prior civil administration experience.
c) See notes (e)-(f) in Table 2.

Table A.18: EXTENSION VI: RANK IMPROVEMENTS OF FEMALE CANDIDATES AND DENSITY OF FEMALE MAYORS IN NEIGHBORING MUNICIPALITIES

	(1)	(2)	(3)	(4)	(5)
Female mayor	4.964***	5.501***	3.148***	3.366***	5.788***
	(0.928)	(1.343)	(0.641)	(0.675)	(1.453)
Share female-led neighbors	-0.036	-0.007	-0.049*	-0.061*	-0.012
	(0.049)	(0.065)	(0.028)	(0.032)	(0.068)
Female mayor × Share female-led neighbors	-0.034	-0.065	0.006	0.014	-0.068
	(0.051)	(0.068)	(0.037)	(0.041)	(0.070)
Bandwidth type	CCT	CCT/2	2CCT	IK	CCT
Bandwidth size	20.10	10.05	40.20	35.59	19.93
Polynomial	Linear	Linear	Linear	Linear	Quadratic
N	2878	1784	5232	4803	2842
Elections	77	46	155	139	76
Municipalities	56	37	102	94	55
Mean (SD)	0.41 (10.95)	0.73 (10.75)	0.27 (11.33)	0.21 (11.37)	0.41 (11.00)

Notes: a) See notes (a)-(c) in Table 2.
b)The treatment variable is a dummy that is one if the margin of victory of the female candidate in the last mixed-gender mayor election was positive. To study effect heterogeneity, we interact the treatment dummy as well as the control function with a variable capturing the share of all neighboring municipalities that have female mayors.
c) See notes (e)-(f) in Table 2.

Table A.19: EXTENSION VII: PARTY VOTE SHARE AND INTERACTIONS BETWEEN MAYOR GENDER AND THE SHARE OF WOMEN ON THE PARTY LIST

	(1)	(2)	(3)	(4)	(5)
Female mayor	-4.112	-8.800	-2.395	-1.693	-7.074
	(7.240)	(11.589)	(4.383)	(5.453)	(10.419)
List share female	-0.291**	-0.241	-0.257***	-0.256**	-0.298
	(0.137)	(0.246)	(0.080)	(0.102)	(0.207)
Female mayor × List share female	-0.017	0.079	-0.055	-0.097	0.068
	(0.188)	(0.317)	(0.113)	(0.136)	(0.281)
Bandwidth type	CCT	CCT/2	2CCT	IK	CCT
Bandwidth size	21.32	10.66	42.65	28.48	26.93
Polynomial	Linear	Linear	Linear	Linear	Quadratic
N	423	257	783	544	535
Elections	85	51	164	113	111
Municipalities	63	40	108	79	78
Mean (SD)	20.09 (14.80)	19.84 (14.44)	20.95 (15.26)	20.77 (14.84)	20.75 (14.86)

Notes: a) This table reports estimates from sharp regression discontinuity designs that relate the gender of the incumbent mayor to party-level outcomes in the election for the local council in the same municipality.
b) The dependent variable is the vote share of a party in the local election.
c) The sample covers all parties participating in local council elections in Hessian municipalities where in the last mayor election the top-two candidates were of opposite gender (mixed-gender races).
d) The treatment variable is a dummy that is one if the margin of victory of the female candidate in the last mixed-gender mayor election was positive. To study effect heterogeneity, we interact the treatment dummy as well as the control function with a variable that captures the share of women on the respective party list.
b) See notes (e)-(f) in Table 2.

A.5. Appendix Figures

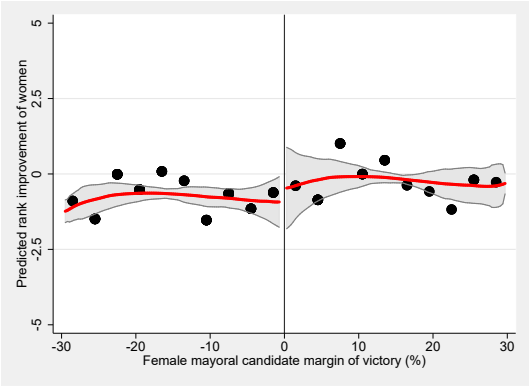


Figure A.1: Validity test I: Predicted (normalized) rank improvement based on municipality characteristics. This graph shows a RDD plot of predicted normalized rank improvement based on various municipality characteristics (demographic, fiscal, and gender composition of the labor force, etc. – see Table A.4 for a full list). The running variable is the margin of victory of a female candidate for the mayor's office in mixed-gender races (where the top two candidates are female and male). Observations to the right of the threshold are under a female mayor. Each dot is the local average of the gains of women in bins of three percent for the margin of victory. The solid lines are from a local linear smooth of the underlying observations. The gray-shaded area are the 95 percent confidence intervals.

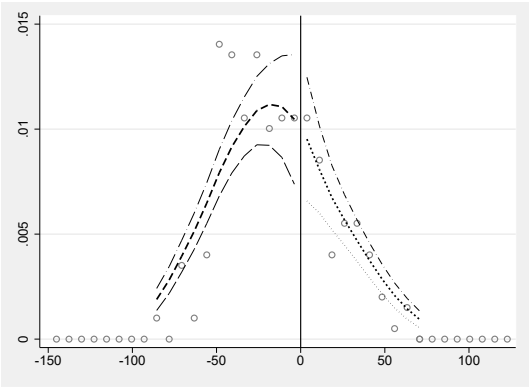


Figure A.2: Validity test II: McCrary density plot. This figure presents a McCrary plot to test whether there is a discontinuity in the margin of victory at zero.

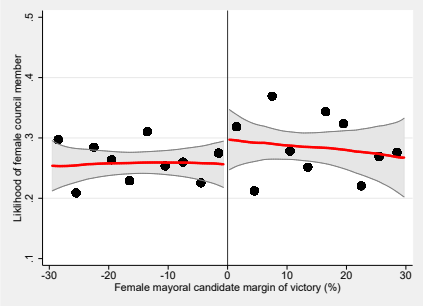


Figure A.3: Share of women among candidates elected to the council. This graph shows a RDD plot for the likelihood that a candidate elected to the council is female when the current mayor is female or male. The running variable is the margin of victory of a female candidate for the mayor's office in mixed-gender races (where the top two candidates are female and male). Observations to the right of the threshold are under a female mayor. Each dot is the local average of the gains of women in bins of three percent for the margin of victory. The solid lines are from a local linear smooth of the underlying observations. The gray-shaded area are the 95 percent confidence intervals.

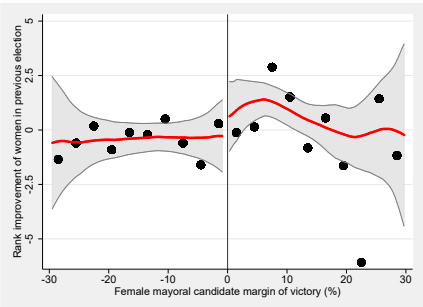
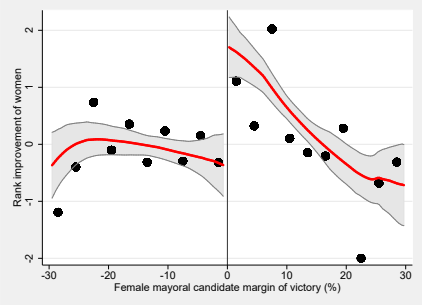
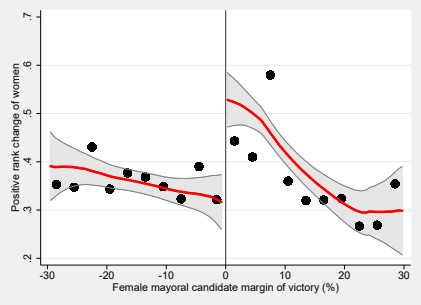


Figure A.4: Robustness test I: Rank improvement of female candidates in the previous election. This graph shows a RDD plot for the (normalized) rank improvement of female candidates in the previous council elections when the current mayor is female or male. The running variable is the margin of victory of a female candidate for the mayor's office in mixed-gender races (where the top two candidates are female and male). Observations to the right of the threshold are under a female mayor. Each dot is the local average of the gains of women in bins of three percent for the margin of victory. The solid lines are from a local linear smooth of the underlying observations. The gray-shaded area are the 95 percent confidence intervals.



(a) NONNORMALIZED RANK IMPROVEMENT OF WOMEN



(b) DUMMY FOR POSITIVE RANK IMPROVEMENT

Figure A.5: Robustness II: Alternative scalings of rank improvements. This figure shows a RDD plot with alternative scalings for rank improvements of women. Subfigure (a) uses the un-normalized (raw) rank improvement of a female council candidate and subfigure (b) a dummy for whether a female council candidate had a positive rank improvement. The running variable is the margin of victory of a female candidate for the mayor's office in mixed-gender races (where the top two candidates are female and male). Observations to the right of the threshold are under a female mayor. Each dot is the local average of the gains of women in bins of three percent for the margin of victory. The solid lines are from a local linear smooth of the underlying observations. The gray-shaded area are the 95 percent confidence intervals.

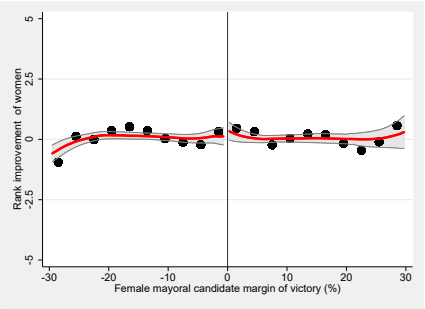


Figure A.6: Mechanism I: Predicted (normalized) rank improvement based on initial list rank. This graph shows a RDD plot relating the predicted normalized rank improvements of female council candidates based on their initial placement to the gender of the current mayor. This figure tests whether adjustments in initial rank in municipalities with female mayors lead to discontinuities in rank improvements at the threshold. The running variable is the margin of victory of a female candidate for the mayor's office in mixed-gender races (where the top two candidates are female and male). Observations to the right of the threshold are under a female mayor. Each dot is the local average of the gains of women in bins of three percent for the margin of victory. The solid lines are from a local linear smooth of the underlying observations. The gray-shaded area are the 95 percent confidence intervals.

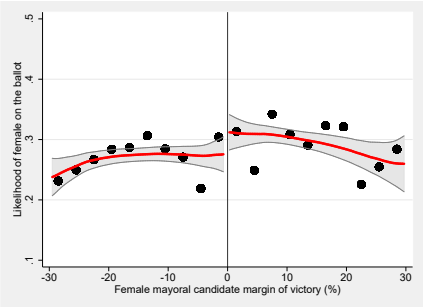
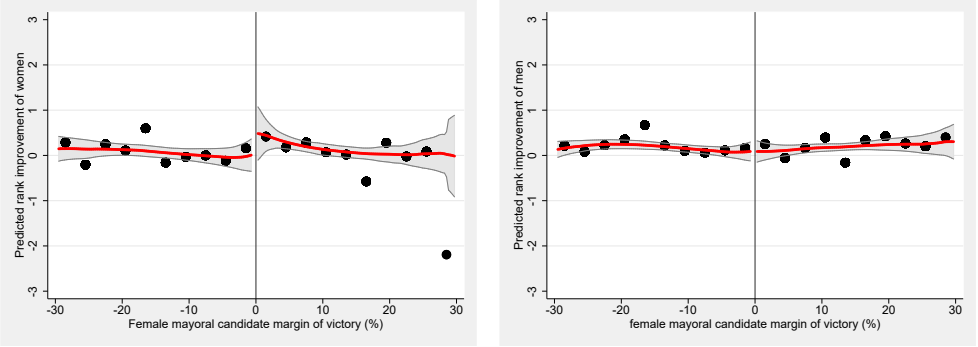


Figure A.7: Mechanism II: Share of women on party lists. This graph shows a RDD plot relating the gender of a council candidate to the gender of the current mayor. The running variable is the margin of victory of a female candidate for the mayor's office in mixed-gender races (where the top two candidates are female and male). Observations to the right of the threshold are under a female mayor. Each dot is the local average of the gains of women in bins of three percent for the margin of victory. The solid lines are from a local linear smooth of the underlying observations. The gray-shaded area are the 95 percent confidence intervals.



(a) FEMALE CANDIDATES **(b)** MALE CANDIDATES

Figure A.8: Mechanism III: Female and male candidate characteristics and rank improvements of female candidates under female mayors. These two RDD plots explore whether changes in female or male candidate characteristics can explain the rank improvements of female candidates in municipalities with female mayors. We calculate predicted (normalized) rank improvements for female and male candidates based on candidate characteristics (age, education, employment – see Table A.13 and A.14 for a full list of characteristics) and study whether these predicted rank improvements show a discontinuity at a margin of victory of zero for the female mayor candidate. Subfigure (a) pertains to female candidate characteristics and subfigure (b) to male candidate characteristics.

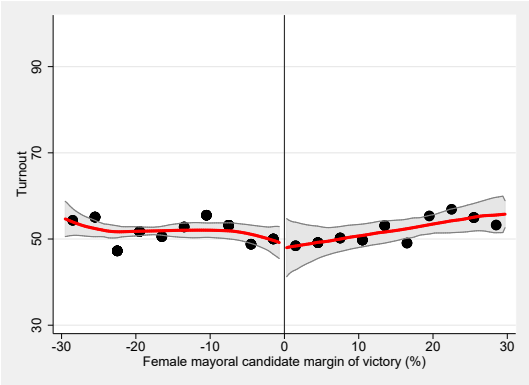


Figure A.9: Mechanism IV: Voter turnout. This figure shows a RDD plot for voter turnout. The running variable is the margin of victory of a female candidate for the mayor's office in mixed-gender races (where the top two candidates are female and male). Observations to the right of the threshold are under a female mayor. Each dot is the local average of the gains of women in bins of three percent for the margin of victory. The solid lines are from a local linear smooth of the underlying observations. The gray-shaded area are the 95 percent confidence intervals.

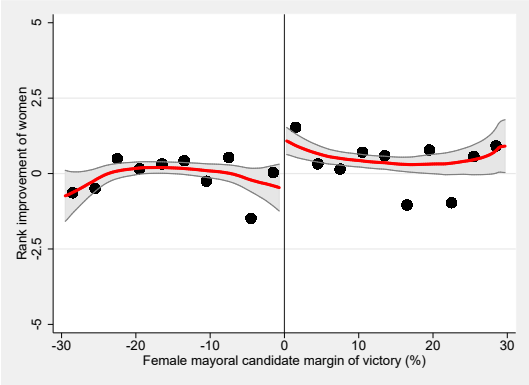


Figure A.10: Extension II: Spillovers in rank improvement to neighboring municipalities. This graph shows a RDD plot for the (normalized) rank improvement of female candidates in the council elections in neighboring municipalities when the current mayor in a given municipality i is female or male. The running variable is the margin of victory of a female candidate for the mayor's office in mixed-gender races (where the top two candidates are female and male). Observations to the right of the threshold are under a female mayor. Each dot is the local average of the gains of women in bins of three percent for the margin of victory. The solid lines are from a local linear smooth of the underlying observations. The gray-shaded area are the 95 percent confidence intervals.

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