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**Working Paper**

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IFN Working Paper, No. 1043

**Provided in Cooperation with:**

Research Institute of Industrial Economics (IFN), Stockholm

*Suggested Citation:* O'Brien, Diana Z.; Rickne, Johanna (2014) : Gender Quotas and Women's Political Leadership, IFN Working Paper, No. 1043, Research Institute of Industrial Economics (IFN), Stockholm

This Version is available at:

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# **Gender Quotas and Women's Political Leadership**

Diana Z. O'Brien and Johanna Rickne

# Gender Quotas and Women's Political Leadership

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## Abstract

Though more than 100 countries have adopted gender quotas, the impacts of these reforms on women's political leadership remain largely unknown. We exploit a quasi-experiment—a zipper quota imposed by the Swedish Social Democratic national party on municipal party groups—to examine quotas' effect on women's selection and survival as leaders within their parties. We find that those municipalities where the quota had a larger impact became more likely to appoint female leaders, but not more likely to support the reelection of women to the post. Extending this analysis, we show that the quota increased the number of qualified female candidates without increasing the diversity among women within the group. These results lend support to the notion that quotas may have an acceleration effect on women's representation in leadership posts and help dispel the myth that quotas trade short-term gains in women's descriptive representation for long-term exclusion from political power.

Keywords: gender quotas; political leadership; party leaders; political careers; electoral reforms; women and politics; subnational politics

JEL Codes: G34, G38, J48, J20

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The widespread adoption of gender quotas is one of the most important political developments of the modern era. As these reforms have spread around the world, there is increasing interest in their broader impacts (Franceschet, Krook, and Piscopo 2012). A large body of work has explored their effectiveness in increasing women's presence in legislatures worldwide (Jones 2009; Krook 2009; Matland 2006; Paxton, Hughes, and Painter 2010; Schwindt-Bayer 2009; Tripp and Kang 2008). Other research documents their influence on the representation of women's interests (Devlin and Elgie 2008; Franceschet and Piscopo 2008; Chattopadhyay and Duflo 2004; Beaman et al. 2009). Still others examine the symbolic effects of quotas, including their impact on women's career ambitions (Beaman et al. 2012) and political participation and engagement (Barnes and Burchard 2013, Kittilson and Schwindt-Bayer 2012), as well as beliefs about women's ability to govern (Alexander 2012).

Despite our growing understanding of quotas' broader impacts, their effect on women's appointment to higher political office remains unknown. In particular, no study has yet considered whether quotas help or hinder women's selection to, and survival in, leadership posts within political organizations. This is a surprising oversight, both because of the potential significance of women's position in the political hierarchy for their descriptive, substantive, and symbolic representation and the conflicting expectations generated by the literature. On the one hand, quotas may increase the supply of women eligible for leadership posts and give them more opportunities to join forces to support other women for top office. This means that quotas could have a positive "acceleration effect" on women's access to top political posts. On the other hand, both scholars and activists have linked increases in "quota women" to stigmatization and backlash effects, which means that quotas could produce a trade-off effect in which immediate gains in women's numeric representation result in their subsequent exclusion from positions of authority.

We provide the first empirical analysis of the impact of quotas on women's access to leadership appointments within political parties. We consider the possibility of acceleration and trade-off effects with respect to both the selection of new female leaders and the reappointment of women to these posts. In an extended analysis, we consider two possible mechanisms that may drive acceleration or trade-off effects: the relationship between

quotas and 1) the supply of female candidates who are qualified for top appointments, and 2) the socioeconomic diversity of the female electorate for top posts.

Our analysis focuses on a case study that offers a novel estimation strategy and compelling data. We use a quasi-experimental approach that identifies the causal impact of the zipper quota adopted by Sweden's largest political party. The empirical design addresses the concern that quotas may be adopted by parties that are more positively disposed towards women in leadership, or among those with powerful female members who aspire to these posts. We sidestep this endogeneity issue by examining a gender quota that was imposed exogenously by the national party organization on 290 local parties. Within those municipal parties, our data cover 15 years of leadership appointments after the quota was introduced in 1994, which gives us an unusually long period during which to study both the short- and long-term impacts of the reform. For each of these groups, we can identify the leader of the local party—the top candidate on its electoral ballot, who acts as its main spokesperson—as well as the socioeconomic background characteristics (i.e., sex, age, education, income, and occupation) of every politician in the municipal party group. We can use this data to determine whether quotas lead to acceleration or trade-off effects, and to assess their mediating influence on the characteristics of party groups.

We show that quotas are positively associated with parties' selection of a female leader, but that they do not influence the tenure of incumbent women. Having established these baseline effects, our analysis of the two possible intervening mechanisms shows that a larger quota impact improved the pool of qualified women, but did not increase the diversity among women in the electorate with respect to age, education, or income. We conclude that the improved quality of the candidate pool, coupled with a lack of increase in diversity, likely explains the acceleration effect in the Swedish case.

This paper helps dispel the myth that electoral affirmative action policies necessarily result in losses in women's access to power. On the contrary, quotas are likely to facilitate the promotion of women, which can in turn have tremendous symbolic and practical consequences. By improving female politicians' access to leadership positions, quotas likely have knock-on effects related to the selection of political candidates (Cheng and Tavits 2011; Niven 2010; Kittilson 2006), the appointment of ministers (Dowding and Dumont 2009), and

the content of the policy agenda (McAllister 2007; Poguntke and Webb 2005). Together, our findings contribute to the growing work on electoral reform, political representation, gender and politics, and quota impact.<sup>1</sup>

## **Quotas and Female Party Leadership**

Party leaders are “the central political figures” in advanced parliamentary democracies (Cross and Blais 2012, 1). As the single most important decision makers within their parties, they shape these organizations’ vote, office, and policy-seeking aims. Leaders, for example, constitute an important reason why citizens vote for (or against) a party (Bittner 2011; Stewart and Clarke 1992). They influence their parties’ policy positions (Harmel et al. 1995) and make (and break) governments (Laver and Schofield 1990). Leaders also wield significant influence over their copartisans’ career paths (Bille 2001; Dowding and Dumont 2009). In the Swedish municipalities considered in this study, party leaders play a key role in formulating their parties’ policy platforms and serve as their main spokespersons. The most important government position available to the party when in office, moreover, is typically reserved for the party leader. At the national level, for example, the leader of the largest coalition party generally serves as prime minister. In Swedish subnational politics, this leader acts as executive committee chairperson, which is equivalent to mayor. When in opposition, she typically serves as vice chairperson of the council board.

Given the growing power of party leaders, it is not surprising that women’s access to this position has important consequences for women’s descriptive (Cheng and Tavits 2011), substantive (Kittilson 2011), and symbolic (Beaman et al. 2009) representation. Indeed, women’s inclusion in these high-profile positions promotes—and serves as a marker of—

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<sup>1</sup> By moving beyond examining whether quotas achieve their initial aim of bringing more women into legislative politics to considering their short- and medium-term consequences for women’s access to more important posts, our paper arguably represents the next generation of quota research (Franceschet, Krook, and Piscopo 2012). We also contribute to a growing body of work that addresses the effects of quotas on the makeup of elected assemblies and party groups. Earlier studies have compared male and female politicians’ occupational and educational backgrounds (Chattopadhyay and Duflo 2004; Schwindt-Bayer 2011; Franceschet and Piscopo 2012; Bird 2003; Baltrunaite et al. 2014; Murray 2010, 2012; O’Brien 2012), prior political experience (Franceschet and Piscopo 2012, 2014; Murray 2010, 2012), and political ambition (Schwindt-Bayer 2011; Davidson-Schmich forthcoming), among other traits.

gender equality, and signals a broader change in political norms. Drawing on a wide body of theoretical and empirical research, in the following subsections we open the black box of intra-party politics and hypothesize both positive and negative effects of quotas on women's ascension to, and survival in, political leadership.

### **Acceleration Effects: Quotas Facilitating Women's Access to Power**

Gender quotas may accelerate women's access to (and survival in) the party leadership by increasing both the supply of, and demand for, female leaders. To begin with, when properly implemented, quotas augment and improve the pool of female candidates for these posts. Indeed, despite the concern that these policies bring undeserving or unambitious female candidates into political office, empirical studies typically indicate that quota women are as (or even more) qualified as their male counterparts. In Sweden, Besley et al. (2013) find that party-based gender quotas have a positive effect on men's competence, mainly due to the replacement of mediocre male leaders with more competent men. Other studies have found a positive link between (both male and female) politicians' education levels and quota implementation (Baltrunaite et al. 2014; Casas-Arce and Saiz 2011). Still others illustrate that women who are elected via quota laws are at least as efficient as legislators as their male peers, and even outpace men in some measures of competency (Catalano Weeks and Baldez 2014; Murray 2010). In both the developed and developing world, quotas have even been shown to encourage the development of sustained political ambition among the women selected to office via these policies (Geissel and Hust 2005).

Together, these works show that quotas may bring more qualified women into the candidate pool for leadership posts. This may, in turn, bolster the probability that a woman will be selected to head the party and increase the likelihood that women will remain in leadership positions. Though there has yet to be a study of the impact of quotas on leadership selection, women's numerical presence in the legislature is often associated with their access to executive posts. The more women a party has in its parliamentary delegation, for example, the more seats they hold on its national executive committees (Kittilson 2006). Similarly, the percentage of seats held by female parliamentarians is a strong predictor of the allocation of ministerial portfolios to women (Escobar-Lemon and Taylor-Robinson 2005;

Krook and O'Brien 2012; Reynolds 1999). Countries with more female legislators are also more likely to have female heads of government and state (Jalalzai 2013). As more women enter legislative politics via the quota policy, these broader trends suggest that parties will be more willing to select a female leader and that these women will likely have longer tenures in office.

Quotas may not only alter the *supply* of potential female leaders; they may also generate greater *demand* for women in these posts. The literature on "critical mass" is based on the assumption that female legislators will form coalitions once their numbers are large enough (Kanter 1977). An increase in the proportion of female legislators may produce changes in the culture, norms, and behaviors within political parties and legislative assemblies. Dahlerup (1988), for example, reasoned that a larger share of women might make the political culture more female-friendly. Empirical evidence further suggests that increasing female representation can alter the way in which women conduct politics. Female members of parliament (MPs) describe a feeling of camaraderie once their numbers are sufficiently large (Grey 2002), and women in committees are more likely to be inclusive and collaborative as the percentage of female leaders grows (Rosenthal 1998). As women's presence in legislative politics increases following quota implementation, norms may become more favorable to female leadership. Women may also be incentivized to jointly promote each other's candidacies for, and survival in, top positions.

While women's greater numbers alone may lead female politicians to work together, quotas may achieve more than just a critical mass of female representation. Franceschet and Piscopo (2008) suggest that quota policies can generate "mandate effects" that empower female legislators to represent women's interests. Following the implementation of a gender quota in Mexico, for example, female deputies were especially successful in passing legislation related to women's interests (Kerevel and Atkeson 2013). A comparison of quota and non-quota women serving in the British parliament, moreover, shows that these mandate effects—such as identifying with women as a group or feeling obligated to work for women—are more strongly felt by women selected via the positive discrimination policy (Childs and Krook 2012). As women elected via quotas sometimes express a stronger "gender consciousness" than their non-quota counterparts, they may be especially likely to band together in support of prospective or incumbent female leaders. In this way, we may



expect quotas to simultaneously enable women to seek leadership posts and to support female candidacies for these positions.

Just as women's increased presence may encourage female politicians to mobilize in support of a female leader, exposure to female legislators via quota policies can also make men more receptive to the idea of a female-led party. People in general, and men in particular, are often skeptical about women's leadership abilities. Recent empirical research has shown that gender quotas can reduce this negative perception by providing first-hand experience with female leadership. Bhavani (2009) illustrates that the selection of women as Indian village leaders via a quota policy improves women's access to this elected position even after the quota is removed. Beaman et al. (2009) show that after having two female leaders, Indian villagers' confidence in female leaders' competence improved. These exposure effects also appear to operate at the elite level. In Germany, entering parliament as a member of a quota party seems to encourage male legislators' participation in debates on women's issues, suggesting that quotas may influence male parliamentarians' attitudes and behaviors (Xydias 2014).

Gender quotas can, in some instances, dramatically increase the supply of qualified women in the candidate pool. Increasing the number of female politicians may also encourage coalitions to form in support of current (or prospective) female leaders. Mandate effects and exposure to women in politics can also reshape the demand for (or at least tolerance of) female leaders. Together, these claims suggest that introducing a gender quota may accelerate women's access to top positions within political parties and help them remain in these posts for longer periods. These positive effects will likely be stronger in localities where the quota had a greater impact on the share of elected women. In these municipalities, the quota likely generated larger changes in the candidate pool, greater opportunities for women's mobilization and coalition formation, and a stronger push for a more female-friendly culture. This leads to the first set of hypotheses relating to the acceleration effect of gender quotas on women's political representation:

**H1a Acceleration Effects — Selection:** High-impact gender quotas will increase the probability that the party will select a female leader.

**H1b Acceleration Effects —Survival:** High-impact gender quotas will increase the probability that an existing female leader will be reappointed.

### **Trade-off Effects: Quotas Hindering Women’s Access to Power**

Though quotas may increase women’s presence in elected office, in public debates it is often suggested that these policies hurt the very groups they are designed to help. In particular, critics of quotas often hold that positive discrimination undermines the status and efficacy of the targeted group(s) within the legislature. That is, women’s immediate gains in descriptive representation come at the risk of increased stigmatization that can damage their long-term career prospects.

Social stigma occurs when a majority group assigns negative and stereotypical attributes to minority group members (Link and Phelan 2001). Importantly, the theory of stigmatization predicts that the assignment of negative attributes can have tangible consequences for the lower-status group. These consequences occur not only through the dominant groups’ active and passive marginalization of the minority group, but also via internalized stigmatization by the minority group members themselves. Marginalization by men, combined with female legislators’ deteriorating self-perception, may thus limit women’s access to (and tenure in) the party leadership.

Women are particularly vulnerable to stigmatization in the political arena. Legislatures are traditionally masculine environments (Diamond 1977; Thomas 1994), and there are gender biases in the personnel, policy, and cultures of political institutions (Lovenduski 2005). Bills sponsored by women, for example, are sometimes subjected to greater scrutiny, hostility, and debate than male-sponsored legislation (Kathlene, Clarke, and Fox 1991). Male legislators also pressure women to focus on working in traditionally feminine issue areas, while maintaining their dominance in high-prestige policy domains (Schwindt-Bayer 2006). In discussions, female politicians sometimes find it difficult to make their opinions heard, and have even reported being subjected to bullying by male legislators (Galligan 2007). This observational data is broadly consistent with experimental research showing that women speak substantially less than men in most mixed-gender settings (Karpowitz, Mendelberg, and Shaker 2012).

Though all women in politics are vulnerable to stigmatization, this threat may be especially acute for female politicians elected via quota policies (Dahlerup and Freidenvall 2010, 42). Central to the debates surrounding quotas is the assumption that they promote undeserving female candidates at the expense of more meritorious male politicians (Dahlerup and Freidenvall 2010). Women who enter an organization with the help of affirmative action policies are frequently ascribed negative attributes, including accusations that they have not “earned” their post or are less competent than their non-quota counterparts (Murray 2010). Nanivadekar (2006), for example, argues that by destabilizing the status quo, quotas may generate adverse reactions that undermine their desired outcomes. Dahlerup and Freidenvall (2005, 31) further suggest that such a backlash is possible even within Nordic states, since “gender inequality is not just an historical relic, but may be (re)produced in modern settings.”

Interviews with “quota women” in both developed and developing states indeed indicate that they experience stigmatization. Franceschet and Piscopo (2008) note that several female legislators in Argentina felt that the quota law resulted in their political professionalism being called into question, which in turn undercut coalition-building opportunities. In their interviews with female British MPs, Childs and Krook (2012) similarly reveal that women in parliament—especially those elected via the Labour Party’s all-women shortlists—experienced social stigma. While some perceived these differences as narrowing over time, others experienced lingering stigmatization. Quota women in Tanzania likewise reported being treated as “second-class” MPs and feeling that their work did not receive sufficient recognition (Yoon 2011).<sup>2</sup>

Even if quota women do not internalize this stigmatization, sudden increases in the number of women in elected office can generate adverse reactions from their male colleagues. As a minority group’s presence grows, group members are likely to bolster their claims on limited political resources. To protect their power, male elites may attempt to limit the authority of female entrants and sideline women as a group. Men have been shown, for example, to become more verbally aggressive and controlling of both committee hearings (Kathlene 1994; Rosenthal 1998) and parliamentary debates (Grey 2002) following

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<sup>2</sup> These feelings of stigmatization are not universal, however (see, for example, Zetterberg 2008).

an expansion in the proportion of women in the legislature. In addition to this overt hostility, women are also marginalized as their numbers grow. Kanthak and Krause (2012) find that both men and women devalue their female colleagues as the proportion of women in the US Congress increases. In US states, women's success in passing their proposed legislation similarly diminishes as their numbers grow (Bratton 2005). Women's access to "masculine" and "powerful" committees has also been shown to decrease as the share of women in the legislature expands (Heath, Schwindt-Bayer, and Taylor-Robinson 2005; Towns 2003). Quotas may not only limit female politicians' access to power; they may also shorten their tenure in leadership posts. Weeks and Baldez (2014) demonstrate, for example, that despite their successes as legislators, Italian quota women were significantly less likely than their non-quota counterparts to be re-elected to office, since party elites placed these women in unwinnable positions on the candidate list.

Finally, the implementation of quotas may heighten the diversity among women and make it difficult for female legislators to operate as a unified group (Beckwith and Cowell-Meyers 2007). Rather than improve women's political efficacy, quotas may thus create a "diversity paradox," in which women's increased numbers create a backlash against female legislators and hinder their ability to work together (Kanthak and Krause 2012). Male legislators' active and passive marginalization of women following large increases in their representation—combined with women's internalized stigmatization and limited capacity to cooperate—can together undermine women's advancement up the political ladder following the adoption of quotas. These factors may also jeopardize female leaders' survival in these posts. Just as with the acceleration effects hypothesized above, moreover, these negative repercussions are likely to be greatest in municipalities where the quota entailed a larger increase the proportion of elected women. That is, there may be a trade-off between an increase in women's representation in the legislature and their subsequent access to leadership posts. This suggests a second set of hypotheses:

**H2a Trade-Off Effects — Selection:** High-impact gender quotas will decrease the probability that the party will appoint a female leader.

**H2b Trade-Off Effects — Survival:** High-impact gender quotas will decrease the probability of survival of an existing female leader.

## Gender Quotas and Politics in Sweden

To test these competing expectations about the effect of quotas on women's political leadership, we examine the prevalence and survival of female party leaders in 290 Swedish municipalities before and after gender quota implementation. Sweden is an ideal case for comparing our rival hypotheses, because the policy emerged from the national party; the local-level quotas can therefore be thought of as largely exogenously assigned. Sweden thus provides a quasi-experimental setting that allows us to examine the causal relationship between quotas and leadership. While the Swedish municipalities have highly similar political institutions and underlying cultural characteristics, moreover, they vary with respect to wealth, urbanization, socioeconomic, and demographic traits of the citizenry, etc. The combination of an externally mandated quota rule and subnational level data provides a unique opportunity for studying quota impact. We do not have to account for country- or region-level features that might lead to the simultaneous adoption of a quota and the promotion of female leaders, yet, we observe sufficient variation in the sample to make more generalizable claims.

One important area in which Swedish localities differ is in their attitudes towards women's representation. When the quota policy was adopted, there was a great deal of variation in local Social Democratic Party groups' behavior towards women. Some were progressive and inclusive, while others excluded women from power. Despite these large baseline differences in women's descriptive representation across municipal assemblies, the Social Democrats enjoyed high levels of quota implementation in these localities. The high variation in local parties' initial positions, combined with the near-universal implementation of electoral affirmative action policies, provides an unrivaled opportunity to observe the effects of quotas.

Two additional features further support the use of the Swedish case. First, Sweden is one of the few countries in which we can observe both the short- and medium-term consequences of quota adoption. Since the quota was implemented in 1993, a sufficient number of elections have passed to assess its effect on women's access to power. Second, the position of local party leader is an important and desirable one within local Swedish politics. Evaluating the quota's effect in these localities thus sheds light on a question of

major importance to countries around the world while circumventing the causality issues inherent in cross-national analyses.

### **Swedish Political Institutions**

Sweden's 290 municipalities vary in size from approximately 3,000 to 800,000 citizens. The electoral system is a parliamentary democracy with list proportional representation. Local legislative bodies are called municipal assemblies, and their boards are the local equivalent of the national government. Compared to other countries, these local governments have substantial economic powers. Their public expenditures account for one-fifth of Swedish GDP, and they employ over one-fifth of the country's labor force. Their main political responsibilities lie in the areas of education, elder care, and childcare, though they also handle issues such as building permits, transport, and infrastructure. Each municipality also sets its own income tax rate, which is usually around 20%.

All eight political parties represented in the national parliament are typically represented in municipal assemblies. Most municipalities also have smaller local parties, which hold an average of 2% of seats. Nominating these representatives is a highly local affair. Parties are decentralized and there is a strong culture of local autonomy. The Social Democrats' party lists, for example, are composed in three steps. First, a group of potential candidates is selected from among the party membership by internal nominations from the local party "clubs" and under the administration of a selection committee. These clubs organize party members, each of whom belongs to at least one club based on geography (neighborhood) and usually at least one fractional club (most commonly a youth, women's, or union club). In a second step, the selection committee uses these nominations to assemble a preliminary list that, in the third step, is subject to a vote in a party member meeting.

This three-step process establishes the composition of the party group and determines the top-ranked individual, the party leader, who leads the organization's political work for the next election period. Despite the involvement of many stakeholders, the party elite and elected council members heavily dominate the list composition process. Sitting leaders and council members usually control the selection committee, either through

their direct presence or indirectly through personal contacts and outsized influence. They also heavily influence the clubs' nominations.

Elections to the municipal assemblies occur at the same time as the national elections and have historically had a turnout of approximately 90% of eligible voters. They were held every third year prior to 1993, and every fourth year thereafter. While most municipal politicians maintain a "day job" on the side, the leaders of the two largest local parties are often full-time politicians, which gives the leaders a great deal of influence over the political process compared to other assembly members. Combined with the municipal governments' economic power, the position of local leader is a politically important post. Indeed, a leadership position in a large municipality is generally considered to be more influential than a rank-and-file seat in the national parliament.

### **The Quota Policy**

In 1993 the Social Democratic Party introduced zippered party lists. This policy—which requires all party lists to alternate between male and female candidates—was adopted in response to events in the national political arena. The party's previous quota policy (a target of 50% women on the ballot) had not increased numerical representation. A fall in the share of female parliamentarians between 1988 and 1991 prompted a heated debate in which a network of prominent women threatened to form a new feminist political party. They explicitly demanded that parties give women half of the political power by providing them with positions high up on the party ballots. The risk of losing both politicians and voters to the new party motivated the Social Democrats to adopt the zipper provision. Local party groups were asked to compose two separate lists of candidates, one male and one female, and then "zip" these together to produce the final list (see Figure 1).

**Figure 1.** Example of “Zipped” Ballot from Social Democrats in the 2006 Election in Ekerö Municipality

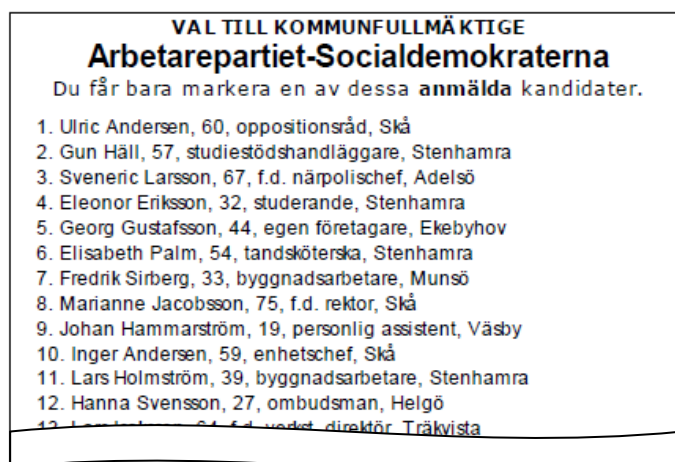
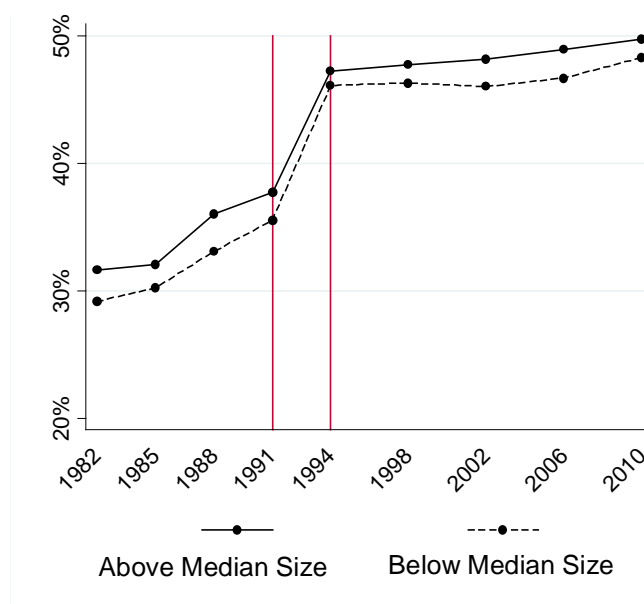


Figure 2 shows that the quota provision substantially affected women's numeric representation in the Social Democratic Party groups. It also shows that these increases were not limited to either small (rural) or large (urban) municipalities. Both above- and below-median-sized municipalities experienced a 10% jump in the average proportion of elected women in the year quotas were introduced.

**Figure 2.** Trends in Women’s Numeric Representation in Local-Level Social Democratic Party Groups



*Note:* Councils are divided by above- and below-median council size. The x-axis denotes election years and the y-axis shows the average percentage of seats on local assemblies held by women. The vertical lines mark the introduction of the zipper gender quota in 1994.



## Testing Quotas' Effects on Female Leaders' Selection and Survival

We draw on one of the most comprehensive datasets of elected officials ever constructed. By law, all Swedish electoral ballots must be registered with the country's electoral agency, and parties must report each candidate's social security number. Using this information for the seven elections held between 1988 and 2010, each politician was linked to his or her administrative records kept by Statistics Sweden. This information is collected by various Swedish public offices (including the tax authority, school authority, and population register) and is therefore not self-reported and does not contain any missing values. The dataset thus consists of highly accurate annual data on background and social circumstance for the full period for each politician listed on a Social Democratic ballot between 1988 and 2010. The breadth and depth of its coverage is unparalleled, and no other case provides such rich information on local-level politicians.

### Measuring Female Leadership and Survival

Our first dependent variable is a binary indicator that takes a value of 1 if the leader of the municipal Social Democratic Party is a woman. As previously noted, we identify the leader as the candidate occupying the top position on the party ballot.<sup>3</sup> These top-ranked candidates are almost always awarded the most desirable appointment available to each party in the municipal political hierarchy, which we verified using data on appointments following the 2006 and 2010 elections.<sup>4</sup> Our second dependent variable is a binary indicator

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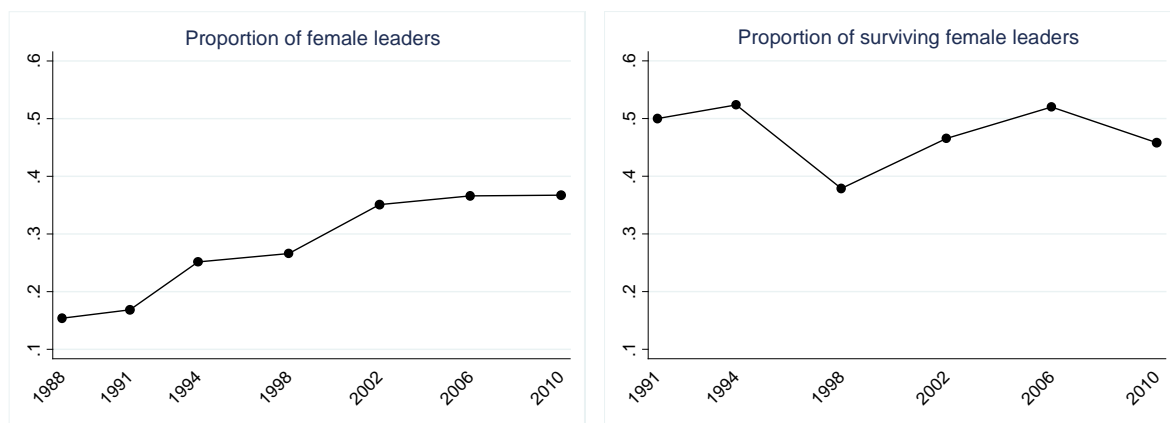
<sup>3</sup> Approximately 10% of the municipality-election period observations do not have a unique top-ranked politician, because the Social Democrats sometimes have several electoral ballots in the same municipality with different top-ranked individuals. In our main empirical analysis, we include the ambiguous cases by using the proportion of top-ranked females out of several top names. We assign the dependent variable a value of 0.5 if there are two first-ranked politicians and one is a woman, 0.33 if there is one woman among the three top-ranked individuals, etc. The results for excluding the unambiguous cases can be found in Appendix Table A4. They show that the findings are largely robust to this alternative approach.

<sup>4</sup> In nine out of ten cases, the chairperson of the municipal council board is the top-ranked politician in the largest political party of the governing majority. In eight out of ten cases, the vice chairperson is the top-ranked representative from the largest opposition party. In seven out of ten cases, when a smaller party has a seat on the municipal council board, it is occupied by their top-ranked politician.

of the leader’s survival from the last election period. It takes a value of 1 if a female leader remains in the top position on the electoral ballot, and 0 otherwise. As we wish to compare women’s tenure in leadership positions before and after quota implementation, groups with male leaders are not included in this analysis.

Figure 3 shows the time trends of the two dependent variables. The left graph shows the proportion of municipal Social Democratic parties with a female leader. It illustrates that women’s access to power has risen steadily since 1988. The right pane plots the proportion of female incumbent leaders that remains in power. Fifty percent of women remained in their posts both in the year before the quota (1991) and in the year it was introduced (1994). There was a dip in 1998, but women’s survival rate appears to rebound over the next two elections.

**Figure 3.** Selection and Survival of Female Leaders over Time



Note: The left graph plots the share of Social Democratic Party groups with a female leader, while the right graph plots the proportion of incumbent female leaders that held onto their posts in each election period.

### Modeling Strategy

To test whether the gender quota influenced both women's promotion to leadership positions and their survival in such posts, we rely on logistic regression analyses with a difference-in-difference specification.<sup>5</sup> For our dataset of Social Democratic Party groups, we estimate:

$$\eta_{m,t} = \alpha + \beta_t \Delta w_{1994-1991,m} * Election_{year_t} + \gamma_t Election_{year_t} + \theta_m Mun_m, \quad (1)$$

<sup>5</sup> We also include the OLS results in Appendix Table A3.

where  $\eta_{m,t} = \log\left(\frac{p_{m,t}}{1-p_{m,t}}\right)$  is the transformed expectation,  $p_{m,t} = P(\text{Lead}_{m,t} = 1)$ , and  $\text{Lead}_{m,t}$  represents each of the two dependent variables. The treatment  $\Delta w_{1994-1991,m}$  measures the size of the quota's impact in each municipality. It captures the change in the proportion of elected women between the 1994 and 1991 elections, minus the time trend in the proportion of elected women. This trend adjustment allows us to distinguish between the underlying process of women's increasing presence in the party groups over time (i.e., the increases that would have happened even without the quota) and the quota's impact on women's numerical representation. We compute the linear trend in the share of women in each party group between 1982 and 1991, and then subtract this trend from the change in the share of women from 1991–94. The resulting adjusted shift in the proportion of women in the quota year captures the inflow of "quota women."

The quota impact is interacted with a dummy variable for each election between 1988 and 2010:  $\text{Election\_year}_t$ . The 1991 election is used as the reference category. The key vector of estimates,  $\beta_t$ , captures the difference in the log odds of the response variable in the year in question compared to the reference year (1991) for a unit increase in quota impact. Our specification includes fixed effects for each election year, denoted by  $\text{Election\_year}_t$ , to ensure that we hold constant any time trend(s) in the averages of our outcome variables across all municipalities. We also include fixed effects for each municipality ( $\text{Mun}_m$ ), so that we estimate  $\beta_t$  based on variation in the presence and survival of female leaders within a specific municipality and over time. These fixed effects account for time-invariant municipal-level factors that might influence parties' (re)selection of a female leader.

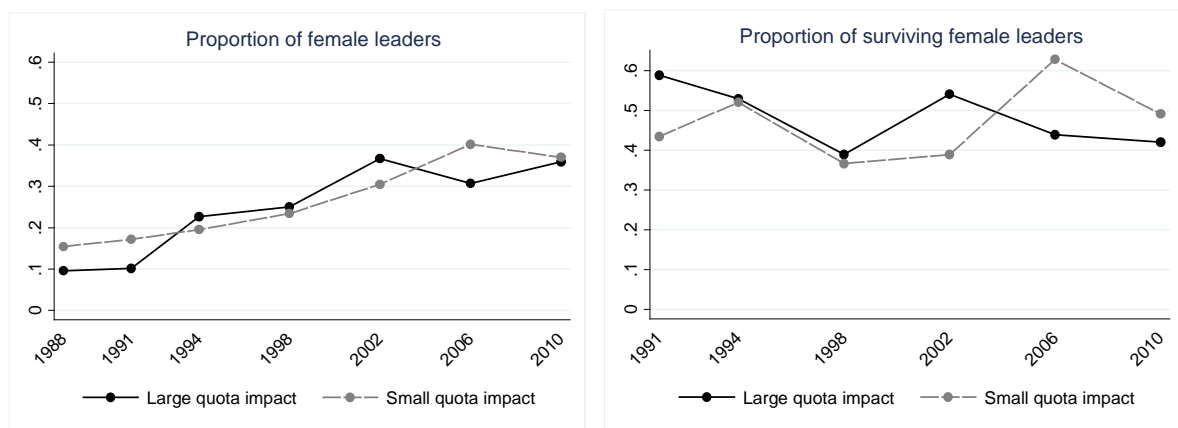
In essence, even though all municipalities receive the "treatment" of a gender quota in the 1994 election, this treatment is not constant across localities. In some municipalities, the Social Democratic Party group was already near parity before the quota, while in others it fell far short of this goal. Our regression estimates the relationship between the quota impact and the probability that 1) the party group will select a female leader, and 2) the incumbent female leader will remain in the post. Since we use a treatment that the national party board imposed on the municipal parties, we view the

analysis as a quasi-experiment that can identify a causal link between the gender quota and women's political leadership.

### Results: Quota Impacts on Female Leaders' Selection and Survival

Figure 4 depicts the two dependent variables over time, distinguishing between municipalities based on quota impact. The solid black line represents municipalities in which the quota had a greater effect on the proportion of women elected (above the median). The gray dashed line represents municipalities in which the quota had a lesser influence (below the median).<sup>6</sup>

**Figure 4.** Selection and Survival of Female Leaders by Quota Impact



*Note:* Proportions of female leaders (left) and proportions of surviving female leaders (right) by median quota impact and over time.

The graph of the proportion of female leaders (left) shows that the percentage of women topping the party list was initially smaller in the municipalities that subsequently experienced quota impacts that were above the median. That is, before the quota there were fewer female leaders in municipalities where women's numerical representation was lower (black line). In the year the quota was introduced (1994), the municipalities in which the quota had a high impact (black line) converge towards municipalities in which women were already well represented in local party groups (gray line). This suggests that female

<sup>6</sup> The cut-off for a high- versus low-impact quota is subjective. In the main figures, we distinguish between districts that are above and below the median change in women's representation following quota implementation. In Appendix Figure A1, we show the same plot but use the first and fourth quartiles of the quota impact variable to classify localities as either high- or low-impact party groups.

leadership increased in the high-impact municipalities relative to the low-impact municipalities.

The second graph in Figure 4 shows the proportions of incumbent female leaders that remained in power in the two sets of municipalities. In 1994 the proportions appear to converge to the same number, with an increase in the share of surviving female leaders where the quota impact was small, and a drop in places with large quota effects. Over time, however, no consistent trend emerges. While in some years women are more likely to survive in higher-impact municipalities, in other years female leaders do better in localities where the quota had a lesser effect.

Table 1 shows the results from estimating our difference-in-difference model in Equation 1. In Columns 1 and 2 we present the findings using the full sample of party groups. In Columns 3 and 4 we exclude the minority of party groups that did not fully comply with the gender quota (i.e., the party group was not at least 45% female in 1994).<sup>7</sup> In each of the two samples we estimate the regression model for the probability that a party group will select a female leader (Columns 1 and 3) and the probability that an incumbent female leaders will keep her position (Columns 2 and 4).

First, we focus on the results for the ascension of female leaders. The top row of the table presents the estimates for the pre-trends. The interaction terms between the 1988 dummy and the quota impact are not significant, which shows that the municipal time trends in female leadership before quota implementation are not correlated with our treatment. In other words, we are confident that our treatment effect does not capture differential time trends in female leadership that began before the quota was introduced.

In the following rows, the post-quota coefficients are universally positive and statistically significant (at the  $\alpha = 0.10$  level). The gender quota clearly has a positive effect on women's access to leadership posts. In municipalities where the quota impact was 10%—i.e., a trend-adjusted shift in the proportion of elected women of 10% between 1991 and

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<sup>7</sup> We opted for 45%—rather than perfect parity—because party groups may have a man as the first-ranked politician and an uneven number of representatives, giving men an advantage even under perfect "zipping."

1994—the odds of having a female leader increased by 50% in 1994 compared to in 1991.<sup>8</sup> As the positive and significant estimates for all elections between 1994 and 2010 demonstrate, moreover, this positive effect was neither short-lived nor temporary. The quota both immediately and permanently improved women's access to leadership posts in municipalities where fewer women had previously held elected office compared to municipalities with higher levels of women's numerical representation prior to quota implementation.

**Table 1.** Logistic Regression Models (with Difference-in-Difference Estimation) of Quota Impact on Female Leader Selection and Survival

1991 = Reference	Including Non-compliers		Excluding Non-compliers	
	Female Leader Selection	Female Leader Survival	Female Leader Selection	Female Leader Survival
1988* Quota Impact	2.14 (2.20)		1.43 (2.35)	
1994* Quota Impact	3.93* (2.05)	4.53 (4.75)	4.33* (2.21)	3.61 (4.77)
1998* Quota Impact	4.27** (2.05)	-0.69 (4.87)	3.79* (2.22)	0.23 (4.87)
2002* Quota Impact	6.33*** (2.03)	2.29 (5.53)	6.24*** (2.20)	5.54 (5.78)
2006* Quota Impact	3.87* (2.02)	-3.36 (5.34)	3.24 (2.21)	-1.18 (5.51)
2010* Quota Impact	5.28*** (2.02)	-4.16 (5.57)	4.14* (2.19)	-4.43 (5.89)
Observations	1,521	265	1,200	213

Notes: Robust standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. All regressions include municipality and year fixed effects.

Next, we examine the results for female leaders' survival in leadership posts from one election to the next. In contrast to the selection of female leaders, the findings for the post-quota years show that this outcome was not affected by the quota's impact.<sup>9</sup> Women are no more (or less) likely to continue serving as leaders in municipalities where the quota

<sup>8</sup> To arrive at this interpretation, we take the exponential of the estimated odds ratio (3.93) multiplied by the desired size of the quota impact (0.1), which is  $e^{(3.93*0.1)}$ . This gives that the odds of having a female leader increased by a factor of 1.48, a 50% increase in the odds.

<sup>9</sup> In this case, our data range does not allow us to test the identifying assumption of common trends in the dependent variable before quota implementation.

had a larger effect on women's representation than in those in which the policy had little influence.<sup>10</sup>

Taken together, the results of the analysis in this section not only refute any concern that quotas have a negative effect on women's political leadership; they also support the idea that quotas accelerate women's advancement in the political hierarchy. Consistent with H1a, we find that quota implementation facilitated women's access to leadership positions in Swedish municipalities. At the same time, and contrary to H1b, though quotas accelerate women's initial access to the party leadership, they do not help female leaders survive in these posts. Thus, while quotas positively impact women's initial selection as party leaders, they cannot be relied upon to extend their tenure in these positions.

## **Mechanisms Influencing the Acceleration Effect**

Thus far, we have theorized and provided empirical support for a previously unrecognized impact of quota policies: their acceleration effect on women's access to leadership posts. Extending this analysis, we now explore two of the possible mechanisms behind this result. We use our rich dataset to examine the relationship between quota impact and 1) the quality of the women (and men) in the candidate pool for leadership positions, and 2) the socioeconomic diversity of the electorate for this post. Though these are clearly not the sole mechanisms shaping the impact of quotas, they represent an important subset of the mediating factors discussed in the literature.<sup>11</sup>

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<sup>10</sup> One caveat with these results is the small sample size. The number of female leaders before the quota is quite small, especially in places where female representation was also low (recall Figure 4). As a consequence, estimations rely mostly on data from small-impact municipalities. In turn, this reduces the variation in the treatment variable, which could lead to non-significant estimates. At the same time, a careful reading of the cross-national literature on female leaders suggests that there is unlikely to be another case in which we could find more incumbent female leaders in countries or municipalities that introduce quotas. As this is the best and most comprehensive dataset available to study this topic, we consider this analysis to be of interest, but keep the small sample size in mind when we interpret the results.

<sup>11</sup> Other mediating factors include closely related phenomenon, such as mandate effects, stigmatization, changing attitudes and norms of representation among voters and politicians, and backlash from party elites, among others. Although our analysis of two potential mediating factors cannot causally determine a mechanism behind our baseline results—and requires the operationalization of thorny concepts such as

We begin with the first of our two mechanisms: the supply of qualified women in the candidate pool for the top post. If a quota bolsters the supply of “well-qualified” potential female leaders, then it is likely to have a positive impact on the ascension of female leaders. If it dilutes the female candidate pool, it may have no (or even negative) effects. As in most parties around the world, the Swedish Social Democrats recruit their leaders from within the organization and typically draw on politicians who are currently serving as elected members of the political body (see, e.g., Norris 1997; Hagevi 1994). In our case, the local party groups look for leaders among the “qualified” politicians currently holding seats in the municipal council. If the quota increases (decreases) the number of women who are perceived as having sought-after leadership characteristics relative to men, then it is likely to increase (decrease) their access to the leadership post.

There are, of course, inherent challenges in defining and measuring the qualifications for political leadership. The characteristics that parties prize vary, and some of these qualities are intangible or difficult to measure. Indeed, the very notion of a “qualified candidate” is not only subjective, but also gendered. Party elites sometimes systematically devalue women’s life experiences, skills, and personality traits, such that the concept of “merit” is biased in favor of men. While scholars widely recognize the limits of “merit,” in practice, prospective party leaders often have to meet a set of informal baseline requirements.

Given our focus on the Swedish Social Democrats, we use two binary indicators of qualifications for office. The first measure defines qualified prospective leaders as those who have experience in the party’s “pipeline professions”; that is, 1) previously or currently working in public administration, 2) previously or currently employed by a trade union, or 3) previously serving as a parliamentarian.<sup>12</sup> The experiences gained in each of these occupations give prospective party leaders skills that are especially useful for the top post.

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qualifications and socioeconomic diversity—we strongly believe that it furthers our understanding of the effect of quotas on women’s access to, and survival in, the party leadership.

<sup>12</sup> In previous work, pipeline professions usually include some subset of lawyers, business professionals, professors, educators, public sector workers, and health professionals (see, e.g., Schwindt-Bayer 2011; Franceschet and Piscopo 2012; Lawless and Fox 2005), though Baltrunaite et al. (2014) use a slightly broader categorization scheme.



These professions also lend credibility to the candidate and are likely to be looked upon favorably by other party group members.<sup>13</sup>

The second indicator extends the first measure to include politicians who have completed a tertiary degree, irrespective of their subsequent career choice.<sup>14</sup> Higher education is the most common measure of politician "quality" or "competence" in the academic literature. It is often argued that it captures enhanced practical skills, signaling ability, and civic engagement (see, e.g., Galasso and Nannicini 2011; Schwindt-Bayer 2011; Franceschet and Piscopo 2012).

For the two qualification measures, we compute the *number* of qualified Social Democratic women elected to the municipal assembly in each election as well as the *share* of qualified elected female politicians. We also compute the *difference* in the number of qualified male and female politicians by subtracting the number of qualified men from the number of qualified women. For all measures, we drop the first-ranked politician to ensure that we do not include the current leader in our set of prospective leaders.

We next consider the second possible mechanism behind our baseline results: the socioeconomic homogeneity of the selectorate for the leadership post. Just as quotas can change the supply of candidates for leadership positions, they may also fundamentally alter the demand for female leaders. By bringing many more women into elected office, high-impact quotas have the potential to increase diversity among female politicians. It has been argued, in turn, that this diversity can undercut women's capacity to identify and implement a shared agenda. In particular, quotas that increased diversity among women in the selectorate may limit their capacity to mobilize in support of (current or prospective) female leaders.

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<sup>13</sup> Because our data reaches back to 1988, we are able to capture at least part of our politicians' earlier work experience. As the vast majority of municipal politicians hold their political position part time, we can also account for their current occupation in our measurements.

<sup>14</sup> In addition to education, we also experimented with adding the qualification constraint that a politician is 40–55 years old. Since the results were nearly identical, we chose the less restrictive versions of the qualification measures.

Though measuring the selectorate for the party leader is not a straightforward task, it is clear that elected politicians play an important role in this process in local Social Democratic Party groups. We use these groups to approximate the selectorates and examine three key socioeconomic dimensions: age, years of education, and income. Although there are innumerable dimensions on which women can differ, these factors are salient to organizing among elected female officials because they represent both generational and class divides. For all three variables, we compute two measures of diversity: the *standard deviation* and the *coefficient of variation* (that is, the ratio of the standard deviation to the mean).

### **Results: Quota Impacts on Qualifications and Diversity**

To determine whether the quota affected the supply of qualified female candidates and the socioeconomic diversity of the elected women, we re-estimated our baseline regression (1) using our measures of qualifications and diversity as dependent variables. The results in Table 2 show broadly positive quota effects on the supply of qualified women. Though the quota's impact on the number and share of women in pipeline professions is modest (see Columns 1–2), the difference in the numbers of qualified women and men (Column 3) is significant. The quota raised the number of qualified women relative to qualified men in the two elections immediately after implementation (1994 and 1998).

For the second qualification measure—which includes tertiary education—the estimates are all positive and most are highly significant (see Columns 4–6). Compared to municipalities with many female assembly members before the quota, party groups that were forced to increase their share of women also witnessed an increase in both the number and share of qualified prospective female leaders. These high-impact localities also experienced a large inflow of qualified women vis-à-vis the number of qualified men.

**Table 2.** OLS Regression Model (with Difference-in-Difference Estimation) of Quota Impact on Qualifications of Women in Party Groups

1991 = Reference	Qualification Measure 1: Pipeline Professions			Qualification Measure 2: Pipeline Professions plus Tertiary Education		
	Number	Share	Number Diff.	Number	Share	Number Diff.
1994*Quota Impact	0.51 (1.23)	0.07 (0.07)	4.22*** (1.22)	0.52 (1.54)	0.15* (0.08)	9.18*** (1.48)
1998* Quota Impact	-0.11 (1.18)	0.04 (0.08)	3.52*** (1.16)	2.40* (1.42)	0.24*** (0.08)	8.42*** (1.47)
2002* Quota Impact	0.18 (1.18)	0.12* (0.07)	1.87 (1.30)	2.08 (1.44)	0.24*** (0.08)	7.14*** (1.51)
2006* Quota Impact	-0.94 (1.24)	-0.03 (0.08)	0.70 (1.18)	2.00 (1.45)	0.15* (0.08)	5.62*** (1.51)
2010* Quota Impact	0.11 (1.26)	0.01 (0.08)	1.96 (1.20)	4.01*** (1.54)	0.26*** (0.09)	7.83*** (1.53)
Observations	1,698	1,698	1,696	1,698	1,698	1,696
R-squared	0.78	0.68	0.47	0.82	0.73	0.47

*Note:* Standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. All regressions include municipality and year fixed effects.

Table 3 presents the results from our models of quota impact on socioeconomic diversity among female politicians. In virtually all cases, we find null effects of the quota on our diversity measures. The estimates are non-significant for age, education, and income level. In the case of the Swedish Social Democrats, the sudden changes in descriptive representation did not lead to greater variation in the types of women entering office.

**Table 3.** OLS Regression Model (with Difference-in-Difference Estimation) of Quota Impact on Diversity of Women in Party Groups

1991 = Reference	Coefficient of variation			Standard deviation		
	Age	Educ.	Income	Age	Educ.	Income
1994* Quota Impact	0.02 (0.06)	-0.03 (0.05)	0.14 (0.18)	-0.08 (2.44)	-0.20 (0.65)	8.34 (28.87)
1998* Quota Impact	0.08 (0.05)	-0.01 (0.05)	0.12 (0.18)	3.39 (2.31)	0.22 (0.66)	-2.88 (30.51)
2002* Quota Impact	0.07 (0.06)	-0.05 (0.06)	0.09 (0.18)	3.23 (2.41)	-0.19 (0.66)	4.21 (27.23)
2006* Quota Impact	0.03 (0.06)	-0.01 (0.06)	0.30* (0.18)	0.82 (2.57)	0.15 (0.70)	38.81 (37.31)
2010* Quota Impact	-0.02 (0.06)	0.04 (0.06)	0.10 (0.20)	-0.52 (2.77)	0.80 (0.69)	-27.30 (32.89)
Observations	1,687	1,687	1,687	1,687	1,687	1,687
R-squared	0.36	0.40	0.32	0.39	0.41	0.55

*Note:* Robust standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. All regressions include municipality and year fixed effects. The units of measurement are year (for the age variable), years of education, and yearly income in 1000s of Swedish Kronor.

As expected, our extended analysis of women’s qualifications and diversity helps us better understand our baseline finding from the Swedish case. Here, higher-impact quotas did not bring less-qualified women into the municipal assemblies. On the contrary, they allowed more educated women to enter politics. In the period immediately following the implementation of the quota, moreover, these policies resulted in an increased share of women from pipeline professions compared to men. While the quota arguably increased the pool of qualified prospective female leaders in high-impact localities, it did not generate more diversity among women, such that it became more difficult for them to mobilize. Thus it may have been easier for women in these districts to move into leadership posts.

## Conclusions

While gender quotas have become increasingly popular, electoral affirmative action remains a controversial strategy for increasing women’s presence in elected office. Central to the debates surrounding these policies are questions about whether quotas help or hurt women’s long-term political prospects. Proponents argue that quotas benefit female politicians, in particular by bringing more “well-qualified” women into elected office. Opponents claim that affirmative action triggers doubts about women's competence among

politicians of both sexes, and results in a backlash among elite groups that influence appointments to top positions.

This paper is the first to empirically identify a causal relationship between gender quotas and women's political leadership. We find that gender quotas have a positive impact on women's ascension to leadership posts, but have no effect (either positive or negative) on the length of female leaders' tenures. Our results generally support the notion of quotas' *acceleration effects*, while rejecting the idea of a *trade-off effect*. These findings, in turn, largely refute claims that gender quotas limit women's descriptive and substantive representation by raising barriers to female politicians' career advancement.

To shed further light on the baseline findings, we also examined two mechanisms that may be driving these results. We found that the quota strengthened the pool of female candidates for the leadership post, while leaving their generational, educational, and income diversity unchanged. The increase in qualified female candidates, coupled with the stability in women's ability to mobilize support for female leaders, are likely explanations of the acceleration effect.

Together, these results extend our understanding of the impact of quotas by showing that these policies can help minorities attain political leadership positions. Our conclusions further speak to advocates for women's political representation. On the one hand, evidence of an acceleration effect provides another argument in support of electoral affirmative action policies and suggests that they may be an effective tool for those concerned with women's access to executive office. On the other hand, we also show that, when faced with a less-qualified or more heterogeneous female party group, activists may not be able to rely on quotas to address women's continued exclusion from leadership posts. Moreover, quotas do not appear to increase female leaders' likelihood of remaining in these positions.

Building on these findings, future research should examine whether similar results hold for other countries, political systems, quota regimes, and positions. These studies should also examine the downstream effects of quotas on women's access to political leadership posts, including the content of the political process, coalition formation with other parties, and electoral performance. As power is progressively moving out of

parliamentary parties and into the executive, these broader consequences are increasingly relevant.

Finally, to fully assess the impact of quotas on women's long-term access to power, we hope that future research will expand our understanding of the mechanisms behind acceleration (or trade-off) effects. We expect that quota provisions that have different repercussions for the quality and diversity of women in the party group may result in different outcomes related to the selection and survival of female leaders. Indeed, understanding the effects of quotas on the socioeconomic composition of the parliamentary party—as well as its rules, practices, and norms (Krook 2010; Krook and Mackay 2011)—will likely be key for understanding the broader impacts of these policies. We thus hope that our effort to explore these mechanisms will be useful to others, and that this paper will represent a first step in a new wave of scholarship on the impact of quotas worldwide.

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## Appendix A.

Table A1 shows summary statistics for party groups with female and male leaders and over time. The right-most column lists the results of significance tests comparing the means of each characteristic between these two groups. Focusing on the bottom rows of the table, where all election years are pooled, there are clear and significant gender differences for all variables.

**Table A1.** Summary Statistics for Party Groups with Female and Male Leaders

	Female Leader	Male Leader	P-value from two-sided significance test of equal means or equal proportions
<b>ELECTION YEAR 1988</b>			
Nr of Observations	33	243	
Municipality population	22 170	31 538	0.35
Group Size	17.7	21.1	0.00
Share of Women	0.36	0.36	0.98
Age (yrs)	47.4	48.1	0.14
Education (yrs)	11.65	11.0	0.00
<b>ELECTION YEAR 2010</b>			
Nr of Observations	104	186	
Municipality population	27 525	33 915	0.39
Group Size	15.9	15.8	0.81
Share of Women	0.47	0.51	0.00
Age (yrs)	52.2	51.83	0.39
Education (yrs)	12.9	12.71	0.12
<b>ELECTION YEARS 1988- 2010</b>			
Nr of Observations	500	1 318	
Municipality population	23 383	33 224	0.00
Group Size	16.8	18.7	0.00
Share of Women	0.44	0.45	0.02
Age (yrs)	50.44	49.4	0.00
Education (yrs)	12.3	11.9	0.00

Women appear to lead in both smaller municipalities and party groups. They are also more likely to come to power in local parties that are slightly more male,<sup>15</sup> and in groups with younger and better-educated members. In the case of both age and education, the differences in these characteristics were statistically significant in 1988 but not in 2010.

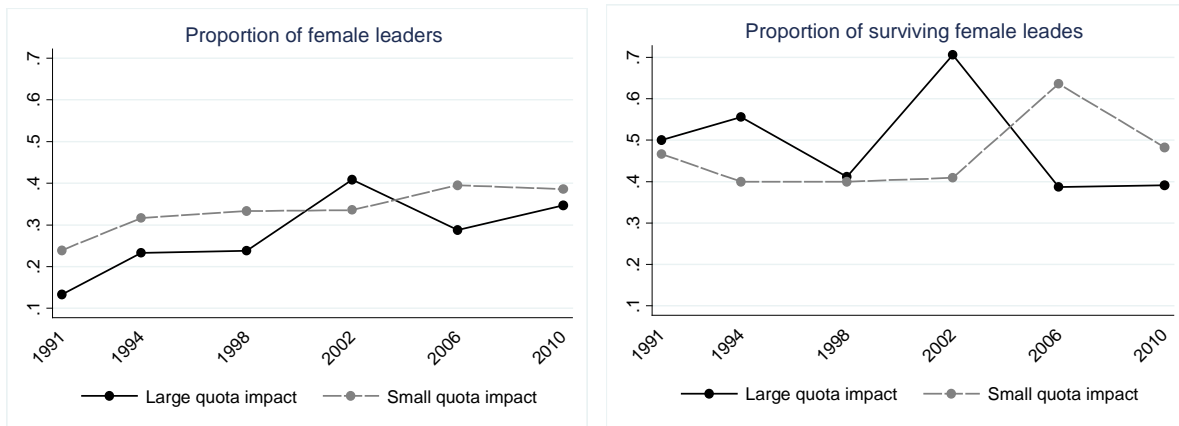
Table A2 provides descriptive statistics for leaders' socioeconomic characteristics. As compared to their male counterparts, female leaders are younger, more likely to have completed a tertiary education degree, less likely to be married, and more likely to be divorced. With the exception of age, these gender differences largely reflect the underlying demographics of the Swedish population.

**Table A2.** Summary Statistics for Male and Female Leaders

	Female Leader	Male Leader	P-value from t-test for equal means
<b>ELECTION YEAR 1988</b>			
Nr of Observations	33	243	
Education (yrs)	13.2	11.7	0.02
Age (yrs)	48	52.5	0.00
<b>ELECTION YEAR 2010</b>			
Nr of Observations	104	186	
Education (yrs)	14.1	13.2	0.00
Age (yrs)	51.2	51.7	0.73
No of Children	0.68	0.66	0.86
Married (share)	0.63	0.69	0.25
Divorced (share)	0.16	0.12	0.26
Experience (periods)	3.25	3.33	0.75
<b>ELECTION YEARS 1988-2010</b>			
Nr of Observations	500	1 318	
Education (yrs)	13.6	12.2	0.00
Age (yrs)	50.8	52.4	0.00
No of Children	0.51	0.53	0.16
Married (share)	0.62	0.67	0.04
Divorced (share)	0.16	0.08	0.00

<sup>15</sup> The top-ranked politician is excluded when computing this group average.

**Figure 1A.** Proportions of Female Leaders Selected and Surviving in Lower (First Quartile) and Higher (Fourth Quartile) Impact Municipalities over Time



**Table A3.** OLS Regression Results from Difference-in-Difference Estimation of Quota Impact on Female Leadership and Leader Survival

1991 = Reference	Including noncompliers		Excluding noncompliers	
	Female Leader	Female Leader Survival	Female Leader	Female Leader Survival
1988* Quota Impact	0.15 (0.32)		0.01 (0.35)	
1994* Quota Impact	0.50 (0.34)	1.30 (1.25)	0.58 (0.37)	1.05 (1.31)
1998* Quota Impact	0.56 (0.35)	-0.03 (1.34)	0.48 (0.38)	0.15 (1.37)
2002* Quota Impact	0.95** (0.38)	0.77 (1.56)	0.94** (0.41)	1.49 (1.61)
2006* Quota Impact	0.41 (0.39)	-0.77 (1.65)	0.27 (0.42)	-0.23 (1.76)
2010* Quota Impact	0.71* (0.38)	-0.98 (1.73)	0.44 (0.40)	-1.22 (1.84)
Observations	1,535	265	1,214	213
R-squared	0.23	0.18	0.23	0.19

Notes: Robust standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. All regressions include municipality and year fixed effects.

**Table A4.** Logistic Regression Results from Difference-in-Difference Estimation of Quota Impact on Female Leadership

1991 = Reference	Including Non-compliers	Excluding Non-compliers
1988* Quota Impact	0.91 (2.56)	-0.12 (2.79)
1994* Quota Impact	3.99* (2.29)	4.23* (2.51)
1998* Quota Impact	4.51** (2.26)	4.02 (2.49)
2002* Quota Impact	5.85*** (2.22)	5.73** (2.46)
2006* Quota Impact	3.78* (2.21)	2.95 (2.45)
2010* Quota Impact	4.70** (2.21)	3.39 (2.44)
Observations	1,375	1,075

*Notes:* Here, the sample includes only party groups with a unique top-ranked individual. Robust standard errors in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . All regressions include municipality and year fixed effects.