Does the Type of Quota Matter? Comparing the Public Goods Effects of Mandatory and Voluntary Gender Quotas

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Abstract

To address the global under-representation of women in legislative bodies, countries have included gender quotas in their political systems. It is ambiguous what type of gender quota will be more effective in altering public good provision. To answer this, I extend the citizen-candidate model and show whether a mandated or voluntary quota can implement a policy more in line with women's preferences. Using the implementation of mandated and voluntary gender quotas for political office as natural experiments, I empirically investigate how women elected through different types of gender quotas alter the provision of public goods. The provision of sewage systems, paved roads and schools increased due to the mandatory quota, and only school provision increased resulting from the voluntary quota. Areas impacted by the mandated quota had public goods provisions gaps close and surpassed areas unaffected by the quota. While more public goods are provided, there is political backlash, driven by male constituents, resulting from both quotas.

Keywords: female politicians, gender quotas, public goods, mandated quota, voluntary quota, governance, Namibia

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1 Introduction

Women are underrepresented in legislatures, and the world is still far from achieving equal gender representation. Women comprised 9.8% of seats in legislatures worldwide in 1990 which increased to 24.9% by 2019. To address this imbalance, over 100 countries worldwide have incorporated a gender quota into their political system (Clots-Figueras and Iyer 2023). The under-representation of women in political office adversely impacts communities. Increasing women's political representation has improved economic growth (Baskaran et al. 2024) and investments in children (Clots-Figueras 2012; Miller 2008) while decreasing corruption (Dollar, Fisman, and Gatti 2001; Swamy et al. 2001). When elected to office, female politicians provide more drinking water, roads, and sanitation to their constituents (Chaturvedi, Das, and Mahajan 2024; Chattopadhyay and Duflo 2004). Female politicians alter policy priorities and spend more money on education and healthcare while decreasing military spending (Clayton and Zetterberg 2018). While gender quotas are a widely implemented policy, it is unclear what type of quota is most effective to increase public goods provision: a legally mandated or voluntarily imposed gender quota. No study has examined whether the type of quota matters for public good provision. Most countries choose to implement only one type of quota so comparing the types of quotas is challenging.

This paper answers how two different types of gender quotas implemented in one country affects the provision of public goods. As nations explore how to promote gender equal representation, understanding the impacts of different types of quotas is critical to inform public policy in an effort to promote economic development and growth. I will examine a mandated candidate list quota and a voluntary political party quota in this paper. Namibia provides a unique opportunity for the comparison of two quotas within one country. Namibia implemented a mandated gender quota at the local level in 1998 which required a certain number of women to be included in each party's list of candidates. The mandated quota increased the proportion of women on local councils by eight percentage points. In 2014, the South West Africa People's Organization (SWAPO) announced that a "zipper" gender quota would be implemented for their party list for the 2015 National Assembly election. This voluntary quota increased the proportion of women in the National Assembly by 17.9 percentage points.

Ex ante, it is not obvious whether a mandated or a voluntary gender quota would be more effective to increase the provision of public goods. To address this question, I extend the citizen-candidate model originally introduced in Besley and Coate (1997) and Osborne and Slivinski (1996). There are a few reasons why one may or may not expect public policy to change as a result of a quota. While a mandated quota requires every party to nominate a certain number of women on their lists, parties might place women at the bottom of lists or in elections they are likely to lose (Casas-Arce and Saiz 2015). Under a voluntary quota, women elected have the full support of party leadership making them more effective legislatures. On the other hand, voluntary quotas may not be substantive if the quota formalizes the status quo. Additionally, voluntary quotas are not legally binding so parties may not actually follow them. My extension of the citizen-candidate model alters the way the final policy is implemented. The policy outcome is a weighted average of the elected men's and women's policy preferences. Quotas change the weight given to women's preferences. In certain situations, both a voluntary and mandatory quota can provide more "woman-friendly" policies depending on the size of the respective quota. In the case of Namibia, my extension predicts the mandated quota will change policy to be in line with women's preferences more than the voluntary quota.

I exploit the 1998 mandated quota and the 2015 voluntary quota as natural experiments to estimate the effect of the two quotas on public good provision. I rely on nine geocoded rounds of the Afrobarometer Surveys from Namibia, which provide information on the provision of infrastructure and public services such as paved roads, schools, and health centers. To estimate the impact of the mandated quota, I compare electoral constituencies where constituencies had met the 1998 quota in 1992, and the average list position of the women was lower than the median to constituencies that did not meet the 1998 quota or had a lower placement of women on their lists. For the voluntary quota, I compare constituencies "affected" and "unaffected" by the voluntary quota, as defined by gender norms surrounding female politicians. Using a difference-in-differences identification strategy, I find the mandated quota increases the provision of sewage systems and paved roads. Both the mandated and voluntary quotas caused increased school provision. Prior to the mandated quota, areas impacted by the quota had lower provision of public goods. These

areas where more women were elected saw the gaps in goods provision close and surpassed their counterparts that were not affected by the quota.

This paper explores mechanisms to determine the reason for the change in the provision of public goods. Using digitized biographic and legislative data for the universe of Namibian National Assembly politicians and citizen level policy preference data, I find the change in public good provision is due to women having different policy preferences than men. Women prefer education and health policy, whereas men prioritize national defense and agriculture policy. This study then goes on to examine how politicians and political institutions are perceived by their constituents following the implementation of the gender quotas. Men trust the legislative body less and believe their elected officials listen to their concerns less following the quotas being implemented. The quotas cause women to believe politicians are more corrupt. Despite the quotas increasing the provision of public goods, both quotas additionally result in political backlash.

Previous research on gender quotas has found mixed results on their impact on public goods provision. Despite the type of quota implemented, gender quotas for political office result in more women being elected to office, and legislative agendas shift towards women's rights, healthcare, and poverty alleviation and away from military spending (Barnes 2012; Catalano Weeks 2019; Clayton and Zetterberg 2018; Clayton 2021). Public good provision is altered when women hold positions in legislative bodies; provision of education, electrical infrastructure, and water infrastructure increase following the implementation of gender quotas (Ban and Rao 2008; Chattopadhyay and Duflo 2004; Duflo and Topalova 2004; Rajaraman and Gupta 2012; Tusalem 2022). However in some cases, elected women do not increase the provision of educational facilities, paved roads, and sanitation when in public office (Ban and Rao 2008; Bardhan, Mookherjee, and Torrado 2010; Deininger et al. 2015; Gajwani and Zhang 2015; Rajaraman and Gupta 2012). Despite the mixed results, women have a higher willingness to contribute to public goods when in elected office, and some differences can be attributed to religious practices (Chaturvedi, Das, and Mahajan 2024; Deininger et al. 2015). This is the first paper to examine the impact of two types of gender quotas on public goods provision in one setting. I show the mandated quota changes public good provision more than the voluntary quota. The public good provision that increases

are associated with policy preferences the existing literature finds women hold including health and education. Using Afrobarometer and politician level data, I find policy areas women prioritize saw increases in their provision. Areas that elected more women increased the provision of public goods faster than their counterparts.

Gender quotas change the perception of female politicians change the perception of female politicians with some quotas improving attitudes towards and views of female politicians while quotas in other countries have caused backlash against female politicians. Over time, negative societal attitudes towards female politicians dissipate, and legislative bodies become more diverse and qualified (Anzia and Berry 2011; Baltrunaite et al. 2014; Barnes and Holman 2020; Besley and Case 1995; Besley et al. 2017; De Paola, Scoppa, and Lombardo 2010; O'Brien and Rickne 2016).[2] However, statistical discrimination towards female leaders only decreases following repeated exposure to female leaders (Beaman et al. 2009). Voluntary quotas raise the perceived quality of female candidates by their constituency, and attitudes towards female politicians slightly improve as a result of the quota (O'Brien and Rickne 2016; Tan 2015). Sociocultural barriers and work-family balance still remain as issues for women seeking to hold political office though (Tan 2015). I show the quotas cause political backlash which is driven by male constituents. The mandated quota caused men to think their elected officials listen to their concerns less while the voluntary quota caused a decrease in men's trust of the legislature. Additionally, women believe politicians are more corrupt after the voluntary quota was implemented.

The rest of the paper is structured as follows. Section 2 provides background on the history of women in Namibia and Namibia's electoral system and governance. The theoretical framework is discussed in Section 3. Section 4 discusses the Afrobarometer Survey data along with the Namibian election and politician data, and Section 5 explains the difference-in-differences identification strategy. Section 6 displays the impact of the quotas on women's political representation, and Section 7 presents the main results of the paper. Section 8 explores how citizens' views on

[2] Also see Lee and Zanella (2023); Pignataro and Taylor-Robinson (2021); Tan (2015); Verge (2012)

governance change following the quota. Robustness checks are highlighted in Section 9, while Section 10 concludes the paper.

2 Namibian History and Political Institutions

Colonization and apartheid drastically changed societal gender norms in Namibia. In 1973, European influence emerged in Namibia with the annexation of Walvis Bay by the Dutch. The British and Germans began to then annex coastal areas in Namibia. In 1884, Germany declared that Namibia would be a colony, naming it South West Africa. During World War I, South Africa invaded and began its occupation of Namibia. This occupation was legally recognized in 1920 by the League of Nations. Then in 1966, the United Nations revoked South Africa's mandate to administer South West Africa; however, South Africa did not comply. Namibian forces began to fight for independence in 1966, and Namibia gained independence on March 21, 1990.

2.1 Gender in Namibia

Prior to the German colonization of Namibia in 1884, women held positions of power and high status in some societies, particularly in northern Namibia. The Owambo, Kavango, and Nama societies provided women with inheritance and property rights as well as the right to divorce (Becker 2019). When German colonizers took administrative control of Namibia, they would only do business and talk to the men (Becker 2019; LeBeau and Iipinge 2004). Thus, women in power had to delegate their responsibilities to male relatives which resulted in men taking power from their female relatives over time. German colonial administrators imposed Western legal systems on Namibians, and apartheid was implemented by South Africa in Namibia which disempowered and discriminated against women. In addition to German colonization, Christian missionaries pushed traditional models of gender on Namibian societies which limited women's roles outside of the house (Becker 2019). The combination of colonial rule and Christian missions led to gender inequality in Namibia that had not previously existed. The inequality continued under South African rule which began in World War I.

Women were involved in the early resistance against colonial rule in Namibia with women fighting as soldiers as well as tending to the wounded as medics. Women played significant toles in revolts from the 1920s through the 1980s. In the 1960s South Africa arrested many resistance leaders and political activists, resulting in many leadings including women going into exile in Tanzania, Zambia, and Botswana. While in exile, men and women were militarily trained for SWAPO's People's Liberation Army of Namibia where women would see combat. Women's involvement in the resistance movement led SWAPO to establish SWAPO's Women's Council and a statement in SWAPO's constitution committing the party to combat sexism.

Upon independence from South Africa in 1990, Namibia adopted a constitution that prohibits discrimination based on sex and provides equal rights in marriage and divorce. Namibia has since passed many pieces of legislation aimed at eliminating gender inequality and discrimination. The Local Authorities Act established the first gender quotas at the local level. The Ministry of Women Affairs and Child Welfare began in 1997 after being housed within the Office of the President since independence. The National Gender Programme of Action was passed in 1998 to increase women's political representation in their government. In 1999, Parliament adopted the National Gender Policy which addressed women's specific needs and increases access to the necessary resources to solve these needs. Since 1990, Namibia actively encouraged and promoted gender equity through legal means including criminalizing domestic violence and rape (LeBeau and Iipinge 2004). Namibia has signed the United Nation's Convention on the Elimination of All Forms of Discrimination Against Women. In 2024, Namibia elected its first female president, Netumbo Nandi-Ndaitwah.

2.2 Electoral System and Governance

Namibia is a multiparty democracy with a bicameral legislature comprised of the National Council and National Assembly. The National Assembly is elected through a closed party list proportional representation system. National Assembly elections occur approximately every 5 years. Since 2015, there are 96 elected positions and eight appointed positions in the National Assembly. Prior to 2015, there were 72 elected positions with six positions appointed by the President. Members of the National Council are indirectly elected through the regional councils. Each regional council

chooses three of its members to serve in the National Council for a five-year term. Namibia is divided into 14 regions with each governed by a regional council comprised of six to 12 elected representatives. Prior to 2013, there were 13 regions until the Kavango region was split into Kavango East and Kavango West. There have not been gender quotas implemented at the regional council level. The members of the regional council are directly elected by their constituents and serve five- or six-year terms. Each electoral constituency elects one person to represent them on the regional council. Regional council elections occur approximately every five years and run concurrently with local authority elections. Regional councils are tasked with promoting growth and development plans within each region. Within the 14 regions, there are 57 local authorities which are broken into four categories: Municipalities Part I, Municipalities Part II, Towns, and Villages. Local authorities are divided into these categories by the president based on financial resources and the local authority's ability to provide services to the public. Municipal councils have between seven and 15 members while town councils and village councils have seven to 12 and five members, respectively. Each person elected to the local authority serves for a five- or six-year term. Mayors and deputy mayors are elected by the municipal and town councils from its own members. The chairperson and vice-chairperson are chosen by the village council from within the council. The full structure of Namibia's legislative branch of government is presented in Figure A.1.

Each level of government is tasked with providing specific public services; however the local authorities work with the regional councils and central government to provide resources for services necessary or insufficient in their local communities. The responsibilities of the national government include police and fire protection; social welfare programs; healthcare; transportation; trade; and promoting business. Regional councils focus on education and town planning. In conjunction with the national government, regional councils plan and maintain roadways. Local authorities' duties lie in housing, utilities (water and sanitation), parks, local roads, museums, religious facilities, and town planning. Through partnership with all levels of governance, electricity is provided to the citizenry; planning and maintenance of the electrical grid are coordinated by the governments.

The government's priority sectors for development include agriculture and rural development, education, health care, and affordable housing. In 1990, 70 percent of Namibians lived in rural areas. Thus, development policy primarily focused on rural areas. For education, "the building of the necessary infrastructure for both formal and non-formal training institutions" was a main priority (Government of the Republic of Namibia 1990). Health care policy focuses on increasing the number of health centers and health clinics in rural communities and providing these communities with safe water and sanitation. The First National Development Plan Report verifies that through 2000 funds were spent on public goods provision in line with the policy priorities of the government (Government of the Republic of Namibia 2000).

Despite Namibia being a multiparty system, SWAPO has maintained a majority in the National Assembly since Namibia's independence in 1990, and the president has always been a member of SWAPO. Of the eight appointed, non-voting members of the National Assembly, a majority of them are appointed to ministerial positions in the government. SWAPO members of the National Assembly are assigned to specific regions.

2.3 Gender Quotas for Political Office

For the 1998 election, the number of reserved candidate list positions for women was three for local authorities with 10 or fewer seats and five for local authorities with more than 10 seats. The 1998 quota was an increase of one and two reserved positions from the 1992 election, respectively. There are many factors contributing to female political participation in the 1992 local authority elections (Tjihero, Namalambo, and Hubbard 1998). The 1992 quota caused a few party lists to be revised to include women (Tjihero, Namalambo, and Hubbard 1998). Following considerable opposition to increasing the gender quota, the fraction of women on party lists increased from 38 percent in 1992 to 47 percent in 1998 (Tjihero, Namalambo, and Hubbard 1998). In both elections, the number of women nominated exceeded the quota, on average.

The mandated gender quota of 1998 increased the percent of women on local authority councils by 8 percentage points. Figure 1 Panel (a) shows the percent of elected seats held by women on local authority councils. Following the 1992 election, 32 percent of local authority seats were held

by women. The 1998 election resulted in 40 percent of seats being held by women. On average, this quota resulted in every local authority having one more elected woman. In subsequent elections, the fraction of seats held by women remained fairly constant.

[Insert Figure 1 here]

The 1998 mandated quota differentially impacted Local Authorities depending on their size. For Local Authorities with 10 or less seats, the quota increased the required number of women from two to three on each party's candidate list. Whereas for Local Authorities with more than 10 seats, the quota went from three to five. Figures A.7 and A.8 shows the fraction of women elected to Local Authorities and average number of women by the number of seats on each Local Authority. Both figures show that the Local Authorities saw an initial increase in the women elected to Local Authorities and this increase remained over time for Local Authorities with 10 or less seats. Local Authorities with 11 or more seats saw the number and fraction of women elected decline over time to less than pre-quota levels in 2020.

In 2014, SWAPO announced that the party would have a 50/50 gender quota for their party list for the National Assembly election later that year. A party list system is when individuals vote for a political party rather than a candidate. Under proportional representation, each party is assigned seats based on their vote share. The candidates who are elected to those seats are based on pre-determined lists the parties submit to the Electoral Commission prior to the election. Since SWAPO has always maintained a majority in the National Assembly, the policy effectively impacted all of Namibia. To avoid all of the women being placed at the bottom of the party list, the quota would be implemented through a “zebra" system where the party list alternates between male and female candidates. Additionally if a man holds a ministerial post, then the deputy minister would be a woman with the positions switching the gender of the holder following the subsequent election. This voluntary gender quota aimed to increase women's representation in the national government of Namibia. Representatives in the National Assembly are elected directly by the citizenry in a closed party list system. This paper will examine the impact of the 1998 mandated gender quota and the 2015 voluntary gender quota.

The voluntary gender quota increased the fraction of women in the National Assembly by 17.9 percentage points. I examine whether the gender quotas resulted in more women being elected to office in Figure 1 Panel (b). Due to the voluntary gender quota, the percent of women in the National Assembly increased from 24.4 percent in 2010 to 42.3 percent in 2015, almost doubling the fraction of women in the National Assembly. Of the 25 additional women in the National Assembly in 2015, 22 of them were members of SWAPO which was the party that implemented the party quota. There is not a large increase from 2010 in the percent of women elected by other political parties in the 2015 election. The size of the National Assembly increased from 78 to 104 seats in 2015. Figure A.6 shows that there is also an increase in the number of women in the National Assembly.

3 Theoretical Framework

In this section, I analyze why mandated and voluntary gender quotas could provide different policy impacts in a representative democracy. I use the framework introduced in Besley and Coate (1997) and Osborne and Slivinski (1996), and extended in Chattopadhyay and Duflo (2004). In these models, elected officials are "citizen candidates" and will try to implement their preferred public policy option rather than a policy platform. Every citizen knows each other's preferences, and each citizen influences the implemented policy through whom they vote to elect. Each citizen candidate decides whether they should run for office by comparing the benefit from being elected and the cost of running for office.

Every citizen in an electoral constituency is eligible to vote and run as a candidate. A citizen i has a preferred policy preference ω_i. Each person in a constituency votes strategically to elect an individual. Men's policy preferences are distributed uniformly over the interval $[M, 1]$, and women's preferences are distributed uniformly over the interval $[0, W]$. The policy implemented is in the interval [0,1]. The cost of running for political office for women is δ_w, and the cost for men is δ_m. Following Chattopadhyay and Duflo (2004), the cost of running for office is higher for women than for men, i.e. $\delta_w > \delta_m$.

The political game has three different stages, originally described in Besley and Coate (1997) and Osborne and Slivinski (1996):

1. Citizens decide whether or not they should run for office.
2. Citizens elect a candidate using strategic voting.
3. A policy, x_j, is implemented.

In each stage of the game, citizens choose which decision to make. If policy x_j is implemented, citizen i has the following utility:

$$u^i(x_j) = \begin{cases} -|x_j - \omega_i| & \text{if citizen } i \text{ was not a candidate} \\ -|x_j - \omega_i| - \delta_i & \text{if citizen } i \text{ was a candidate} \end{cases}$$

My model differs from Chattopadhyay and Duflo (2004), Besley and Coate (1997), and Osborne and Slivinski (1996) in how the final policy is implemented. Citizen candidates are elected to a legislative body with N total seats. The set of female politicians elected to the legislature is $P_W = \{0, 1, ..., N_W\}$, and the set of male politicians elected is $P_M = \{0, 1, ..., N_M\}$ where $N_W + N_M = N$. The policy implemented is $x_j = \beta\omega_W + (1-\beta)\omega_M$ where $\beta \in [0,1]$ represents the proportion of seats in the legislature held by women, i.e. $\beta = \frac{N_W}{N}$. The female politicians' policy preference is given by $\omega_W = \sum_{c \in P_W} \alpha_W^c \omega_c$ with $\sum_{c \in P_W} \alpha_W^c = 1$. The female politicians' policy stance is a weighted average of each of the individual female politician's policy preferences. The weight α_W^c represents the ability of politician c to influence their gender's policy stance. Similarly for the male politicians, their policy preference is given by $\omega_M = \sum_{c \in P_M} \alpha_M^c \omega_c$ with $\sum_{c \in P_M} \alpha_M^c = 1$.

Suppose without the quota, there exists a "natural" proportion of seats in the legislature that are held by women, β^0. In a non-quota regime, the policy implemented is $x_j^0 = \beta^0\omega_W + (1-\beta^0)\omega_M$. If a gender quota is implemented, policy makers need to decide the level of the quota. Let β^Q denote the required proportion of women to be elected to the legislature. If policy makers decide the quota will be equal to the natural proportion of women elected, then $\beta^Q = \beta^0 \Rightarrow x_j^Q = x_j^0$ which indicates there would be no change in the policy implemented. If the quota requires the

fraction of women to be elected to be lower than the natural proportion, i.e. $\beta^Q < \beta^0$, the quota is not binding, and the natural proportion of women are elected. Thus, the policy implemented under the quota is the same as the policy without a quota, $x_j^Q = x_j^0$. The last scenario is when the quota is binding. If the required proportion of women to be elected is higher than the natural rate, then we have $\beta^Q > \beta^0$. This quota increased the weight put on female politicians' policy preferences, thus $x_j^Q < x_j^0$ which is a more "woman-friendly" policy outcome. The only time the gender quota alters the policy implemented is when the quota is binding. Without loss of generality, the rest of the analysis will assume the quota is binding.

Consider two types of gender quotas: a legally mandated gender quota and a voluntarily imposed gender quota. Let a superscript D represent the mandated quota, and V represent the voluntary quota. Under the mandatory quota, the fraction of women elected is $\beta^D = q^D$ where q^D is the required fraction of women to be elected per the quota. Under the voluntary quota, $\beta^V = sq^V$ where s is the share of legislative seats the quota applies to. The share of seats is bounded, thus $s \in [0,1]$. In a party system, s would be the sum of the vote share of parties that implement a quota of q^V for their elected officials. In this analysis, I assume the voluntary quota is followed. This assumption is discussed in more detail following the analysis.

When implementing either type of quota, policy makers must decide what fraction of the legislature they want to be held by women in future elections. To compare how the two types of gender quotas affect public policy, I consider the following three cases:

Case I. Suppose $q^D = q^V$. If the voluntary quota applies to all seats ($s = 1$), then we have $\beta^D = q^D = sq^V = \beta^V$. In this scenario, women's policy preferences have the same weight in deciding the final policy implemented, i.e. $x_j^D = x_j^V$. In this case, the mandatory and voluntary quotas have the same policy impact. Now suppose the voluntary quota does not apply to all of the legislative seats ($s \in [0,1)$), then $\beta^D > \beta^V$ and thus $x_j^D < x_j^V$. In this case, women's preferences under the mandatory quota have a higher weight leading to a more "women-friendly" policy.

Case II. Suppose $q^V > q^D$. Let the share of seats affected by the voluntary quota $s \in (\frac{q^D}{q^V}, 1]$. Then, we know $\beta^V = sq^V > q^D = \beta^D$ meaning that women's preferences are weighted more under the voluntary quota than the mandatory quota. Under this quota scheme, $x_j^V < x_j^D$ so a more "women-friendly" policy is implemented under the voluntary quota. If $s = \frac{q^D}{q^V}$, then $\beta^V = sq^V = q^D = \beta^D$, and women's preferences are given the same weight for which policy is implemented. Thus when $s = \frac{q^D}{q^V}$, the same policy would be implemented. Now suppose $s \in \left[0, \frac{q^D}{q^V}\right)$, the policy weights are as follows: $\beta^V = sq^V < q^D = \beta^D$. Under the mandatory quota, women's preferences are given more weight so $x_j^D < x_j^V$. The mandated quota leads to a more "women-friendly" policy being implemented.

Case III. Suppose $q^D > q^V$. For the voluntary quota to implement a more "woman-friendly" policy, it must be $x_j^V < x_j^D$ meaning women's preferences are weighted more in the voluntary quota. Thus it must be that $\beta^V > \beta^D \Rightarrow sq^V > q^D \Rightarrow s > \frac{q^D}{q^V}$. Since $q^D > q^V$, $\frac{q^D}{q^V} > 1$. This cannot occur since $s \in$ [0,1]. Thus when $q^D > q^V$, the mandated quota will always yield a more "woman-friendly" policy.

The analysis of this model shows on in most cases the mandatory quota would produce a more "woman-friendly" policy to be implemented, but in one case the voluntary quota could result in better policy for women. The only scenario where the voluntary quota provides a more "woman-friendly" policy is when the voluntary quota is for a larger proportion of seats than the mandated quota and the voluntary quota applies to a large fraction of seats. Since the quota is binding, both of the quotas will yield a more "woman-friendly" policy outcome than if no quota was implemented.

If the voluntary quota is not followed at all, then the natural fraction of women is elected to the legislature, β^0. This quota would have no impact on policy if it was not followed as x_j^0 would be implemented. In this case where the fraction of women elected $q^{low} \in (q^0, sq^V)$, a similar analysis as above holds. If $q^{low} = q^D$, the policies implemented under the mandatory and voluntary quotas are the same. If $q^{low} > q^D$, women's policy preferences are weighted more leading to $x_j^{low} < x_j^D$. In this case, the voluntary quota has a more "woman-friendly" policy implemented. Now suppose

$q^{low} < q^D$, similar to case 3 above, the mandated quota will yield a more "woman-friendly" policy outcome.

In the Namibia case, the voluntary quota was a 50% quota for SWAPO's party list. SWAPO's vote share in elections prior to 2015 was approximately 75% since the first election in 1994. Therefore, $q^V = 0.5$ and $s = 0.75$. The mandated quota required local authorities with 10 or fewer seats to put three women on each party list and local authorities with more than 10 seats were required to put five women on the list. Using a weighted average, the mandated quota gives $q^D = 0.41$. Namibia falls into case two described above where $q^V > q^D$. Since $\frac{q^D}{q^V} = \frac{0.41}{0.5} = 0.82$, thus $s \in [0, 0.82)$ and the model predicts the mandated quota would implement policy more in line with women's preferences.

4 Data

This paper uses three datasets for the analysis: Local Authority Election Data, National Assembly Politician Data, and Geocoded Afrobarometer Surveys. This section discusses each dataset and the relevant variables for the analysis.

Local Authority Election Data:

The results of Local Authority Elections are published in the Government Gazette of the Republic of Namibia. For each Local Authority, the Government Gazette reports the total number of votes cast in the election, the number of votes recorded for each party, and the number of rejected ballots. Based on the number of votes cast for each party, the Electoral Commission of Namibia determines the number of seats for each party on the Local Authority based on each party's list, all of which is listed in the election results. I do not have the party lists and will attempt to obtain these in the future. The names of the duly elected members of the Local Authorities are listed last. A table containing the electoral results in the Government Gazette is presented in Appendix Figure A.2.

I digitized the data from the Government Gazette for every Local Authority Election since Namibia's independence in 1990. Local Authority Elections were held in 1992, 1998, 2004, 2010, 2015, and 2020. To determine the number of women serving on each Local Authority, I ran the names of every elected official through two sets of gender AI, which predicts the sex of each individual taking into account their country of origin. The two AI programs I used were Namsor and Gender API. Individuals were classified as male or female if both programs predicted the same sex of the individual. Of the 2,457 elected officials, the AI programs predicted the same sex for 2,260 individuals. I manually checked the sex commonly associated with the names of the remaining 197 individuals. Using this data, I will be able to determine how many women were elected to each Local Authority Council.

I digitized the data about the 1992 candidate lists by party for each local authority. This data was available in the appendix of Hubbard (1993). The appendix provided data on for which position on the list women were nominated. This data is only available for the 1992 election. Figure A.3 shows an example of this data. I use this candidate list data to determine which local authorities were affected by the mandatory quota. Since the mandated quota was a national policy, I will compare places that are more and less impacted by this quota. The purpose of the gender quota is to increase the number of women elected to local authorities. There are three ways the quota could change the number of women elected to office. First, the number of women nominated to the candidate lists. The quota could also change the positions on the list where women are nominated. Lastly, the quota could shift votes towards parties that place women towards the top or bottom of their lists. The election data shows the vote shares do not change much between the 1992 and 1998 elections. Thus, the quota could have changed the number of women nominated to the lists and their positions on the list. To capture these changes, I define local authorities to be "affected" by the mandated quota if the average list position of women in the local authority is below the average across Namibia and if the local authority had not met the 1998 quota in the 1992 election. The variable $AffectedMandatory_{cr}$ is a dummy variable defined using the definition above.

Figure 2 shows the variation in $AffectedMandatory_{cr}$ across Namibia. Figure 2 shows electoral constituencies rather than local authorities. I map the Local Authorities to their electoral constituency using documentation published by the Electoral Commission of Namibia. For the majority of constituencies, there is a one-to-one mapping to Local Authorities. For larger cities such as Windhoek and Walvis Bay, there are multiple constituencies within the jurisdiction of the Local Authority. This mapping is necessary because the Geocoded Afrobarometer data not including Local Authority area as a geographic level since Local Authority areas do not cover all of Namibia. In Figure 2, orange constituencies are more affected by the mandated quota and have $AffectedMandatory_{cr}$ equal to one. Blue constituencies either had a high placement of women on their list or met the 1998 quota number of women in the 1992 election and thus did not have to add more women to their lists in the 1998 election. The blue constituencies are less impacted by the quota.

[Insert Figure 2 here]

A concern in examining how policy changed following the implementation of these gender quotas arises if electoral constituencies affected and unaffected by the quota are systematically different prior the quotas. Table 1 Panel A examines political competitiveness across electoral constituencies in the 1992 local authority elections. Panel A shows that there are statistical differences in the number of political parties that compete in the local authority elections. Affected constituencies have 3.5 parties on average and unaffected constituencies have 2.6 parties on average. This difference is driven by Windhoek where 6 parties compete in the local authority elections. When Windhoek is dropped, there is not a statistical difference in the number of parties competing in the elections. The SWAPO vote share in the 1992 election is very similar across electoral constituencies. SWAPO received 57.3% of the vote in affected constituencies compared to 56.5% of the vote in unaffected constituencies. The number of candidates on each party list is the same across constituencies because parties are required to nominate the same number of people as there are seats on the local authorities. The last lines in Panel A show that there is a statistically significant different in the average position on the candidate list for women. This is by construction of $AffectedMandatory_{cr}$. Since there is a slight difference in the number of parties competing in

local authority elections which is driven by Windhoek, I will drop Windhoek from the analysis as a robustness check. I additionally will add time trends for the number of parties competing in the local authority elections as another robustness check. These two additional analyses are to ensure the public goods results in Section 7 are not driven by differences in political competitiveness.

[Insert Table 1 here]

Geocoded Afrobarometer Data:

I utilize nine rounds of Geocoded Afrobarometer Survey data. In each round, interviewers in conjunction with the field supervisors indicate what infrastructure is available in each area. The physical infrastructure surveyed and available in each round includes electricity grid, piped water system, and sewage system that most houses could access. In addition to infrastructure, public services are also surveyed. The interviewers record whether the following public services are in each area or within "easy walking distance": post office, school, police station, health clinic, and market stalls. Market stalls are areas where individuals can buy and sell groceries and clothing.

There are no statistically significant differences in the public good provision between electoral constituencies affected and unaffected by the mandated quota when using the first round of the Afrobarometer data. Table 1 Panel B displays the fraction of villages or towns with access to each public good. The only marginally significant difference is in the provision of schools. This difference is driven by Windhoek. When Windhoek is dropped from the sample, the p-value of the difference is 0.1917. As discussed above, I will drop Windhoek from the sample in a robustness check to ensure differences between electoral constituencies are not driving the results.

Since these public service indicators are assigned at the primary sampling area, I aggregate the data to this level. Some rounds of the Afrobarometer survey include town or village as a geographic area. Most towns only have one sampling area; however larger towns such as Windhoek and Walvis Bay have more than one since these cities have more residents. I use sampling unit as the aggregated level because some survey rounds do not include town and village as a geographic level and other rounds have many missing values. Sampling area is essentially the town or village for

most places, and including multiple observations for larger cities provides a representative sample for access throughout the country. For the rest of the paper, I will refer to the sampling unit as town or village. Afrobarometer's within weights are used in the analysis to adjust for an individual's selection probability. The weights are assigned at the individual level. When aggregating to the village-level, I compute within weights using the sum of the individual within weights in each area. The weights within each survey round are normalized to one so that each survey is weighted equally.

I construct the variable $AffectedVoluntary_{cr}$which is an indicator and defined by gender norms surrounding women holding political office. Gender norms are computed from the following Afrobarometer question: "Which of the following statements is closest to your view? Choose statement 1 or statement 2. Statement 1: Men make better political leaders than women and should be elected rather than women. Statement 2: Women should have the same chance of being elected to political office as men. Do you agree or agree very strongly?" If an electoral constituency has gender norms at the median or less, then $AffectedVoluntary_{cr}$ equals 1 due to these constituencies being more impacted by the gender quota. The correlation between $AffectedVoluntary_{cr}$and the number of women elected to Local Authorities prior to 2015 is 0.0539. Only the 41 constituencies containing election data from 1992 and data on gender norms are used in the analysis, and 20 of them have $AffectedVoluntary_{cr}$ equal to one.

Figure 3 shows the distribution of gender norms by electoral constituency. Constituencies in blue have the majority of people believing women should have the same chance of being elected as a man. Orange constituencies are those impacted by the quota as the majority of residents think men make better political leaders than women.

[Insert Figure 3 here]

The correlation between $AffectedVoluntary_{cr}$ and $AffectedMandatory_{cr}$ is -0.0805. Table 2 shows the overlap between treatments at the electoral constituency level. Seven constituencies are

affected by both quotas while 12 are unaffected by either quota. Nine constituencies are only impacted by the mandated quota, whereas 13 are affected by the voluntary quota.

[Insert Table 2 here]

National Assembly Politician Data:

Every politician who has served in the National Assembly has a profile on the National Assembly website. I digitized the profiles of all 322 politicians. Appendix Figure A.4 is an example of one of the politician's profiles. Each profile contains the following sections: legislative profile, personal, education, career, and interests. The majority of politicians filled out all five sections with varying degrees of detail. From these profiles, I am able to each politician's education level, legislative experience prior to entering the National Assembly, previous career path, and ministerial and committee appointments while serving in the National Assembly. I compute policy preferences using the expressed policy interests in the "interests" section of each politician's profile. Of the 322 politicians who have served in the National Assembly, 102 are women and 220 are men. There were 43 women who were elected to the National Assembly in the four elections before the 2015 voluntary quota, and 59 women were elected in the two elections after the quota was implemented. Of the 220 male politicians, 161 were elected before 2015 and 59 elected to the National Assembly in the 2015 and 2020 election.

5 Empirical Strategy

To estimate the effect of the mandated quota on public goods provision, I use a standard difference-in-differences identification strategy:

$$PublicGood_{vcrt} = \beta_0 + \beta_1 AffectedMandatory_{cr} \times PostMandatory_t + \delta_t + \delta_c + t \times \delta_r + \varepsilon_{vcrt} \quad (1)$$

The outcome variable $PublicGood_{vcrt}$ is a dummy variable equal to one if village v in electoral constituency c in region r has access to the public good in year t. Year and electoral constituency fixed effects are denoted δ_t and δ_c, respectively. I control for regional council investment by including region-time trends in the specification, denoted $t \times \delta_r$. The variable

$AffectedMandatory_{cr}$ is as defined in Section 4. $PostMandatory_t$ is a dummy variable equal to one if the year is after 1999. Standard errors are clustered at the 2001 electoral constituency level to allow for correlated outcomes within constituencies over time, and additional, because the treatment is assigned at the electoral constituency level.

To estimate the impact of the voluntary quota on public good provision, I employ another difference-in-differences identification strategy:

$$PublicGood_{vcrt} = \gamma_0 + \gamma_1 AffectedVoluntary_{cr} \times PostVoluntary_t + \delta_t + \delta_c + t \times \delta_r + \nu_{vcrt} \quad (2)$$

Similar to equation (1), the outcome variable $PublicGood_{vcrt}$ is a dummy variable equal to one if village v in electoral constituency c in region r has access to the public good in year t. Year fixed effects, constituency fixed effects, and region-time trends are included in the specification. $AffectedVoluntary_{cr}$ is as defined in Section 4. $PostVoluntary_t$ is a dummy variable equal to one if the year is after 2015. The standard errors are also clustered at the 2001 electoral constituency level.

The mandated quota went into effect in 1998, and the voluntary quota was enacted in 2015. There are only six years of data following the voluntary quota. Thus, I restrict the sample of the mandated quota to 2006 and earlier. This restriction ensures that the analysis examines the impact of each quota after approximately the same length of time post implementation. For the mandated quota, Afrobarometer from 1999 through 2006 are used; this is discussed in the next subsection. Afrobarometer from 2008 through 2021 are used for the voluntary quota.

5.1 Limitations

There are some limitations of this study due to the data. The first round of the Afrobarometer survey was conducted in 1999, while the mandated gender quota I examine was implemented for the 1998 election. Thus, there is not data from before the quota was enacted. I therefore use the 1999 data as the data "prior" to the election. I am examining long-run development variables that do not change quickly over time. The provision of public goods over time is shown in

Appendix Figure A.10. It is unlikely that within a year from the election there would be a major increase in public good provision due to local politicians needing to discuss funding with other local, regional, and national politicians then write and pass legislation followed by completing construction of the public good. If this were to occur within a year, I would be estimating a lower bound on the true effect of the mandated quota.[3] To address this concern empirically, I examine the differences in public goods between constituencies affected and unaffected by the mandated quota in Table 1. This table was discussed more in Section 4. However, there are no statistically significant differences in public good provision at the 5% level in 1999. Thus, it is reasonable to use the 1999 data as "pre" data for the difference-in-differences analysis.

6 Women's Political Representation

The number of women elected to local authorities increased by 0.64, on average, which corresponds to an 8.4 percentage point increase in the fraction of seats held by women. Table 3 shows the effect of the mandated quota on women's political representation. Columns 1 and 2 use the local authority election data to examine the impact of the mandated quota on the number of women elected and the fraction of seats held by women. The p-values associated with wild cluster bootstrapped standard errors are reported in brackets because there are less than 50 electoral constituencies with data available for both quotas. Column 1 shows on average the mandated quota increased the number of women on local authority councils by 0.64. The fraction of seats held by women increased by 8.4 percentage points following the mandatory quota (Table 3 Column 2). Appendix Figure A.9 shows the proportion of seats held by women over time by treatment status.

[Insert Table 3 here]

[3] The Local Authority election of 1998 occurred on February 16, 1998, with the results posted on March 5, 1998. When the politicians took office, it not clear. At the earliest, they would have taken office in March, but it could have been a few months later. The Afrobarometer Survey of 1999 occurred in September. Thus, the maximum time between the election and survey would have been 18 months.

I am unfortunately unable to do this analysis for the voluntary quota. SWAPO assigns each politician to a constituency; however this is not publicly available information, nor is it clear whether other political parties follow this practice. As a proxy for this assignment, I would use the constituency where a politician previously served, if available, or their birth place. Based on the National Assembly politician profiles, I am able to match a politician with a constituency for less than half of the sample. Thus, I am unable to properly conduct the same analysis as above with the incredibly small sample of matched National Assembly politicians.

7 Do mandated and voluntary gender quotas alter public good provision?

Following the implementation of the two quotas, the mandated quota increased the provision of sewage systems, paved roads, and schools. The voluntary quota increased the provision of schools. Table 4 Panel A displays the impact of each quota on infrastructure, and Panel B examines public services. Column 1 shows the impact of the mandated quota, whereas Column 2 is the effect of the voluntary quota. The mandated quota increased the provision of sewage systems by 28.5 percentage points and paved road provision by 78.2 percentage points (Table 4 Panel A Column 1). The increase in paved roads is consistent with previous research on gender quotas (Chattopadhyay and Duflo 2004). The increase in sewage systems due to the mandatory quota is additionally consistent with existing literature showing women elected to public office provide more and spend more on health services (Ban and Rao 2008; Clayton 2021; Chattopadhyay and Duflo 2004). The voluntary quota did not increase the provision of infrastructure (Table 4 Panel A Column 2). School provision increased by 59 percentage points following the mandated quota (Table 4 Panel B Column 1). Overall, the mandated quota increased the provision of public services by one standard deviation (Table 4 Panel B Column 1). The voluntary quota increased school provision by 12.6 percentage points but had a statistically insignificant impact on public services overall (Table 4 Panel B Column 2). The positive effect of both quotas is seen in other studies as well; women spend more on education

and provide more schools to their constituents (Clayton 2021). Overall, the mandated quota is changing public policy more than the voluntary quota.

[Insert Table 4 here]

The mandated quota did not just cause the gap between constituencies to close, instead constituencies impacted by the mandatory quota surpassed their counterparts in public good provision. Prior to the quota, there is an 8.3 percentage point difference in the provision of paved roads (Table 1 Panel B). Following the mandatory quota, the affected areas had an 18.1 percentage point advantage in paved roads (Appendix Table A.1). Not only did electing women close this road deficit but also continued to increase infrastructure investments. For sewage system provision, there was a 4.2 point deficit (Table 1 Panel B) which reversed and became a 12.1 percentage point advantage in areas affected by the mandated quota (Appendix Table A.1). The difference between electoral constituencies in school provision closed and is insignificant following the mandated quota. Electing women to public office not only shrank differences in public service provision but also caused additional growth in the provision of these goods.

These policy shifts are for public goods that women typically prefer (Clayton 2021). Using Afrobarometer data, I can examine men and women's views on policy issues (Appendix Table A.2). More women than men believe education should be a priority of the government. This is consistent with the finding that the mandatory quota increased school provision. Additionally, women think water, health, and roads are also issues the government should be addressing at slightly higher rates than men; however these preferences are not statistically different. These small policy differences are consistent with elected women providing more sewage systems and paved roads to their constituencies following the mandatory quota. The voluntary quota increased the provision of schools, which is in line with women elected to the National Assembly having higher priority towards education and vulnerable populations. The interests section of the National Assembly profiles provides data on expressed policy interests. These policy preferences are shown in Appendix Table A.3. 18.2 percent of female politicians have interest in education policy compared to 17.5 percent of male politicians. While this is not statistically significant,

women do have a higher priority on policy that impacts vulnerable populations, including children. The slightly higher priority on education policy and much higher important of policy for vulnerable populations is consistent with the provision of schools increasing following the voluntary gender quota. Appendix Tables A.2 and A.3 find men and women have different policy preferences, similar to previous research, which are the reason for changes in public policy due to the implementation of gender quotas for political office.

To determine if there are differential pre-trends threatening identification, Figure A.11 displays event studies for each of the infrastructure variables and public services before and after the voluntary quota went into effect. The infrastructure variables do not show signs of differential trends prior to the implementation of the voluntary quota. The pre-trends for each public service are statistically equal to zero and show no evidence of a violation of the parallel trends assumption prior to the voluntary quota. Overall for both infrastructure and public goods, Figure A.11 does not show signs of the parallel trends assumption being violated. Due to data limitations, testing the parallel trends assumption for the 1998 quota is not possible. This is discussed in more depth in Section A.3.

Since there are two quotas implemented and Table 2 shows the overlap in constituencies affected by each quota, one might be concerned about the complementary effects of having two quotas. I discuss this more in Section A.4 with the results shown in Appendix Table A.4. The effects seen in Appendix Table A.4 are larger than those in Table 4. Thus, the results presented in this section are more conservative than those obtained when additionally examining the complementarities of the two quotas.

8 Do the Quotas change Citizens' Views on Governance?

Men believe their local elected officials listen to their concerns 19.3 percentage points less after the implementation of the mandatory quota. The voluntary quota caused men's trust in the National Assembly to fall by 11.8 percentage points and women to believe the National Assembly is 8 percentage points more corrupt. Table 5 shows the impact of the mandated and

voluntary quotas on views of governance. Panel A examines citizens' trust in the legislative institution, whereas Panel B displays the impact of the quotas on citizens' beliefs of whether their elected officials listen to their concerns. The perceived corruption of elected officials is in Panel C. For the mandated quota, the outcome variables are for the local authorities or politicians holding seats on the local authorities. The voluntary quota uses the same questions but in regard to the National Assembly and National Assembly politicians. The mandated quota did not have an impact on trust in the local authorities. On the other hand after the voluntary quota, overall trust in the National Assembly decreased by 6.9 percentage points which was driven entirely by men. Perceptions of politicians also changed after the quotas were introduced. The voluntary quota made people believe their National Assembly politicians listened to their concerns less. This effect was not driven by either men or women. The mandated quota caused men to think the local authority politicians listen to their concerns 19.3 percentage points less. While the mandated quota did not change perceived corruption of politicians, women perceive National Assembly politicians to be more corrupt following the implementation of the voluntary quota. Overall, the backlash on views of governance seen following both of the quotas is mainly driven by men changing their views towards the legislature or politicians.

[Insert Table 5 here]

9 Robustness Checks and Sensitivity Analysis

I conduct several robustness checks and sensitivity analyses, varying the sample and variable definitions. Coefficients are reported in Appendix Tables A.5, A.6, A.7, and A.8. The estimates remain stable when I (i) drop Windhoek, (ii) drop constituencies with gender norms at the median, and (iii) define affected by the voluntary quota using the 25th percentile of gender norms rather than the 50th percentile. The effect of the mandatory quota is stable for schools, sewage systems, and paved roads when including time trends for the number of political parties competing in the 1992 local authority elections. All of these tables are presented in the Appendix.

Table 1 shows the number of parties competing in electoral constituencies affected by the mandated quota is significantly higher than constituencies unaffected by the quota. The difference in the number of competing parties is no longer significant at conventional levels when I drop Windhoek. Windhoek had six parties compete in the 1992 local authority election, which is significantly higher than any other local authority. To ensure the results of the mandated quota are not driven by political differences between electoral constituencies, I drop Windhoek and re-estimate equations 1 and 2. The results are shown in Appendix Table A.5. The coefficients are the same as in Table 4, but with slightly different standard errors. The statistical significance also stays the same. This analysis shows that the effect of the mandated quota on public good provision presented in Table 4 are not driven political differences between Windhoek and other electoral constituencies.

Since there are still marginal differences in the number of political parties competing in the 1992 local authorities even when dropping Windhoek. I include the number of political parties competing in the 1992 local authority election time trends in the analysis to determine if this competition is driving the changes in public good provision. This analysis is presented in Appendix Table A.6. The magnitude of the effect of the mandated quota on school and paved road provision is similar to those presented in Table 4. The impact on sewage systems is 12.6 percentage points (Appendix Table A.6 Column 1) which is down from 28.5 points (Table 4 Column 1) and is imprecisely estimated. Appendix Table 6 shows some negative impacts on other policy areas such as piped water and market stalls. The null effects on these public goods shown in Table 4 could thus be driven by differences in political competition. Overall, Appendix Tables A.5 and A.6 show the impact of the mandatory quota on sewage, schools, and paved roads (Table 4) are not driven by differences in political competitiveness between electoral constituencies.

I define constituencies impacted by the voluntary gender quota using gender norms surrounding women as politicians due to the quota being a national policy. I drop constituencies with median gender norms to see if this is driving the results. By dropping constituencies with median gender norms, four constituencies are dropped which is about 10 percent of the sample. Appendix Table

A.7 shows these results. The estimates in Appendix Table A.7 for public services and infrastructure are very similar in magnitude to the original estimates in Table 4. Thus, one should not be concerned that the definition of the "affected" variable is driving the results.

Now, I test the sensitivity of my definition of a constituency affected by the voluntary quota. Appendix Table A.8 estimates equation 2 and defines $AffectedVoluntary_{cr}$ as an indicator if the constituency's gender norms are at or below the 25th percentile. The results are similar to those in Table 4. There remains to be no impact of the voluntary quota on infrastructure provision. Some statistical significance has changed but the magnitude and signs of the estimated impacts remain the same for public services. The effect of the voluntary quota on school provision almost doubles to 21.3 percentage points, and the impact on market stalls is negative and marginally significant. These results remain very similar to the original estimates. The estimates in Table 4 are more conservative than those obtained from this alternative definition of $AffectedVoluntary_{cr}$. Thus, one should not be concerned about the effect of the quotas being solely driven by how the "affected" variable is defined.

10 Conclusion

Ex ante, it is not obvious how different types of quotas may differentially impact policy. I present an extension of the citizen-candidate model first introduced in Besley and Coate (1997) and Osborne and Slivinski (1996). My extension changes how the final policy is implemented. Politicians are elected to a legislative body, and the policy outcome is a weighted average of men's and women's policy preferences. Quotas change the weight given to women's preferences. Both the voluntary and mandatory quotas can provide more "woman-friendly" policies depending on the size of the quotas. In Namibia's case, the extension predicts the mandated quota will change policy to be in line with women's preferences more than the voluntary quota.

This is the first paper to provide quasi-experimental evidence of the differential effects of two gender quotas for political office on public good provision. By exploiting time and electoral constituency variation, I show the mandated and voluntary gender quotas have a positive and

significant impact on the provision of infrastructure and public services. The mandated quota increases sewage system, paved roads, and schools provision. The voluntary quota increased the provision of schools. Overall, the mandated quota had a larger impact on the provision of public goods than the voluntary quota.

Both quotas saw shifts in public policy that benefits their constituents. However, there was backlash towards both politicians and the legislative bodies after the quotas were implemented. Men trust the legislature less and believe politicians listen to their concerns less often after the quota. Women believe National Assembly politicians are more corrupt after the voluntary quota was implemented by SWAPO. While there are positive impacts on the provision of public goods, constituents had negative perceptions of institutions and politicians because of the quotas.

These results have implications for other countries with low levels of women's legislative representation. Increasing representation is possible through quotas, but the type of quota matters for public good provision. Governments should be aware of the potential impacts of each type of quota in consideration and understand different types of quotas can have differential effects on policy.

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Appendix

A.1 Tables

[Insert Appendix Tables A.1 through A.3 here]

A.2 Figures

[Insert Appendix Figures A.1 through A.10 here]

A.3 Identification Assumptions

Due to not having more than one year of data prior to the 1998 mandated quota, I cannot empirically test whether the parallel trends assumption holds. However, Namibia gained independence in 1990 after being under apartheid and colonial rule since 1884. The post-independence government of Namibia focused on reconstruction and development of Namibia as a whole due to the majority of the population being systemically and legally discriminated against while under South African rule. The Reconstruction and Development of Namibia's General Policy Statement explains that the government will pass legislation aimed at "ensuring that every citizen has a right to fair and reasonable access to public facilities and services" (Government of the Republic of Namibia 1990). Due to the government's policies to provide more public goods to all Namibians, the parallel trends assumption should hold prior to the implementation of the mandated gender quota in 1998. Additionally, Table 1 shows that there are not statistical differences at the 5% level in public good provision between electoral constituencies affected and unaffected by the mandated quota, which furthers the argument that the parallel trends assumption holds prior to the 1998 quota.

To determine if the parallel trends assumption holds for the voluntary quota, I estimate equation 2 with an event study. The results are shown in Appendix Figure A.11. The vertical line in Figure A.11 is at 2015 which is when the voluntary quota was implemented by SWAPO. Each point in the figure represents the impact of the voluntary quota in that year relative to 2014. For most public good provision, the impact is around zero prior to the implementation of the quota. Some are noisy and alternate above and below zero but are still statistically insignificant. Overall,

Appendix Figure A.11 does not present evidence of pre-trends. Thus, there is no evidence of the parallel trends assumption being violated for the voluntary gender quota.

[Insert Appendix Figure A.11 here]

A.4 Complementarities of the Gender Quotas

A potential outcomes framework will be utilized to illustrate which treatment effects can be identified. Let m be an indicator for when a constituency was affected by the mandated quota, and v be an indicator for when an area was impacted by the voluntary quota. Let $g \in \{0,1,2,3\}$ denote the group. The potential outcome for constituency c at time t is denoted $Y_{c,t}(m,v)$. Figure A.12 provides a visual depiction of treatment status and timing by group G. The impacts of the mandated quota, voluntary quota, and both quotas combined can be identified. Group $g = 0$ was not impacted by either quota. Group $g = 1$ was impacted by the mandated quota beginning in 1998. The voluntary quota affected group $g = 2$ after 2015. The mandated quota impacted group $g = 3$ in 1998, and group $g = 3$ was then affected by the voluntary quota in 2015.

[Insert Appendix Figure A.12 here]

In order to identify the complementary effects of the mandated and voluntary quotas, one needs to estimate their effects in absence of the other and the two quotas combined. To obtain the effect of the mandated quota, compare group 3 to group 0 between 1998 and 2015 and group 1 to group 0 after 1998. The ATT for the mandated quota without the voluntary quota is a weighted average between two treatment effects denoted by

$$ATT(g,t) = \mathbb{E}[Y_t(1,0) - Y_t(0,0)|g = 3] \text{ for } t \in [1998, 2015] \quad (3)$$

$$ATT(g,t) = \mathbb{E}[Y_t(1,0) - Y_t(0,0)|g = 1] \text{ for } t \geq 1998 \quad (4)$$

The impact of the voluntary quota is obtained by comparing group 2 to group 0 after 2015. The ATT for the voluntary quota without the mandated quota is given by

$$ATT(g,t) = \mathbb{E}[Y_t(0,1) - Y_t(0,0)|g = 2] \text{ for } t \geq 2015 \quad (5)$$

The effect of both quotas in one place is computed by comparing group 3 to group 0 after 2015. The ATT for both the combined mandated and voluntary gender quotas is denoted by

$$ATT(g,t) = \mathbb{E}[Y_t(1,1) - Y_t(0,0)|g = 3] \text{ for } t \geq 2015 \quad (6)$$

To estimate these average treatment effects on the treated, I implement a difference-in-differences identification strategy, examining how electoral constituencies respond to the implementation of two differing types of gender quotas for political office. I estimate the following equation:

$$\begin{aligned} PublicGood_{vcrt} = \beta_0 &+ \beta_1 PostMandatory_t \times AffectedMandatory_{cr} \\ &\times \mathbf{1}[g = 1 \cup \ (t < 2015 \cap \ g = 3)] \\ &+ \beta_2 PostVoluntary_t \times AffectedVoluntary_{cr} \times \mathbf{1}[g = 2] \\ &+ \beta_3 \ PostVoluntary_t \times AffectedVoluntary_{cr} \times AffectedMandatory_{cr} \\ &\times \mathbf{1}[g = 3] + \delta_t + \delta_c + t \times \delta_r \ + \nu_{vcrt} \end{aligned} \quad (7)$$

The outcome variable $PublicGood_{vcrt}$ is a dummy equal to 1 if village (or town or municipality) v in electoral constituency c in region r has access to the public good in year t. Year and electoral constituency fixed effects are denoted δ_t and δ_c, respectively. I control for Regional Council investment in public goods by including region-time trends in the specification, denoted $t \times \delta_r$. The variables $AffectedMandatory_{cr}$ and $AffectedVoluntary_{cr}$ are as described in Section 4. The indicator $PostMandatory_t$ equals 1 if the year is after 1999. $PostVoluntary_t$ is an indicator variable that equals 1 if the year is after 2015 which is when the quota was implemented by SWAPO. Standard errors are clustered at the 2001 electoral constituency level to allow for correlated outcomes within constituencies over time, and additionally, the treatment is assigned at the electoral constituency level.

The ATT described in equations 3 and 4 for the mandated quota is captured by β_1. To ensure β_1 only captures the impact of the mandated quota for group $g = 3$ prior to 2015 and group $g = 1$, I include $\mathbf{1}[g = 1 \cup (t < 2015 \cap g = 3)]$, which ensures the impact on group $g = 3$ after 2015 is not included in the estimate. The ATT described in equation 5 for the voluntary quota is estimated

by β_2. To exclude the impact of the quotas on group $g = 3$ from the estimate of β_2, I include $\mathbf{1}[g = 2]$. Thus β_2 only captures the effect of the quotas on group $g = 2$. The ATT, given by equation 6, for the effect of both quotas in a constituency is estimated by β_3 in equation 7. Including β_3 in the regression will allow for the isolation of the impact of each quota and the quotas together.

The impact of the quotas, denoted by the β's in the equation 7, are explicitly written out in below. This maps the ATTs to the β's.

The impact of the mandated quota is as follows:

$$\begin{aligned}\beta_1 = \ & \mathbb{E}[Y_{2015>t>1998}(1,0) - Y_{2015>t>1998}(0,0) \mid g = 3] - \mathbb{E}[Y_{t\leq 1998}(1,0) - Y_{t\leq 1998}(0,0) \mid g = 3] \\ & + \mathbb{E}[Y_{t>1998}(1,0) - Y_{t>1998}(0,0) \mid g = 1] - \mathbb{E}[Y_{t\leq 1998}(1,0) - Y_{t\leq 1998}(0,0) \mid g = 1] \end{aligned} \tag{8}$$

The impact of the voluntary quota is as follows:

$$\beta_2 = \mathbb{E}[Y_{t>2015}(0,1) - Y_{t>2015}(0,0) \mid g = 2] - \mathbb{E}[Y_{t\leq 2015}(0,1) - Y_{t\leq 2015}(0,0) \mid g = 2] \tag{9}$$

The impact on areas affected by both quotas is the following:

$$\beta_3 = \mathbb{E}[Y_{t>2015}(1,1) - Y_{t>2015}(0,0) \mid g = 3] - \mathbb{E}[Y_{t\leq 2015}(1,1) - Y_{t\leq 2015}(0,0) \mid g = 3] \tag{10}$$

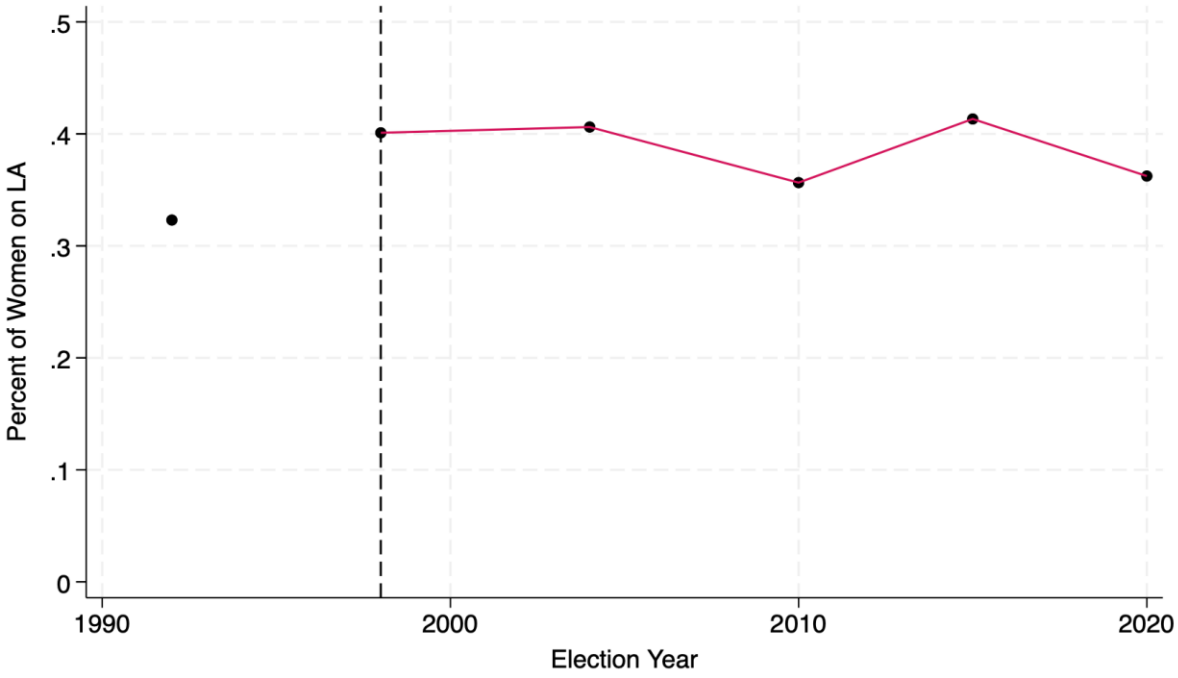
[Insert Appendix Table A.4 here]

[Insert Appendix Figure A.13 here]

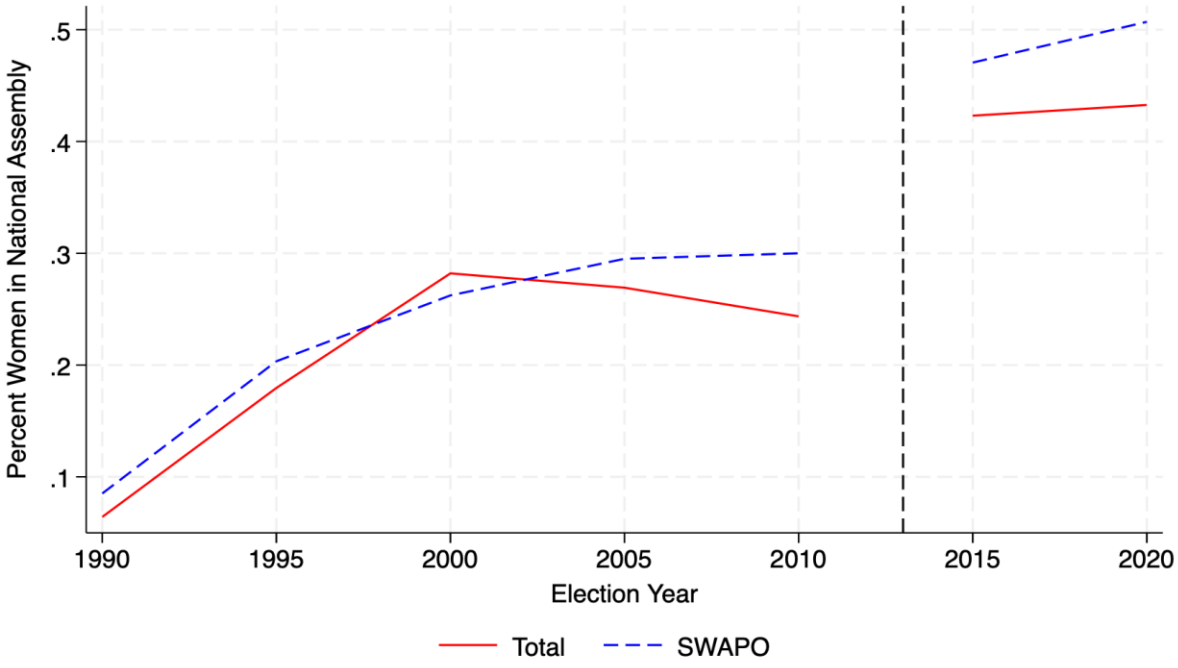
A.5 Robustness Check Tables

[Insert Appendix Tables A.5 through A.8 here]

Figure 1: Fraction of Legislative Seats held by Women



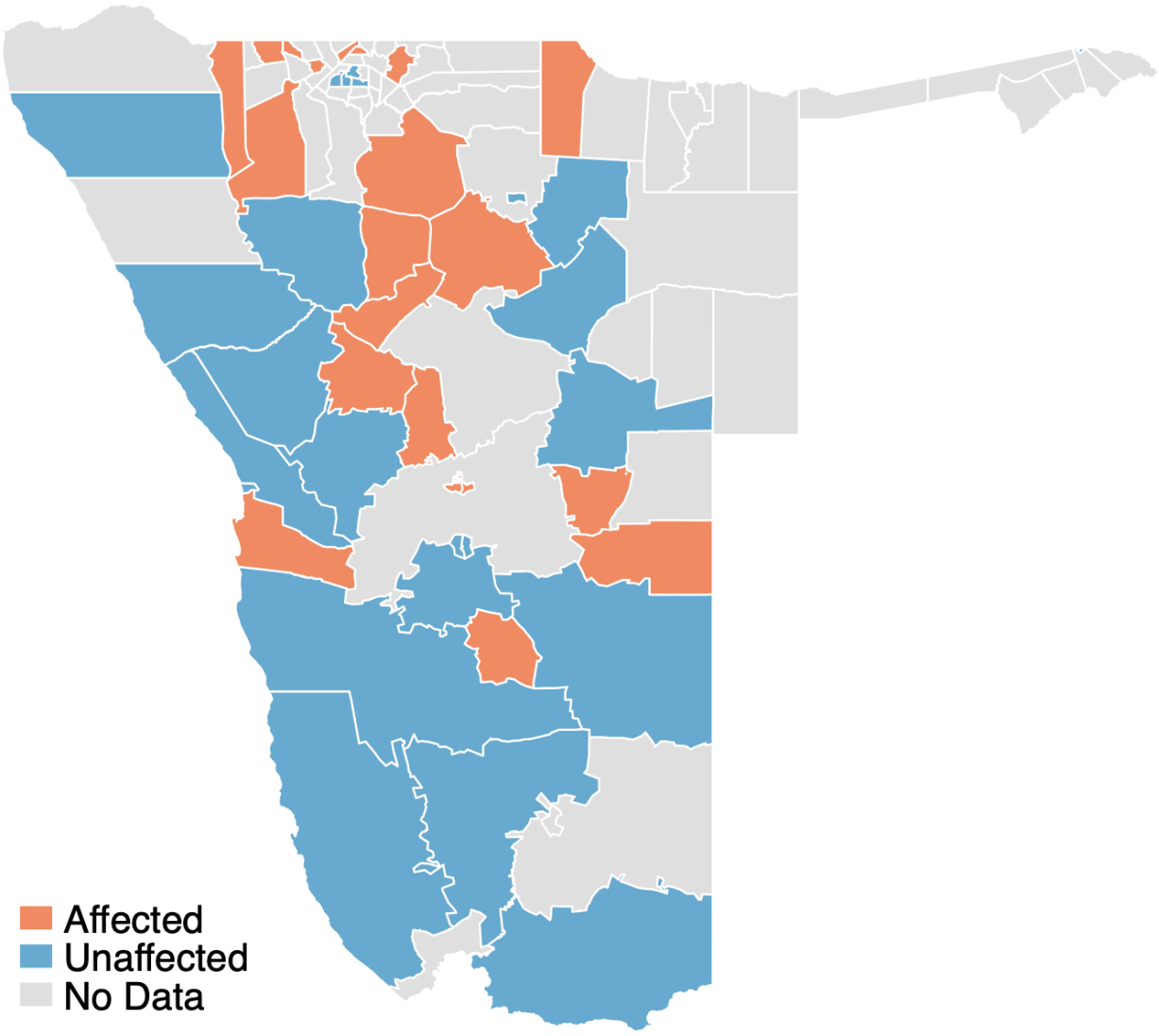
(a) Local Authority



(b) National Assembly

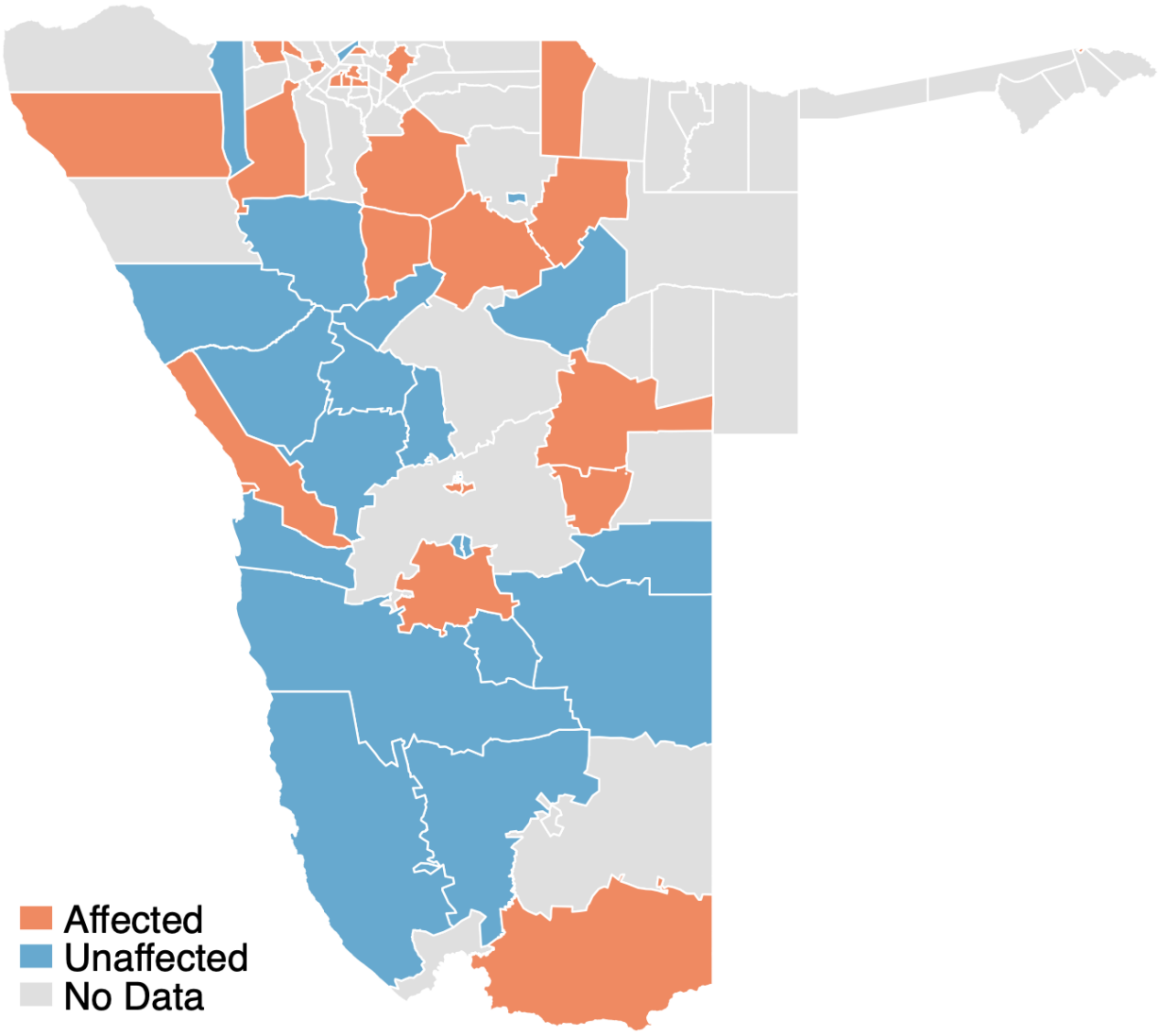
Note: Panel A uses Local Authority Election Data. Panel B uses National Assembly Election Data. The vertical line in Panel A corresponds to 1998 when the mandated quota was implemented. The vertical line in Panel B is at 2015 when the voluntary quota was implemented by SWAPO.

Figure 2: Electoral Constituencies Impacted by the Mandatory Quota



Note: Orange constituencies are classified as affected by by mandatory quota, and blue constituencies are classified as unaffected. The 1992 Local Authority election data is used for this figure.

Figure 3: Electoral Constituencies Impacted by the Voluntary Quota



Note: Orange constituencies are classified as affected by by voluntary quota, and blue constituencies are classified as unaffected. The 2012 and 2014 rounds of the Afrobarometer are used in this figure.

Table 1: Electoral Constituency Characteristics

	(1) Affected	(2) Unaffected	(3) Difference p-value
Panel A: Political Competitiveness			
Number of Parties Competing	3.56	2.63	0.0605*
Excluding Windhoek	3.25	2.63	0.1035
SWAPO Vote Share	0.573	0.565	0.8844
Excluding Windhoek	0.575	0.565	0.8566
Average List Position of Women	4.99	4.02	0.0005***
Excluding Windhoek	5.01	4.02	0.0013***
Panel B: Public Goods			
Electricity	0.508	0.611	0.3425
Piped Water	0.666	0.760	0.3625
Sewage	0.571	0.613	0.7089
Paved Roads	0.275	0.358	0.3472
Post Offices	0.318	0.321	0.9736
Police Stations	0.329	0.358	0.7539
Schools	0.529	0.701	0.0969*
Health Clinics	0.404	0.505	0.3058
Market Stalls	0.336	0.434	0.3140

Note: *** p<0.01, ** p<0.05, * p<0.1. The sample in column 1 consists of electoral constituencies classified as affected by the mandatory quota, and column 2 are constituencies unaffected by the mandatory quota. Column 3 displays the p-value of the difference between the means in columns 1 and 2. Panel A uses 1992 Local Authority Election Data. "Exclusing Windhoek" drops Windhoek from the sample. Panel B uses the 1999 Afrobarometer data. For electricity, piped water, and sewage systems, the dependent variable is an indicator that equals one if the outcome is available to most homes in the village. For roads, the dependent variable is an indicator that equals one if the there are paved roads in the village. For post offices, police stations, schools, health clinics, and market stalls, the dependent variable is an indicator equal to one if the outcome is available in the town or within easy walking distance.

Table 2: Fraction of Constituencies Affected by Each Quota

		Voluntary Quota	
		Unaffected	Affected
Mandated Quota	Unaffected	12	13
	Affected	9	7

Note: Each cell is the number of electoral constituencies. 1992 Local Authority Election data is used to classify which constituencues are affected by the mandatory quota. The 2012 and 2014 rounds of the Afrobarometer survey are used to determine which constituencies are afffected by the voluntary quota.

Table 3: Effect of Quotas on Women's Political Representation

	Mandated Quota	
	(1)	(2)
	Number of Women	Percent of Women
Affected x Post	0.635	0.0841
	(0.392)	(0.0575)
	[0.0917]	[0.130]

Note: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors clustered at the electoral constituency level are reported in parentheses. The p-values associated with wild cluster bootstrapped standard errors are reported in brackets. All regressions include constituency and time fixed effects and region-time trends. The dependent variable in column one is the number of women elected to the local authority. The dependent variable in column 2 is the fraction of seats on the local authority held by women.

Table 4: Effect of Mandatory and Voluntary Gender Quotas on Public Good Provision

	(1) Mandated Quota	(2) Voluntary Quota
Panel A: Infrastructure		
Electricity	0.257	-0.009
	(0.316)	(0.047)
	[0.438]	[0.879]
Piped Water	-0.462	0.116
	(0.307)	(0.093)
	[0.370]	[0.280]
Sewage	0.285***	0.022
	(0.065)	(0.065)
	[0.0465]	[0.749]
Paved Roads	0.782***	0.047
	(0.114)	(0.070)
	[0.0177]	[0.515]
Infrastructure Index	0.138	0.116
	(0.716)	(0.130)
	[0.882]	[0.421]
Panel B: Public Services		
Post Offices	0.145	0.154
	(0.236)	(0.103)
	[0.650]	[0.167]
Police Stations	0.459	0.152
	(0.302)	(0.146)
	[0.318]	[0.341]
Schools	0.590***	0.126*
	(0.095)	(0.074)
	[0.0262]	[0.145]
Health Clinics	0.312	0.147
	(0.288)	(0.100)
	[0.503]	[0.175]
Market Stalls	0.114	-0.029
	(0.295)	(0.070)
	[0.889]	[0.668]
Public Service Index	1.005*	0.288
	(0.547)	(0.204)
	[0.232]	[0.214]

Note: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors clustered at the electoral constituency level are reported in parentheses. The p-values associated with wild cluster bootstrapped standard errors are reported in brackets. Each cell in Column 1 represents the coefficient from separate regresions of the dependent variable on the impact of the mandated quota. Each cell in Column 2 represents the coefficient from separate regresions of the dependent variable on the impact of the voluntary quota. Every regression includes year and electoral constituency fixed effects. Column 1 uses Afrobarometer from 1999 through 2006. Column 2 uses Afrobarometer from 2008 through 2021. For electricity, piped water, and sewage systems, the dependent variable is an indicator that equals one if the outcome is available to most homes in the village. For roads, the dependent variable is an indicator that equals one if the there are paved roads in the village. The infrastructure index is combines the electricity, piped water, sewage systems, and roads variables. For post offices, police stations, schools, health clinics, and market stalls, the dependent variable is an indicator equal to one if the outcome is available in the town or within easy walking distance. The public service index combines the post office, police station, schools, health clinics, and market stalls variables.

Table 5: Effect of Mandatory and Voluntary Quotas on Views of Governance

	(1) Mandated Quota	(2) Voluntary Quota
Panel A: Trust in Institution		
Overall	0.140	-0.069**
	(0.110)	(0.030)
	[0.471]	[0.0373]
Men	0.056	-0.118***
	(0.161)	(0.037)
	[0.837]	[0.00475]
Women	0.199	-0.008
	(0.131)	(0.035)
	[0.359]	[0.839]
Panel B: Politicians Listen to Constituents		
Overall	-0.026	-0.048**
	(0.102)	(0.023)
	[0.868]	[0.0676]
Men	-0.193***	-0.029
	(0.014)	(0.025)
	[0.00799]	[0.275]
Women	0.143	-0.051
	(0.201)	(0.034)
	[0.667]	[0.179]
Panel C: Perceived Corruption		
Overall	-0.014	0.049**
	(0.104)	(0.024)
	[0.924]	[0.0671]
Men	-0.004	0.038
	(0.037)	(0.030)
	[0.942]	[0.249]
Women	0.024	0.080**
	(0.144)	(0.032)
	[0.920]	[0.0204]

Note: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors clustered at the electoral constituency level are reported in parentheses. Each cell in Column 1 represents the coefficient from separate regresions of the dependent variable on the impact of the mandated quota. The dependent variable in Column 1 corresponds to the local authority in Panel A and politicians elected to the local authority in Panels B and C. Each cell in Column 2 represents the coefficient from separate regresions of the dependent variable on the impact of the voluntary quota. The dependent variable in Column 2 is the National Assembly in Panel A and National Assembly Politicians in Panels B and C. Every regression includes year and electoral constituency fixed effects. Column 1 uses Afrobarometer from 1999 through 2006. Column 2 uses Afrobarometer from 2008 through 2021.

Figure A.1: Legislative Structure of Namibia

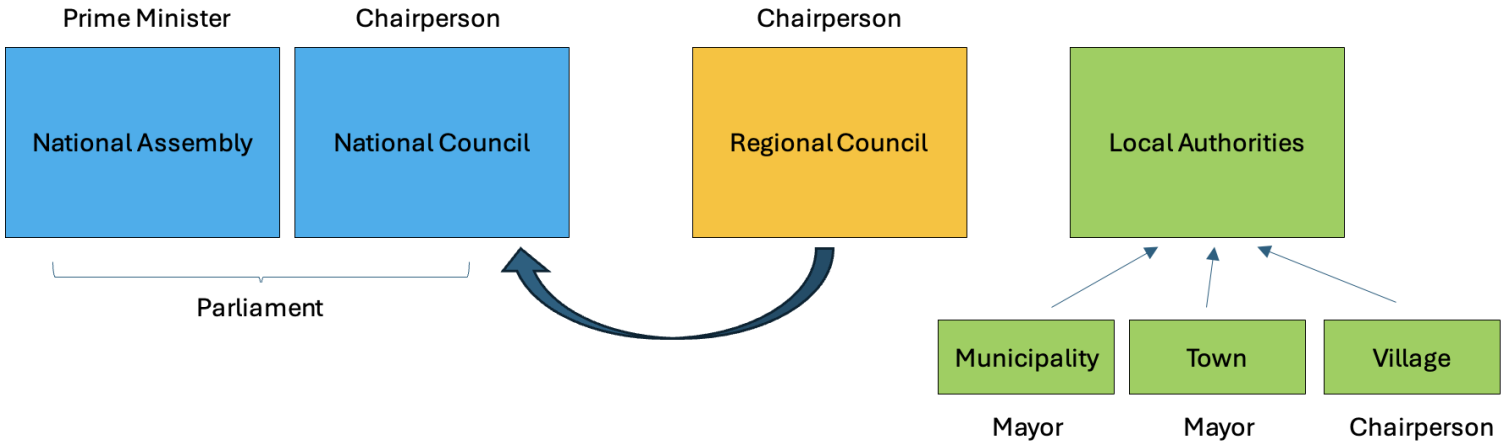


Figure A.2: Example of Local Authority Election Results in the Government Gazette

FIRST SCHEDULE

Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7
Local authority area	Total number of votes (rejected ballot papers)	Quota	Political party	Number of votes recorded for party	Number of seats determined	Candidates declared to be duly elected members
Arandis	1246 (5)	177	SWAPO-Party	1053	6	Hoabeb, Harry Andreas, Rosalia Kluft, John Unaeb, Engelhardt Namupala, Justine Shupamba, Leonard
			UDF of Namibia	122	1	Dausab, Herman
			DTA of Namibia	52	0	
			SWANU of Namibia	14	0	
Aranos	1050 (24)	146,57	DTA of Namibia	611	4	Strauss, Frederick Johannes Jakobs, Christiaan Du Plessis, Susara Wilhelmina Meyer, Rosalia
			SWAPO-Party	415	3	Hochobeb, Eduard Kharuchab, Elias Gaoseb, Helmuth

Figure A.3: Example of Data on Women's Positions on Candidate List

PLACE	PARTY	NO OF WOMEN	POSITION ON PARTY LISTS							
			1	2	3	4	5	6	7	7+
ARANDIS	DTA	3		1			1		1	
	SWANU	4				1	1	1	1	
	SWAPO	2		1			1			
	UDF	3				1		1	1	
ARANOS	DTA	4			1	1		1	1	
	SWAPO	2						1	1	
ARIAMSVLEI	DTA	3		1			1		1	
	SWAPO	3				1	1	1		
AROAB	DTA	2	1	1						
	SWANU	3			1	1		1		
	SWAPO	3	1		1	1				

Figure A.4: Example of National Assembly Politican Profile

Kasingo, Loide



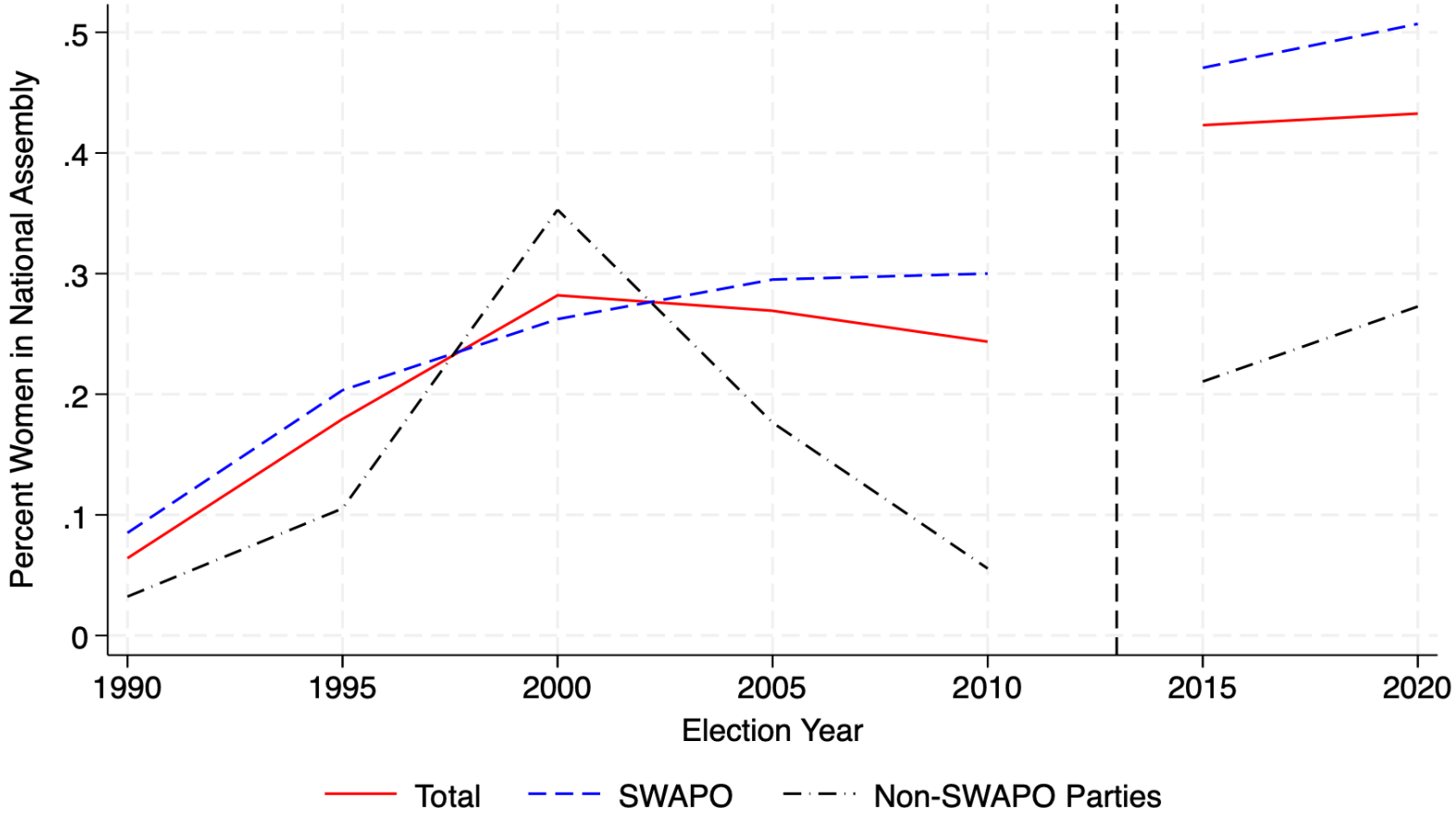
Deputy Speaker: National Assembly

Address: Private Bag 13323, Windhoek

SWAPO Party

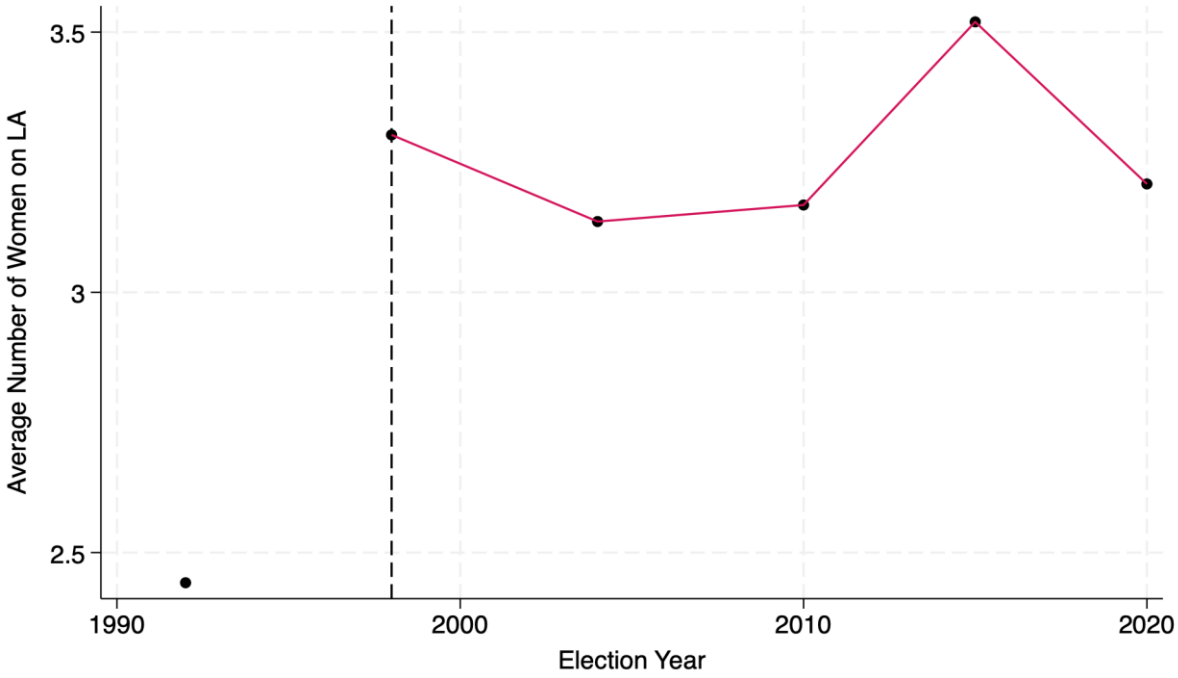
Legislative Profile	Member of Parliament since 1996; Chairperson of the Committee on Constitutional and Legal Affairs 2005-2010; Deputy Minister of Home Affairs 2000 – 2005; Deputy Minister of Regional and Local Government and Housing 1990 – 2000; Deputy Speaker of the National Assembly of Namibia since 2010
Personal	Born in Oshikoto Region
Education	Matriculation, Ongwediva High School 1971; B.Juris. University of the North, South Africa 1974 -1978; Various Courses, Institute of Marketing Management, South Africa 1983 – 1984; Diploma in Training Methodology for Trade Union Instructors, ILO Centre in Turin, Italy 1987; Namibia Diploma in Development and Adaptation of Trade Union Material, Turin, Italy 1990; Honorary Professor, Jilin University 2011; Busy with a Thesis on Criminal Justice System in Namibia, towards my LL.M Degree
Career	Join SWAPO 1975; Public Prosecutor, Ministry of Justice 1990 – 1996; National Treasurer, Namibia Public Workers Union 1993-1996; Education Coordinator, NUNW 1988 – 90; NUNW organiser 1986 -1987; Adult literacy instructor for Namibia Literacy Programme and Council Of Churches in Namibia 1980 – 1985; Member of the SWAPO Party Central Committee since 2002; Member of the SWAPO Party Women's Council Central Committee since 2002; Associate Member of the National Union of Namibian Workers since 2000; Member of the Pan African Parliament since 2006, Member of the Committee on cooperation, International Relations and Conflict Resolution 2006-2011; Member of the Committee on Administrative and Financial Evaluation up to 2011.
Interests	Worker's rights, labour, youth, women issues, African Union and its organs

Figure A.5: Fraction of Seats in the National Assembly Held by Women, including non-SWAPO Parties

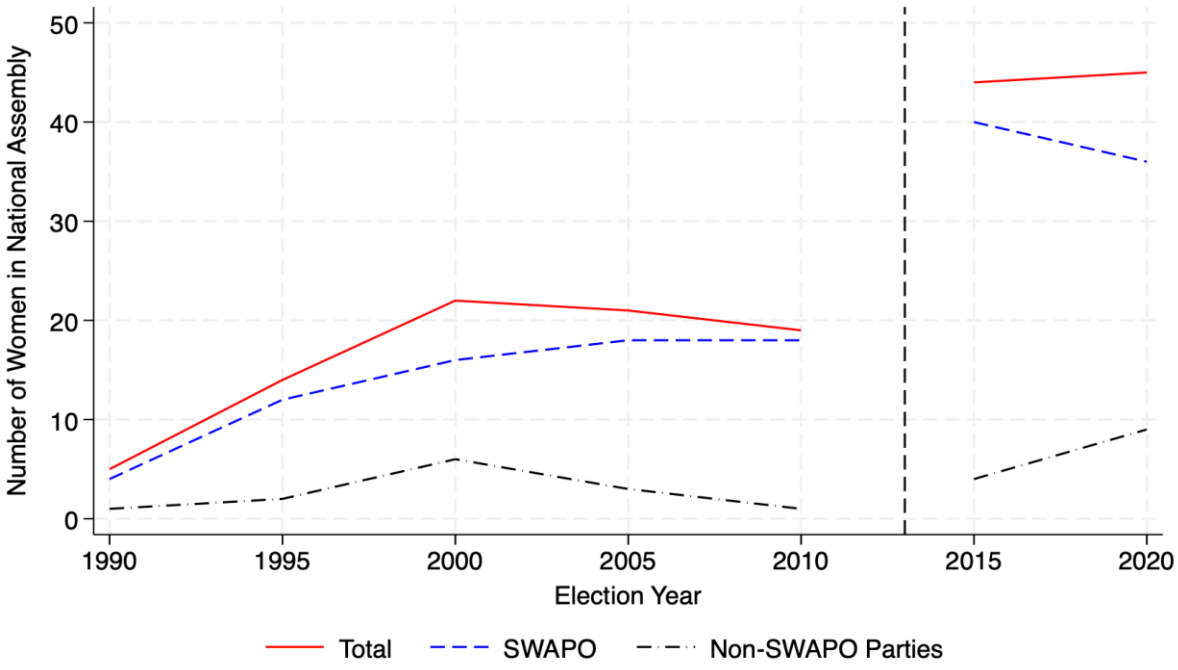


Note: This figure uses National Assembly Election Data. The vertical line is at 2015 when the voluntary quota was implemented by SWAPO.

Figure A.6: Average Number of Women Elected to the Legislature



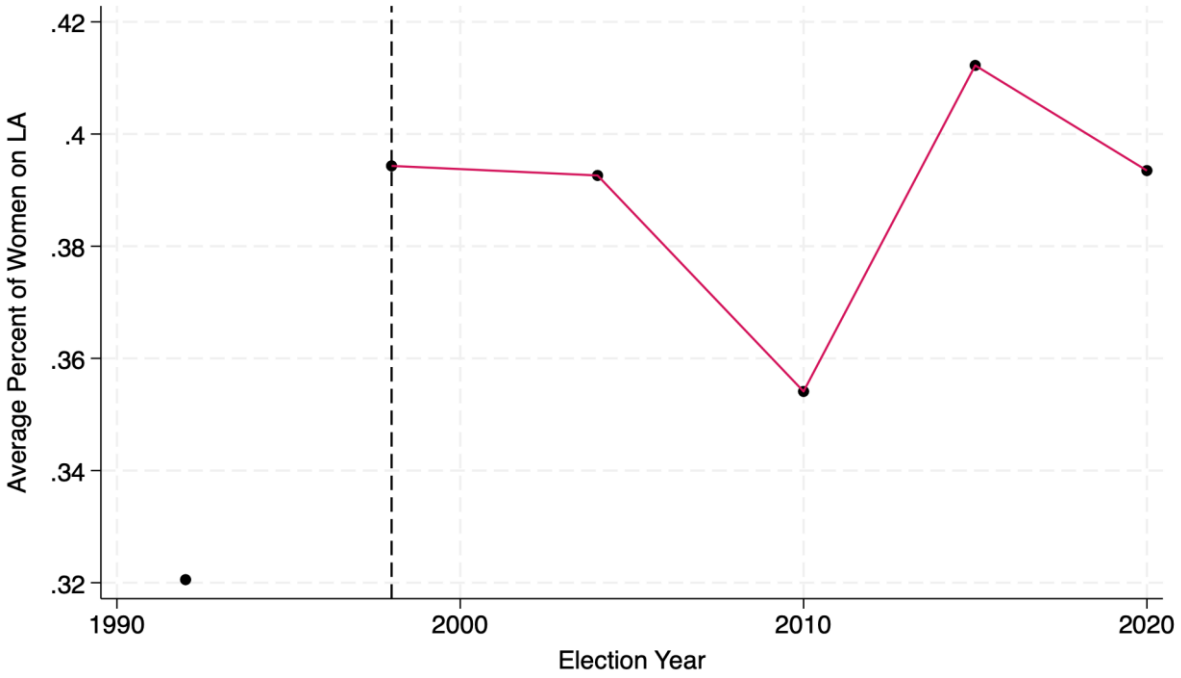
(a) Local Authority



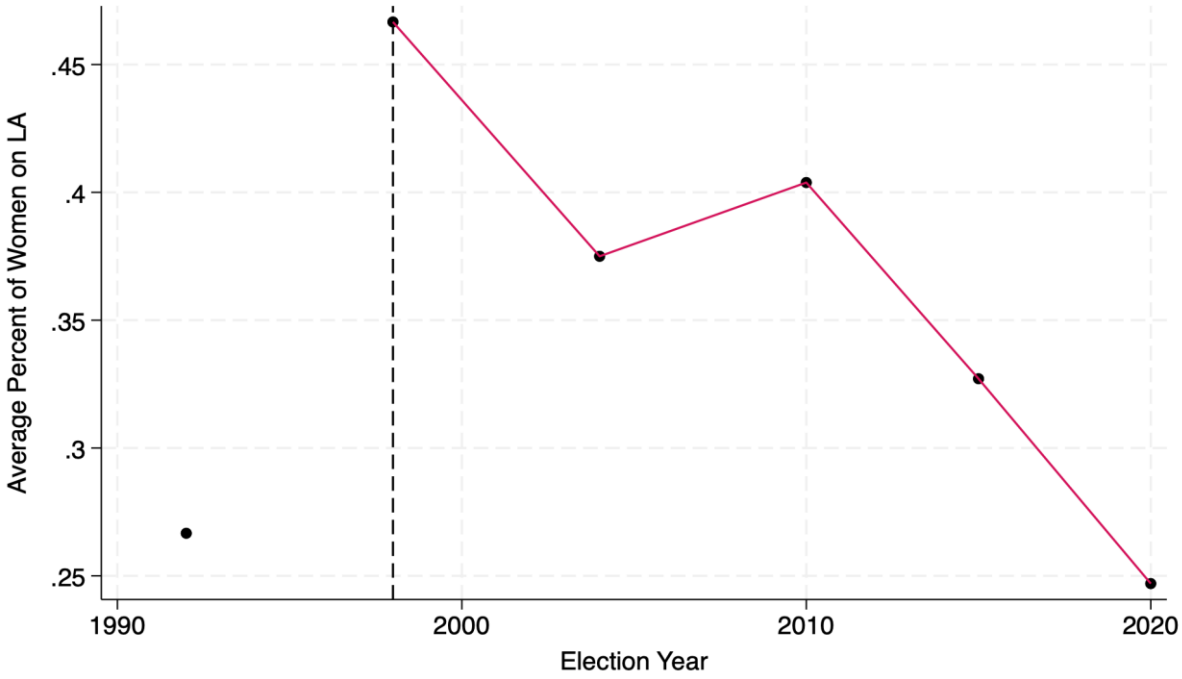
(b) National Assembly

Note: Panel A uses Local Authority Election Data. Panel B uses National Assembly Election Data. The vertical line in Panel A corresponds to 1998 when the mandated quota was implemented. The vertical line in Panel B is at 2015 when the voluntary quota was implemented by SWAPO.

Figure A.7: Fraction of Local Authority Seats Held by Women



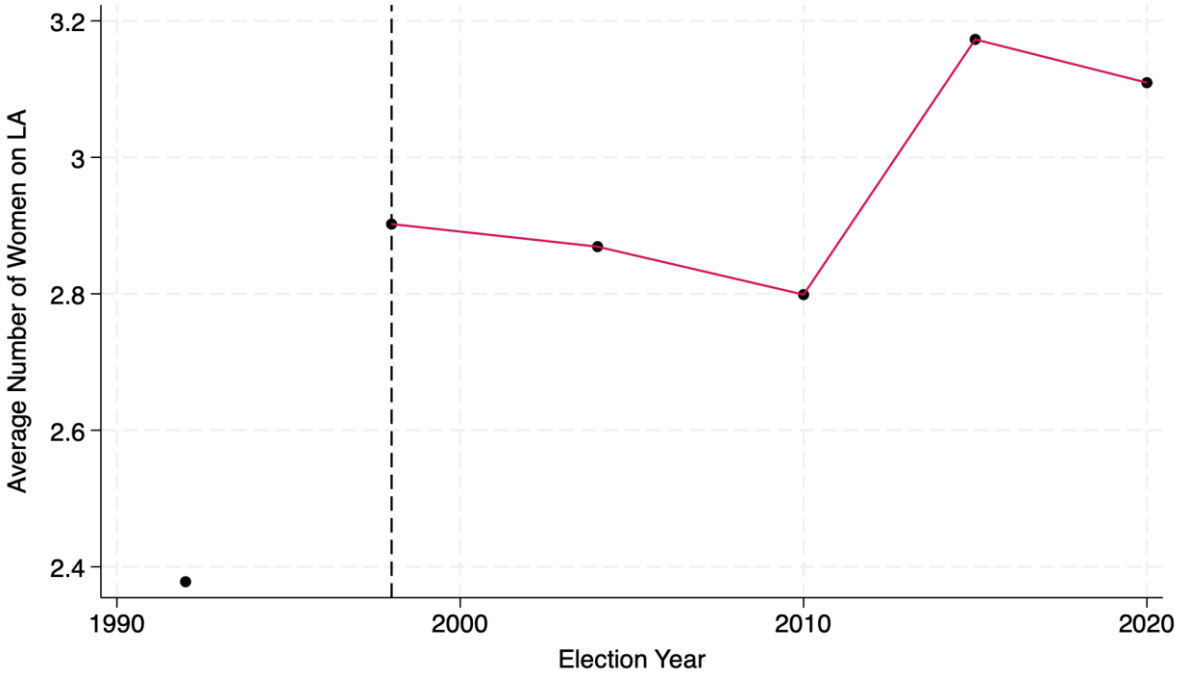
(a) 10 or fewer seats



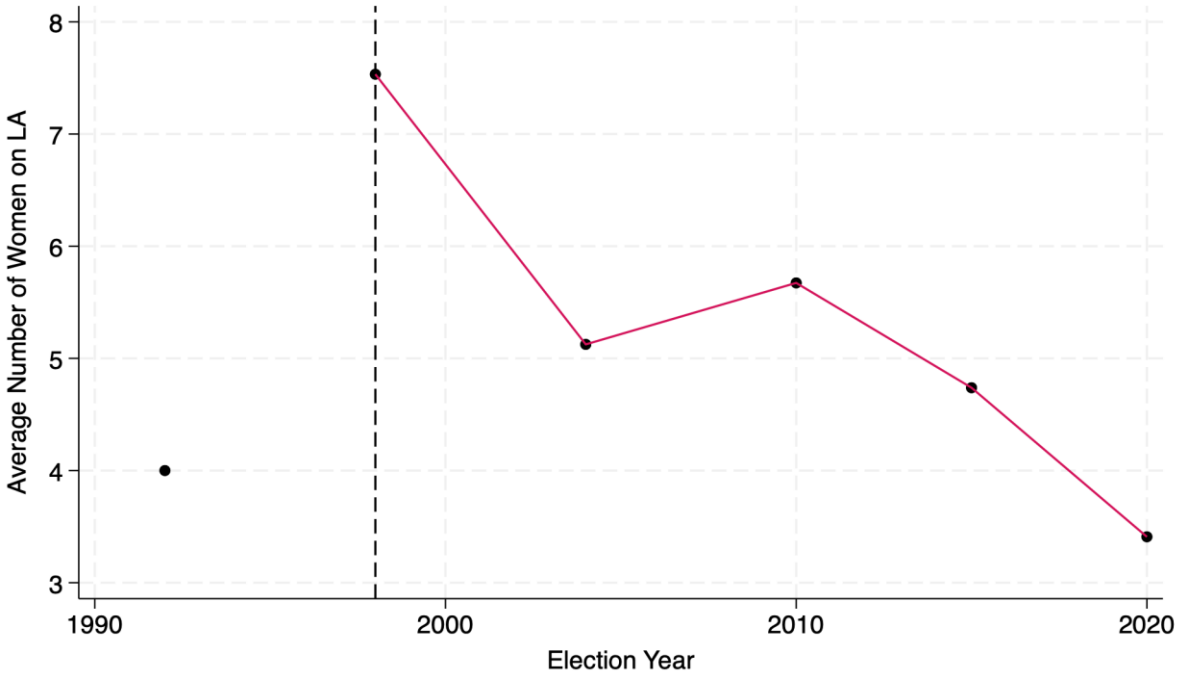
(b) 11 or more seats

Note: Panels A and B use Local Authority Election Data. The vertical line in both panels corresponds to 1998 when the mandated quota was implemented.

Figure A.8: Average Number of Women Elected to Local Authorities



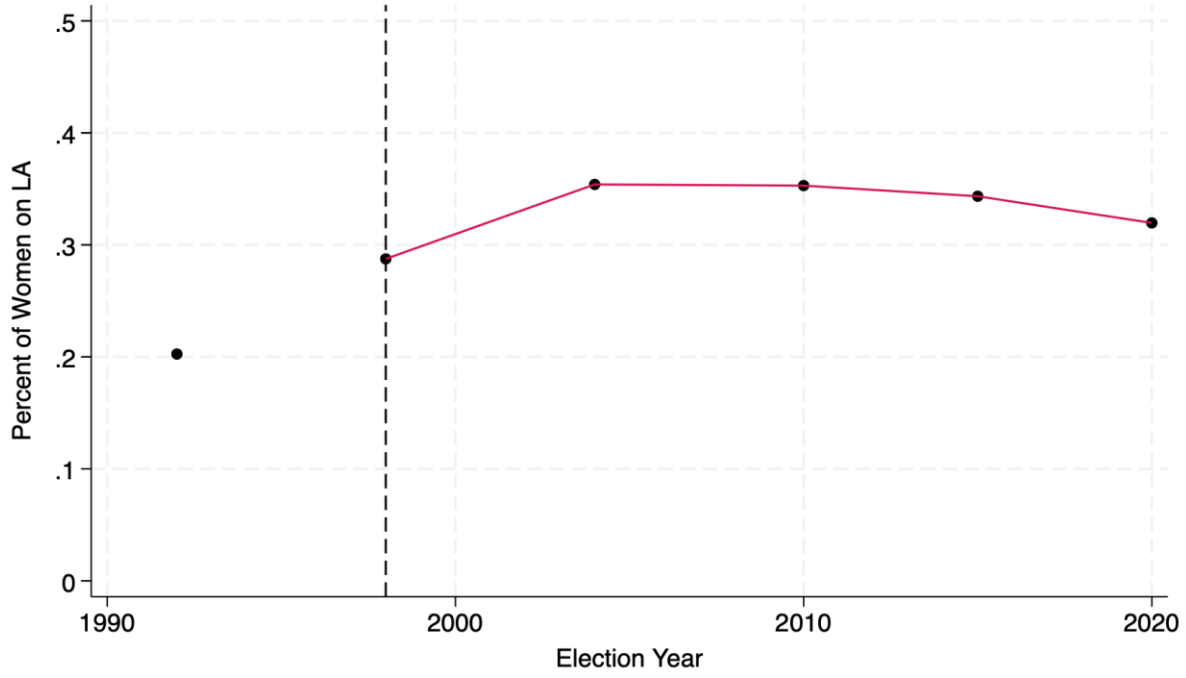
(a) 10 or fewer seats



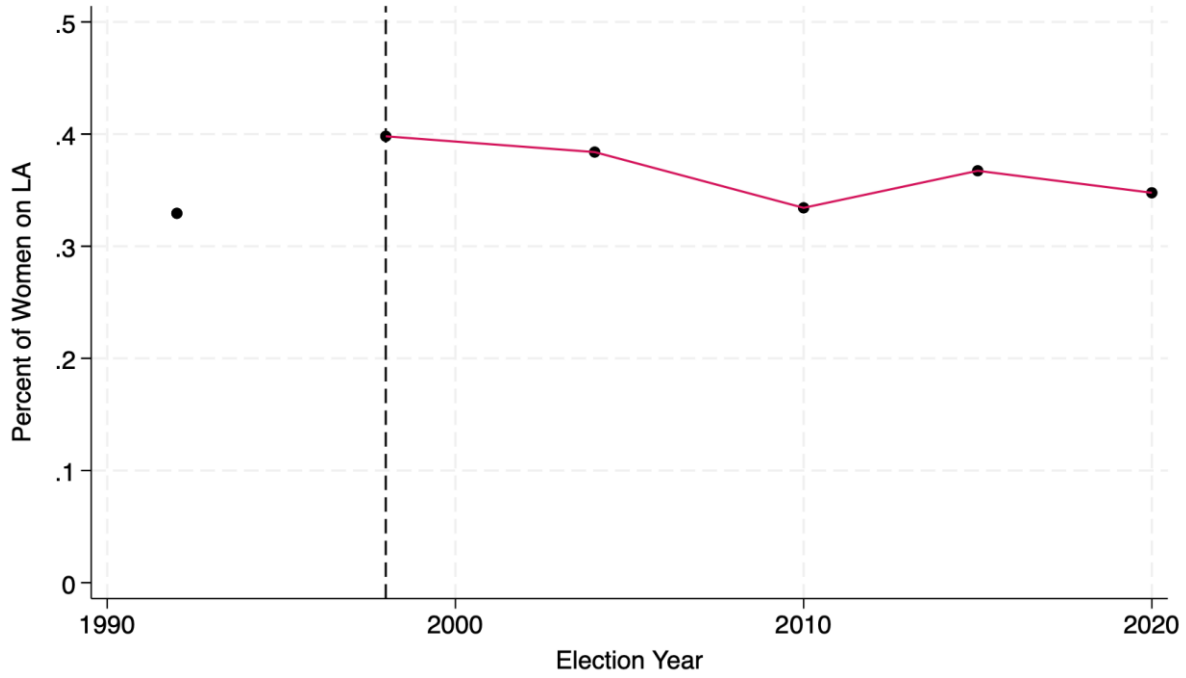
(b) 11 or more seats

Note: Panels A and B use Local Authority Election Data. The vertical line in both panels corresponds to 1998 when the mandated quota was implemented.

Figure A.9: Fraction of Local Authority Seats Held by Women, by Affected Status - Mandatory Quota



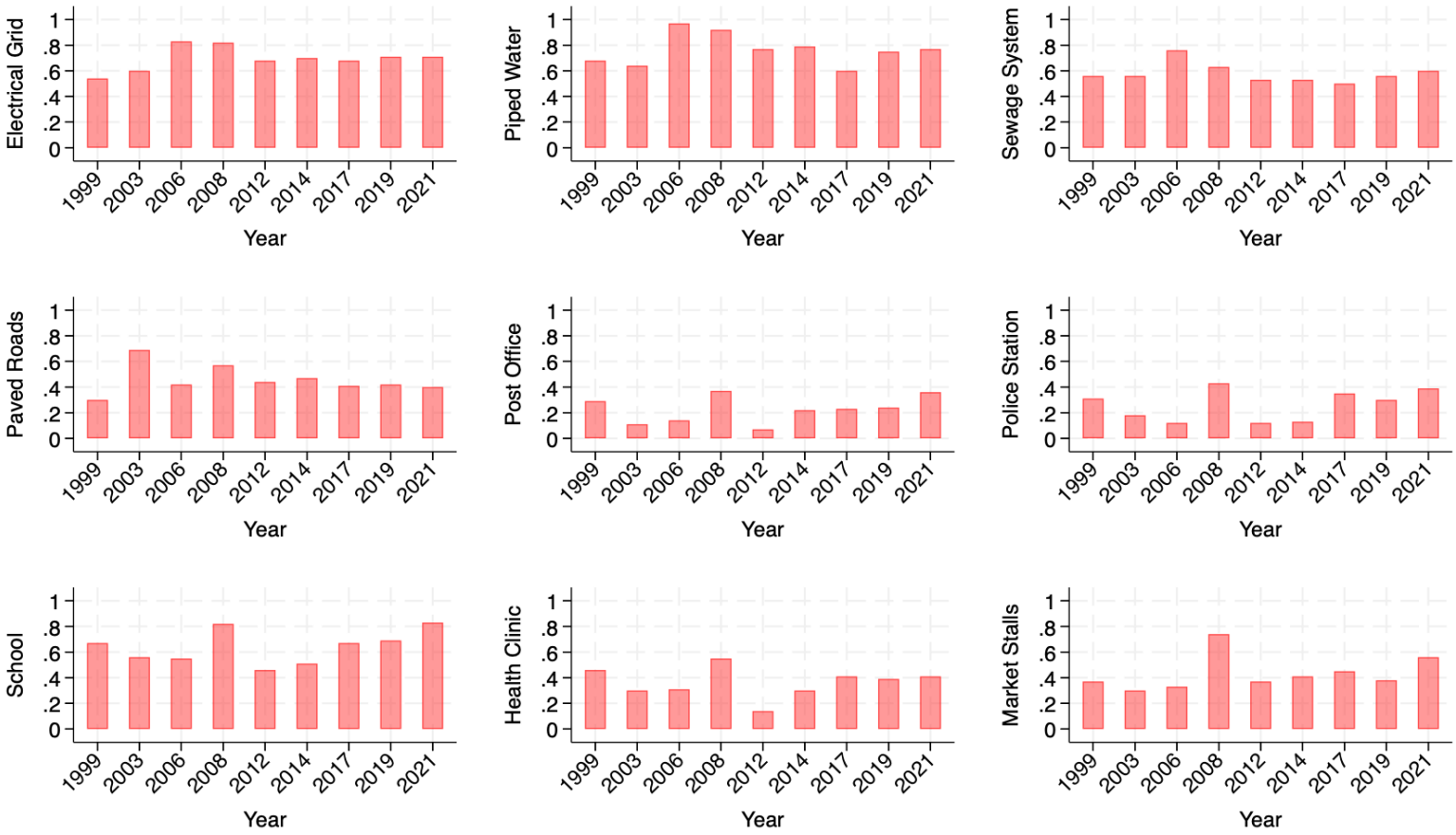
(a) Affected by Mandatory Quota



(b) Unaffected by Mandated Quota

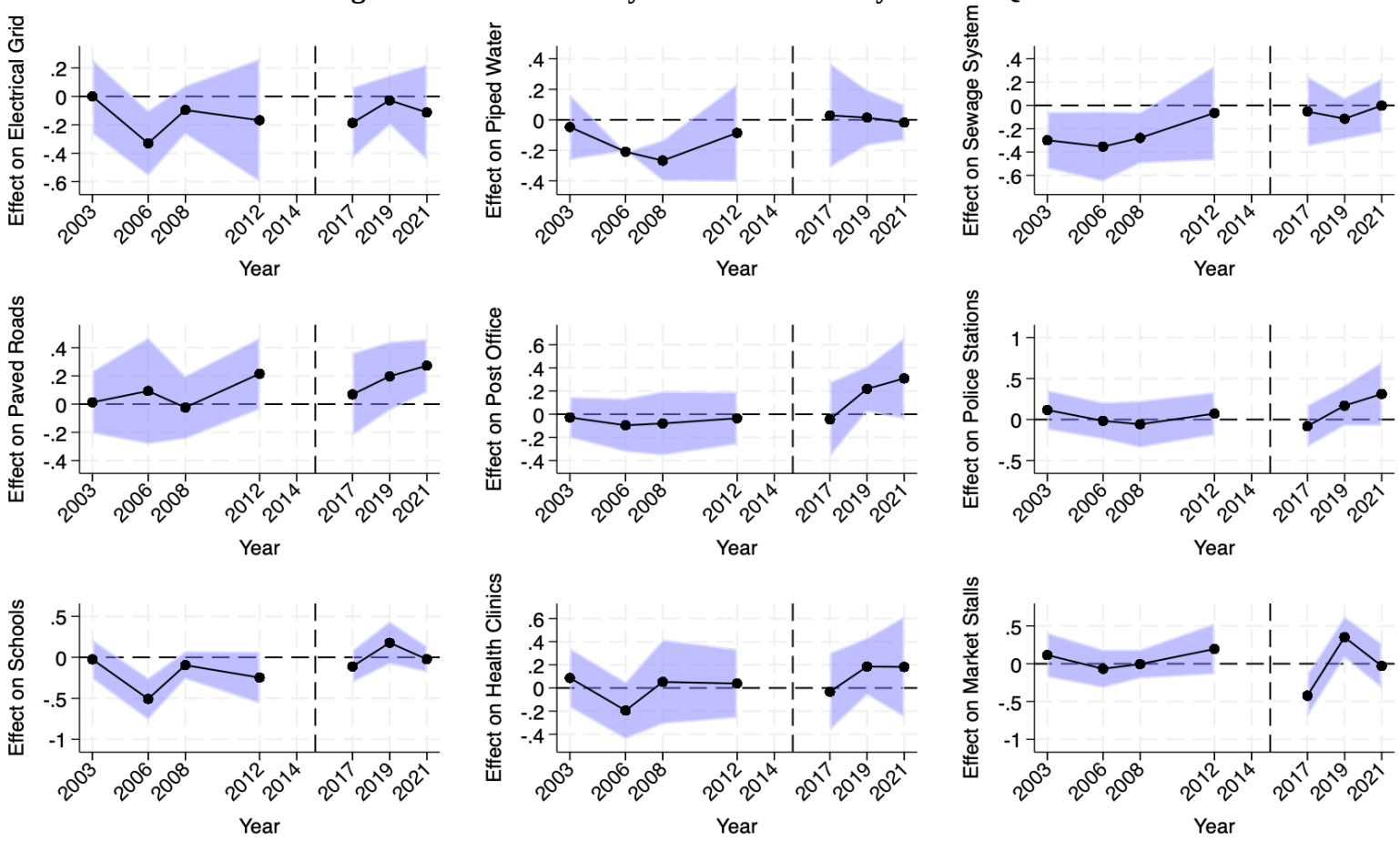
Note: Panels A and B use Local Authority Election Data. The vertical line in both panels corresponds to 1998 when the mandated quota was implemented.

Figure A.10: Public Good Provision Over Time



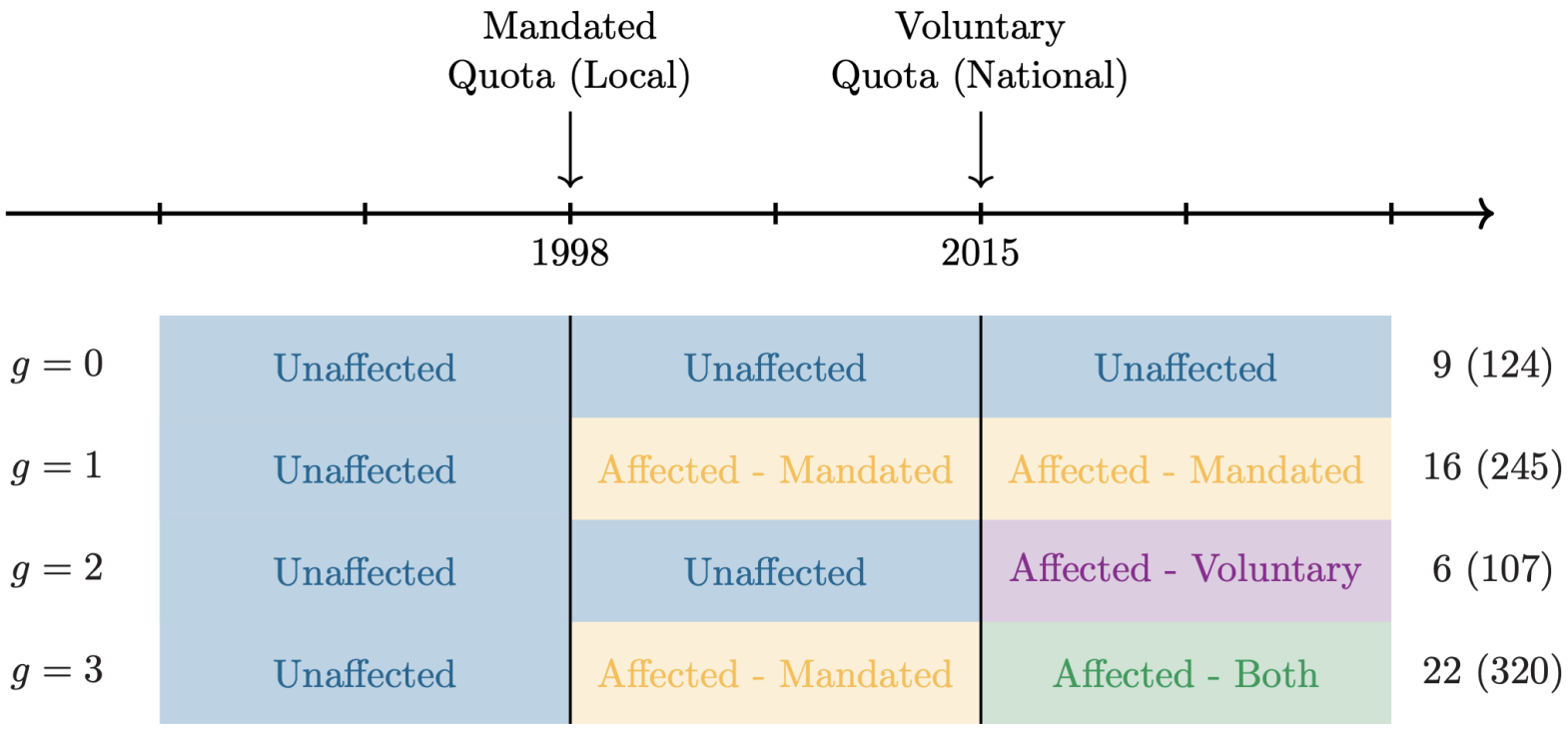
Note: Shows the provision of public good provision in each survey year. All nine rounds of the Afrobarometer survey are used. The data is a repeated cross section which is why the provision of public goods is not strictly increasing.

Figure A.11: Event Study Plots for Voluntary Gender Quota



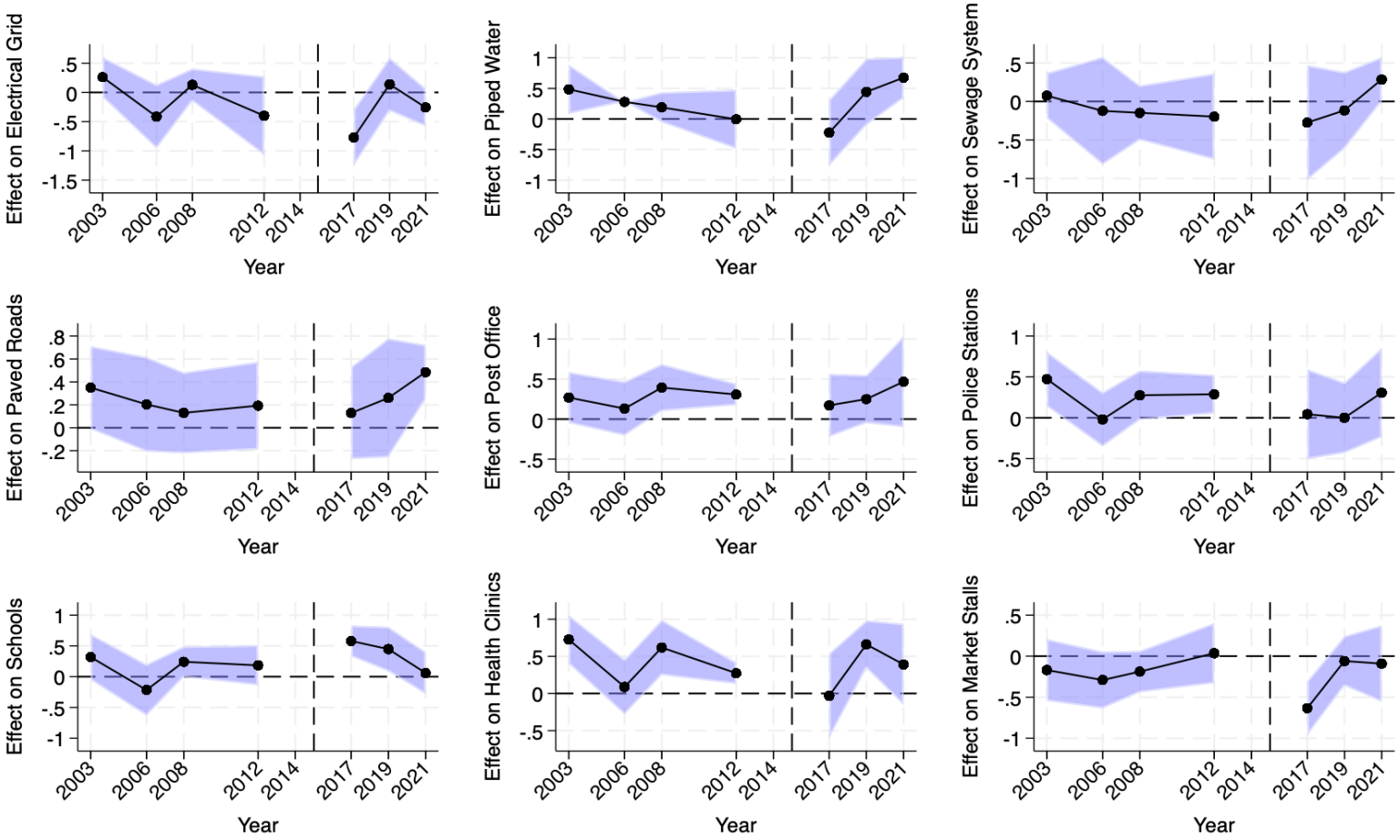
Note: Each point represents the coefficient from a regression. The point indicates the average effect of the voluntary quota on the outcome variable in a given year. The shaded region represents the 95% confidence interval for each point. The vertical line is at 2015 which is when SWAPO implemented the voluntary quota. The horizontal line is at 0. All nine rounds of the geocoded Afrobarometer data are used. The 1999 round has a large negative effect for many public goods, which makes the scale much larger. I ran the analysis dropping 1999, and the point estimates are very close in magnitude to those in Table 4 Column 2. Thus, I do not include 1999 in this figure.

Figure A.12: Visual Depiction of Treatments



Note: This depicts the different treatment groups. The number on the right side is the number of electoral constituencies in each treatment category, and the number of observations is presented in parentheses.

Figure A.13: Event Study Plots for Voluntary Gender Quota: Complementarities



Note: Each point represents the coefficient from a regression. The point indicates the average effect of the voluntary quota on the outcome variable in a given year. The shaded region represents the 95% confidence interval for each point. The vertical line is at 2015 which is when SWAPO implemented the voluntary quota. The horizontal line is at 0. All nine rounds of the geocoded Afrobarometer data are used.

Table A.1: Electoral Constituency Characteristics in Mandatory Quota Post Period

	(1) Affected	(2) Unaffected	(3) P-Value of Following Test
			(1) = (2)
			(1) > (2)
Electricity	0.719	0.726	0.9251
			0.5374
Piped Water	0.762	0.873	0.0999*
			0.9500
Sewage	0.726	0.605	0.1437
			0.0719*
Paved Roads	0.662	0.481	0.0296**
			0.0148**
Post Offices	0.1875	0.087	0.0959*
			0.0479**
Police Stations	0.141	0.154	0.8247
			0.5876
Schools	0.538	0.594	0.5189
			0.7405
Health Clinics	0.377	0.257	0.1487
			0.0743*
Market Stalls	0.397	0.216	0.0233**
			0.0117**

Note: *** p<0.01, ** p<0.05, * p<0.1. The sample in column 1 consists of electoral constituencies classified as affected by the mandatory quota, and column 2 are constituencies unaffected by the mandatory quota. Column 3 displays the p-value of the difference between the means in columns 1 and 2. Afrobarometer surveys from 2003 and 2006 are used in this table. For electricity, piped water, and sewage systems, the dependent variable is an indicator that equals one if the outcome is available to most homes in the village. For roads, the dependent variable is an indicator that equals one if the there are paved roads in the village. For post offices, police stations, schools, health clinics, and market stalls, the dependent variable is an indicator equal to one if the outcome is available in the town or within easy walking distance.

Table A.2: Citizens' Policy Preferences

	(1) Men	(2) Women	(3) P-Value of Following Test
			(1) = (2)
			(1) < (2)
Electricity	0.044	0.043	0.9157
			0.5422
Water	0.256	0.265	0.5675
			0.2838
Roads / Infrastructure	0.028	0.032	0.5397
			0.2698
Education	0.317	0.355	0.0183**
			0.0092***
Health	0.421	0.424	0.8496
			0.4248
Crime	0.114	0.107	0.5264
			0.7368
Unemployment	0.603	0.623	0.2254
			0.1127

Note: *** p<0.01, ** p<0.05, * p<0.1. Column 1 displays men's policy preferences and Column 2 shows women's preferences. Column 3 displays the p-value of the difference between the means in columns 1 and 2.The top p-value is from testing the null hypothesis that the same proportion of men and women have that policy preference. The bottom p-value is from testing the null hypothesis that a higher proportion of women have the policy preference. The data is from Afrobarometer surverys from 1999 through 2006. If an individual listed one of the policy areas as one of their top three issues the government should be addressing, the individual is classified as having that issue as a policy preference.

Table A.3: National Assembly Politicians' Policy Preferences

	(1) Men	(2) Women	(3) P-Value of (1) = (2) (1) < (2)
Energy	0.016	0.000	0.1581 0.9209
Water	0.032	0.013	0.3580 0.8210
Roads / Infrastructure	0.024	0.000	0.0833* 0.9584
Education	0.175	0.182	0.8972 0.4486
Health	0.079	0.078	0.9706 0.5147
Labor/Unemployment	0.032	0.169	0.0035*** 0.0017***
Gender Issues/Women's Rights	0.071	0.468	<0.0001*** <0.0001***
Crime	0.198	0.169	0.5970 0.7015
National Defense	0.119	0.052	0.0834* 0.9583
Foreign Affairs	0.135	0.156	0.6858 0.3429
Economic Development	0.206	0.260	0.3903 0.1951
Poverty Eradication	0.056	0.117	0.1484 0.0742*
Vulnerable Polulations	0.032	0.143	0.0114** 0.0057***
Agriculture	0.278	0.117	0.0035*** 0.9982

Note: *** p<0.01, ** p<0.05, * p<0.1. Column 1 displays men's policy preferences and Column 2 shows women's preferences. Column 3 displays the p-value of the difference between the means in columns 1 and 2.The top p-value is from testing the null hypothesis that the same proportion of men and women have that policy preference. The bottom p-value is from testing the null hypothesis that a higher proportion of women have the policy preference. The data is from the National Assembly Politician profiles. If a politician listed a policy area under the "interests" section of their profile, they are classified as having the policy area as a policy preference.

Table A.4: Complementarities of Gender Quotas for Public Good Provision

	(1) Mandated Quota	(2) Voluntary Quota	(3) Both Quotas
Panel A: Infrastructure			
Electricity	0.871***	0.206*	-0.004
	(0.067)	(0.121)	(0.073)
	[0.353]	[0.158]	[0.961]
Piped Water	0.185***	0.324**	0.075
	(0.039)	(0.146)	(0.060)
	[0.611]	[0.0814]	[0.243]
Sewage	0.529***	0.333***	0.106
	(0.077)	(0.112)	(0.085)
	[0.447]	[0.0269]	[0.260]
Paved Roads	0.771***	0.160**	0.023
	(0.032)	(0.076)	(0.067)
	[0.208]	[0.115]	[0.740]
Infrastructure Index	2.576***	0.671***	0.121
	(0.102)	(0.219)	(0.126)
	[0.481]	[0.0294]	[0.395]
Panel B: Public Services			
Post Offices	0.764***	0.047	0.221*
	(0.060)	(0.115)	(0.114)
	[0.470]	[0.722]	[0.0860]
Police Stations	0.819***	0.009	0.210
	(0.082)	(0.135)	(0.150)
	[0.448]	[0.951]	[0.191]
Schools	1.190***	0.233***	0.207**
	(0.051)	(0.086)	(0.087)
	[0.252]	[0.0490]	[0.0701]
Health Clinics	0.772***	0.256*	0.161
	(0.038)	(0.131)	(0.115)
	[0.305]	[0.126]	[0.237]
Market Stalls	0.654***	-0.022	-0.049
	(0.027)	(0.168)	(0.094)
	[0.146]	[0.920]	[0.597]
Public Service Index	2.391***	0.277	0.404*
	(0.118)	(0.300)	(0.206)
	[0.421]	[0.443]	[0.128]

Note: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors clustered at the electoral constituency level are reported in parentheses. The p-values associated with wild cluster bootstrapped standard errors are reported in brackets. Each row represents separate regressions. Every regression includes year and electoral constituency fixed effects. Afrobarometer data from 1999 through 2021 is used in this analysis. For electricity, piped water, and sewage systems, the dependent variable is an indicator that equals one if the outcome is available to most homes in the village. For roads, the dependent variable is an indicator that equals one if the there are paved roads in the village. The infrastructure index is combines the electricity, piped water, sewage systems, and roads variables. For post offices, police stations, schools, health clinics, and market stalls, the dependent variable is an indicator equal to one if the outcome is available in the town or within easy walking distance. The public service index combines the post office, police station, schools, health clinics, and market stalls variables.

Table A.5: Robustness Check - Effect of Quotas on Public Good Provision, Dropping Windhoek

			Complementarities		
	(1)	(2)	(3)	(4)	(5)
	Mandated Quota	Voluntary Quota	Mandated Quota	Voluntary Quota	Both Quotas
Panel A: Infrastructure					
Electricity	0.257	-0.119	0.869***	0.069	-0.424**
	(0.327)	(0.116)	(0.069)	(0.090)	(0.193)
	[0.437]	[0.412]	[0.346]	[0.450]	[0.118]
Piped Water	-0.462	0.392**	0.185***	0.349**	0.153
	(0.318)	(0.170)	(0.041)	(0.160)	(0.237)
	[0.368]	[0.0192]	[0.612]	[0.0569]	[0.632]
Sewage	0.285***	0.131	0.528***	0.285**	-0.041
	(0.067)	(0.128)	(0.081)	(0.114)	(0.388)
	[0.0450]	[0.302]	[0.450]	[0.0303]	[0.950]
Paved Roads	0.782***	0.235*	0.772***	0.207**	0.167
	(0.118)	(0.126)	(0.033)	(0.084)	(0.127)
	[0.0177]	[0.0930]	[0.203]	[0.0847]	[0.313]
Infrastructure Index	0.138	0.445*	2.574***	0.583***	-0.143
	(0.746)	(0.248)	(0.108)	(0.207)	(0.542)
	[0.883]	[0.0970]	[0.483]	[0.0211]	[0.835]
Panel B: Public Services					
Post Offices	0.145	-0.088	0.764***	0.001	0.085
	(0.243)	(0.169)	(0.062)	(0.133)	(0.149)
	[0.655]	[0.625]	[0.471]	[0.993]	[0.565]
Police Stations	0.459	-0.176	0.818***	-0.068	-0.031
	(0.312)	(0.186)	(0.085)	(0.159)	(0.188)
	[0.319]	[0.401]	[0.444]	[0.686]	[0.870]
Schools	0.590***	0.033	1.189***	0.179*	0.045
	(0.098)	(0.163)	(0.053)	(0.103)	(0.165)
	[0.0262]	[0.853]	[0.255]	[0.131]	[0.813]
Health Clinics	0.312	0.039	0.771***	0.215	0.040
	(0.299)	(0.197)	(0.039)	(0.147)	(0.166)
	[0.501]	[0.854]	[0.301]	[0.193]	[0.794]
Market Stalls	0.114	0.048	0.656***	0.115	0.369*
	(0.304)	(0.135)	(0.029)	(0.175)	(0.187)
	[0.889]	[0.732]	[0.173]	[0.624]	[0.139]
Public Service Index	1.005*	-0.084	2.390***	0.241	0.299
	(0.569)	(0.415)	(0.123)	(0.357)	(0.465)
	[0.232]	[0.850]	[0.419]	[0.538]	[0.513]

Note: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors clustered at the electoral constituency level are reported in parentheses. The p-values associated with wild cluster bootstrapped standard errors are reported in brackets. Each cell in Column 1 represents the coefficient from separate regresions of the dependent variable on the impact of the mandated quota. Each cell in Column 2 represents the coefficient from separate regresions of the dependent variable on the impact of the voluntary quota. Each row of Columns 3, 4, and 5 represents separate regressions. Every regression includes year and electoral constituency fixed effects. Column 1 uses Afrobarometer from 1999 through 2006. Column 2 uses Afrobarometer from 2008 through 2021. Afrobarometer data from 1999 through 2021 is used for Columns 3, 4, and 5. For electricity, piped water, and sewage systems, the dependent variable is an indicator that equals one if the outcome is available to most homes in the village. For roads, the dependent variable is an indicator that equals one if the there are paved roads in the village. The infrastructure index is combines the electricity, piped water, sewage systems, and roads variables. For post offices, police stations, schools, health clinics, and market stalls, the dependent variable is an indicator equal to one if the outcome is available in the town or within easy walking distance. The public service index combines the post office, police station, schools, health clinics, and market stalls variables. Windhoek is dropped from the analysis.

Table A.6: Robustness Check - Effect of Quotas on Public Good Provision, Including Time Trends for the Number of Parties Competing in the 1992 Local Authority Elections

			Complementarities		
	(1)	(2)	(3)	(4)	(5)
	Mandated Quota	Voluntary Quota	Mandated Quota	Voluntary Quota	Both Quotas
Panel A: Infrastructure					
Electricity	-0.138	-0.015	1.857***	0.137	0.006
	(0.656)	(0.050)	(0.098)	(0.145)	(0.071)
	[0.829]	[0.785]	[0.391]	[0.520]	[0.940]
Piped Water	-2.106***	0.054	0.317***	0.262*	0.028
	(0.427)	(0.071)	(0.098)	(0.135)	(0.061)
	[0.176]	[0.494]	[0.521]	[0.169]	[0.656]
Sewage	0.126	0.010	0.690***	0.252*	0.127*
	(0.282)	(0.067)	(0.217)	(0.143)	(0.074)
	[0.844]	[0.890]	[0.275]	[0.183]	[0.125]
Paved Roads	0.955***	0.029	0.372***	0.053	-0.008
	(0.098)	(0.072)	(0.106)	(0.098)	(0.071)
	[0.301]	[0.708]	[0.452]	[0.639]	[0.912]
Infrastructure Index	-4.490***	0.048	2.165***	0.463	0.102
	(0.136)	(0.126)	(0.442)	(0.291)	(0.128)
	[0.0776]	[0.733]	[0.600]	[0.241]	[0.471]
Panel B: Public Services					
Post Offices	-0.245***	0.109	0.432***	-0.037	0.168
	(0.075)	(0.110)	(0.110)	(0.105)	(0.124)
	[0.170]	[0.370]	[0.333]	[0.747]	[0.209]
Police Stations	-0.259	0.112	-0.013	-0.082	0.161
	(0.167)	(0.153)	(0.137)	(0.118)	(0.159)
	[0.306]	[0.494]	[0.937]	[0.527]	[0.321]
Schools	0.382***	0.122*	0.833***	0.229**	0.191**
	(0.000)	(0.069)	(0.121)	(0.093)	(0.090)
	[0.166]	[0.135]	[0.430]	[0.0541]	[0.109]
Health Clinics	-0.304*	0.129	-0.181	0.218*	0.119
	(0.169)	(0.099)	(0.270)	(0.120)	(0.124)
	[0.707]	[0.221]	[0.611]	[0.113]	[0.390]
Market Stalls	-0.111***	-0.067	0.414***	-0.097	-0.081
	(0.000)	(0.069)	(0.101)	(0.155)	(0.093)
	[0.0002]	[0.314]	[0.413]	[0.607]	[0.369]
Public Service Index	-0.154***	0.197	0.251	0.100	0.284
	(0.000)	(0.208)	(0.640)	(0.262)	(0.223)
	[0.258]	[0.394]	[0.754]	[0.725]	[0.279]

Note: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors clustered at the electoral constituency level are reported in parentheses. The p-values associated with wild cluster bootstrapped standard errors are reported in brackets. Each cell in Column 1 represents the coefficient from separate regresions of the dependent variable on the impact of the mandated quota. Each cell in Column 2 represents the coefficient from separate regresions of the dependent variable on the impact of the voluntary quota. Each row of Columns 3, 4, and 5 represents separate regressions. Every regression includes year and electoral constituency fixed effects. Number of Political Parties time trends are included in each regression. The number of political parties is the number that competed in each local authority election in 1992. Column 1 uses Afrobarometer from 1999 through 2006. Column 2 uses Afrobarometer from 2008 through 2021. Afrobarometer data from 1999 through 2021 is used for Columns 3, 4, and 5. For electricity, piped water, and sewage systems, the dependent variable is an indicator that equals one if the outcome is available to most homes in the village. For roads, the dependent variable is an indicator that equals one if the there are paved roads in the village. The infrastructure index is combines the electricity, piped water, sewage systems, and roads variables. For post offices, police stations, schools, health clinics, and market stalls, the dependent variable is an indicator equal to one if the outcome is available in the town or within easy walking distance. The public service index combines the post office, police station, schools, health clinics, and market stalls variables.

Table A.7: Robustness Check - Effect of Quotas on Public Good Provision, Dropping Constituencies with Median Gender Norms

		Complementarities		
	(1)	(2)	(3)	(4)
	Voluntary Quota	Mandated Quota	Voluntary Quota	Both Quotas
Panel A: Infrastructure				
Electricity	-0.024	0.871***	0.212	-0.003
	(0.061)	(0.067)	(0.134)	(0.072)
	[0.728]	[0.352]	[0.196]	[0.970]
Piped Water	0.074	0.186***	0.381**	0.083
	(0.137)	(0.040)	(0.158)	(0.060)
	[0.656]	[0.615]	[0.0590]	[0.179]
Sewage	-0.045	0.529***	0.318**	0.104
	(0.093)	(0.077)	(0.121)	(0.085)
	[0.668]	[0.448]	[0.0498]	[0.269]
Paved Roads	0.060	0.772***	0.214***	0.031
	(0.094)	(0.032)	(0.064)	(0.068)
	[0.553]	[0.200]	[0.0199]	[0.652]
Infrastructure Index	0.038	2.577***	0.741***	0.131
	(0.213)	(0.102)	(0.238)	(0.123)
	[0.878]	[0.478]	[0.0340]	[0.342]
Panel B: Public Services				
Post Offices	0.177	0.764***	0.053	0.222*
	(0.119)	(0.060)	(0.127)	(0.115)
	[0.206]	[0.468]	[0.719]	[0.0880]
Police Stations	0.115	0.819***	0.011	0.210
	(0.149)	(0.082)	(0.150)	(0.151)
	[0.460]	[0.446]	[0.949]	[0.192]
Schools	0.112	1.190***	0.209**	0.203**
	(0.093)	(0.051)	(0.093)	(0.088)
	[0.301]	[0.253]	[0.101]	[0.0773]
Health Clinics	0.128	0.772***	0.247*	0.160
	(0.124)	(0.038)	(0.144)	(0.116)
	[0.301]	[0.305]	[0.187]	[0.246]
Market Stalls	-0.100	0.653***	-0.095	-0.060
	(0.089)	(0.026)	(0.186)	(0.093)
	[0.296]	[0.133]	[0.707]	[0.511]
Public Service Index	0.222	2.390***	0.210	0.394*
	(0.219)	(0.118)	(0.334)	(0.209)
	[0.322]	[0.421]	[0.606]	[0.138]

Note: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors clustered at the electoral constituency level are reported in parentheses. The p-values associated with wild cluster bootstrapped standard errors are reported in brackets. Each cell in Column12 represents the coefficient from separate regresions of the dependent variable on the impact of the voluntary quota. Each row of Columns 2, 3, and 4 represents separate regressions. Every regression includes year and electoral constituency fixed effects. Column 1 uses Afrobarometer from 2008 through 2021. Afrobarometer data from 1999 through 2021 is used for Columns 2, 3, and 4. For electricity, piped water, and sewage systems, the dependent variable is an indicator that equals one if the outcome is available to most homes in the village. For roads, the dependent variable is an indicator that equals one if the there are paved roads in the village. The infrastructure index is combines the electricity, piped water, sewage systems, and roads variables. For post offices, police stations, schools, health clinics, and market stalls, the dependent variable is an indicator equal to one if the outcome is available in the town or within easy walking distance. The public service index combines the post office, police station, schools, health clinics, and market stalls variables. Constituencies with median gender norms are dropped from the analysis.

Table A.8: Robustness Check - Effect of Quotas on Public Good Provision, Using 25th Percentile to Define Affected by Voluntary Quota

		Complementarities		
	(1)	(2)	(3)	(4)
	Voluntary Quota	Mandated Quota	Voluntary Quota	Both Quotas
Panel A: Infrastructure				
Electricity	0.074	0.874***	0.433***	0.057
	(0.051)	(0.067)	(0.143)	(0.048)
	[0.167]	[0.365]	[0.0978]	[0.341]
Piped Water	0.068	0.185***	0.336***	0.007
	(0.076)	(0.039)	(0.099)	(0.046)
	[0.456]	[0.617]	[0.0255]	[0.873]
Sewage	0.025	0.530***	0.373***	0.086
	(0.065)	(0.077)	(0.126)	(0.057)
	[0.725]	[0.447]	[0.104]	[0.228]
Paved Roads	0.038	0.774***	0.352**	0.060
	(0.053)	(0.031)	(0.173)	(0.060)
	[0.472]	[0.182]	[0.128]	[0.371]
Infrastructure Index	0.135	2.581***	0.986***	0.134
	(0.124)	(0.100)	(0.247)	(0.094)
	[0.358]	[0.478]	[0.0521]	[0.294]
Panel B: Public Services				
Post Offices	0.114	0.762***	-0.117	0.221
	(0.128)	(0.058)	(0.137)	(0.158)
	[0.439]	[0.467]	[0.498]	[0.188]
Police Stations	0.114	0.817***	-0.121	0.230
	(0.169)	(0.080)	(0.188)	(0.191)
	[0.533]	[0.445]	[0.611]	[0.239]
Schools	0.213***	1.190***	0.192	0.278***
	(0.074)	(0.051)	(0.120)	(0.091)
	[0.0289]	[0.253]	[0.293]	[0.0740]
Health Clinics	0.157	0.770***	0.139	0.090
	(0.103)	(0.037)	(0.144)	(0.130)
	[0.177]	[0.292]	[0.603]	[0.522]
Market Stalls	-0.143*	0.650***	-0.281***	-0.186
	(0.073)	(0.025)	(0.098)	(0.115)
	[0.0524]	[0.108]	[0.0393]	[0.0769]
Public Service Index	0.249	2.384***	-0.133	0.368
	(0.227)	(0.114)	(0.378)	(0.228)
	[0.332]	[0.413]	[0.809]	[0.209]

Note: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors clustered at the electoral constituency level are reported in parentheses. The p-values associated with wild cluster bootstrapped standard errors are reported in brackets. Each cell in Column12 represents the coefficient from separate regresions of the dependent variable on the impact of the voluntary quota. Each row of Columns 2, 3, and 4 represents separate regressions. Every regression includes year and electoral constituency fixed effects. Column 1 uses Afrobarometer from 2008 through 2021. Afrobarometer data from 1999 through 2021 is used for Columns 2, 3, and 4. For electricity, piped water, and sewage systems, the dependent variable is an indicator that equals one if the outcome is available to most homes in the village. For roads, the dependent variable is an indicator that equals one if the there are paved roads in the village. The infrastructure index is combines the electricity, piped water, sewage systems, and roads variables. For post offices, police stations, schools, health clinics, and market stalls, the dependent variable is an indicator equal to one if the outcome is available in the town or within easy walking distance. The public service index combines the post office, police station, schools, health clinics, and market stalls variables. Constituencies affected by the voluntary quota is defined using the 25th percentile gender norms for this analysis rather than the median.