

Conflict and Female Leadership: Evidence from Colombia*

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Abstract

This paper examines whether female leadership can reduce violence in the context of the Colombian conflict during the late 1990s and 2000s. To identify the effect, I leverage close mayoral races contested between a woman and a man. I find that after the narrow election of a female candidate, a municipality experienced a decline in the number of guerrilla attacks in the following electoral cycle amounting to 60% of the average incidence of guerrilla violence. I use a unique and novel dataset comprising the spatial distribution of guerrilla units and the gender of the command line to show that female leadership in the guerrillas is also correlated with lower levels of violence. Crucially, I show that whenever two female leaders coincide, violence decreases in a non-linear way. To understand the mechanisms underlying the main effects, I compile a novel dataset encompassing the campaign statements from a subset of mayoral candidates. Using unstructured text-analysis algorithms, I show that female mayors make use of more “peaceful” expressions, without diminishing their recognition of conflict. This suggests that female leaders have different “preferences” compared to their male counterparts. Finally, I combine administrative and survey data to show that there are no gender differences in terms of performance during office or political ideologies, and that the effect is not driven by the behavior of other conflict actors.

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Introduction

Existing evidence suggests that women and men exhibit different behaviors and make distinct decisions in various contexts. For instance, previous research has demonstrated that women tend to avoid competitive and risky situations (Niederle & Vesterlund, 2007; Exley, Niederle, & Vesterlund, 2020) and are more inclined to yield in demanding negotiations (Castillo, Petrie, Torero, & Vesterlund, 2013). Moreover, these gender disparities have been observed in leadership and influential positions, including local councils and national legislative bodies (Chattopadhyay & Duflo, 2004; Brollo & Troiano, 2016; Koch & Fulton, 2011; Caprioli, 2000).

However, there is a notable gap in the literature concerning how female and male leaders behave and respond when confronted with an armed conflict. Dube and Harish (2020) provide one of the few empirical examinations of this issue, focusing on a historical context, and find that medieval queens were more likely to face attacks when they were young and engage in hostilities when married.

The scarcity of empirical evidence is particularly intriguing given the widespread notion that women, by their very nature, exhibit less inclination toward violence compared to men. This notion raises an interesting possibility: that women could play a significant role in mitigating armed conflicts if presented with an opportunity (Goldstein, 2003). An alternative, yet complementary approach, is put forth by feminist philosopher Sara Ruddick, who argues that women’s maternal thoughts and practices, centered on preservation, can serve as a foundation for peace-building (Ruddick, 1982).

However, despite the mounting work on gender differences in policymaking, public good provision and role modeling, this idea has not been empirically tested in a contemporary democratic context. This is partly due to the scarcity of female figures in authoritative positions and the overall male dominance in conflict-related matters (Pinker, 2012). Furthermore, despite the decreasing trend in the number of active armed conflicts in recent decades, they continue to be one of the most pressing issues of public policy, resulting in over 50,000 casualties worldwide each year (Roser, Hasell, Herre, & Macdonald, 2016). Therefore, it is important to examine how female leaders respond and adapt to conflict violence, as well as the underlying reasons for the existence of this gender gap.

To address this gap and empirically identify the effects of female leadership on conflict violence, I study mayoral elections in Colombian municipalities between 1996 and 2015. I leverage the (quasi) random assignment of gender induced by close elections to estimate the causal effect of having a female mayor on the number of violent attacks a municipality experiences. Following the election of a woman as mayor, the municipality

experiences a significant reduction in the number of attacks by left-wing guerrilla groups. Specifically, a woman's victory in an election leads to 6 fewer attacks per 100,000 inhabitants during the electoral cycle, an effect that amounts to 60% of the average incidence of violence in that period. Importantly, while this effect does not extend to violent attacks from right-wing paramilitary groups, it does have a spatial spillover effect on neighboring municipalities.

I then turn my attention the other side of the conflict and examine the role of female leadership within the FARC guerrilla group. The existing literature in economics and other social sciences argues that the interaction between two females can have nonlinear effects on the de-escalation of armed conflict due to their reciprocal use of less-violent forms of relating to each other (Tannen, 1994). To provide empirical evidence on these matters, I build a novel and unique dataset that includes the structure, spatial distribution, and gender composition of the guerrilla command line. My findings show that guerrilla female leadership is correlated with lower levels of violence. Crucially, I show that when female guerrilla leaders make presence in municipalities with female mayors, the decline on the number of guerrilla attacks experienced by the municipality is more than linear. This result can be rationalized under the framework of a "competition for resources" game with heterogeneous agents (Smith & Price, 1973).

To further investigate whether the effects on conflict can be attributed to the "preferences" of the female politicians, or to their performance while in office, I put together another novel dataset comprising the campaign statements of a subset of candidates who were elected mayors in Colombia between 2003 and 2011. I use non-structured text-analysis techniques and find that women use words and expressions that denote a greater preference for peace, even when holding their use of conflict-related expressions constant. Furthermore, these differences do not appear when examining their reference to other "placebo" topics. Finally, I combine data from different sources to show that females do not enact different types of public policies, are not favored nor harmed by other conflict actors, and do not hold different political views.

This paper contributes to multiple strands of literature. First, it relates to previous studies of the role of women in armed conflicts. Most closely related is the work by Dube and Harish (2020) where the authors argue that kingdoms in the European middle ages led by *Queens* were more likely to be involved in conflicts both because they were attacked more regularly (perception of vulnerability) and because they attacked more often (signaling of strength and labor division within household). My work provides the first contemporary piece of evidence of the role of female leaders in conflict, in a democratic and developing nation with modern institutions. Moreover, and unlike Dube and Harish (2020), I find that female leaders are not actively participating

more in conflict and fail to find evidence of them being perceived as weak by other actors. Other related studies of gender and conflict have privileged the analysis of the victimization of women in conflicted settings leaving aside their potential role as leaders.¹

More in general, this paper relates to the extensive literature on the causes and consequences of conflict.² Recent studies document the role of ethnicity (Novta, 2016), government policy (Dell, 2015), elites (Rogall, 2021) and institutions (Besley & Persson, 2011) amongst others as determinants of conflict, as well as its consequences on economic development (Ray & Esteban, 2017).³ This paper sets itself apart from previous work by focusing on the differences that arise due to the gender of the local leaders. Furthermore, I produce a novel and unique dataset with the gender and hierarchy of the guerrillas which allows a better understanding of the dynamics inside these types of illegal actors.

Finally, this paper also relates to the existing work on female political leadership and their performance while in office (Chattopadhyay & Duflo, 2004; Clots-Figueras, 2012; Beaman, Chattopadhyay, Duflo, Pande, & Topalova, 2009; Iyer, Mani, Mishra, & Topalova, 2012; Brollo & Troiano, 2016; Chauvin & Tricaud, 2021). These papers have tied female success with differential legislation and public goods provision; lower levels of corruption; and higher reporting of gender violence (among others). I contribute to this literature by studying the effects of female leadership on a different outcome. Namely, the incidence of conflict violence. Furthermore, and unlike the majority of the evidence available, I study the behavior of politicians that were elected in the absence of gender quotas or reserved seats of any kind.

The remainder of this paper proceeds as follows: In the next section I provide some context on the level of female political participation in Colombia, and on the armed conflict of the second half of the 20th century. Section 3 details the data and empirical strategy used, and section 4 presents the main results of the paper. In section 5, I present a series of exercises to validate the empirical strategy used, as well as some robustness checks. Finally, section 6 delves into the different mechanisms that might help in explaining the main effects documented in section 4. Section 7 discusses the main conclusions of the paper

¹See Guarnieri and Tur-Prats (2023); Caprioli (2000) among others.

²See Blattman and Miguel (2010) and Kimbrough, Laughren, and Sheremeta (2017) for two extensive surveys on the literature.

³Previous work on the Colombian conflict includes Fergusson, Querubin, Ruiz-Guarin, and Vargas (2019); Acemoglu, Robinson, and Santos (2013); Acemoglu, García-Jimeno, and Robinson (2015); Acemoglu, Fergusson, Robinson, Romero, and Vargas (2020); Prem, Rivera, Romero, and Vargas (2019) on the political roots of conflict; Dube and Vargas (2013) on the responsiveness of violence to macroeconomic variables; Ibáñez and Vélez (2008) on forced displacement; Angrist and Kugler (2008); Mejia and Restrepo (2013) on drug production and traffic.

2 Institutional background

2.1 Female political participation in Colombia

The institutional design of Colombia before 1988 allowed the political elites in Bogotá to control the state bureaucracy across levels and regions. State governors and municipal mayors were all appointed (and removed) at the discretion of the president's party and, consequently, these positions remained inaccessible to a broad segment of the population, including those advocating for more progressive agendas. Historically, women were among those significantly underrepresented in the spheres of power and, hence, seldom had any access to it (Aviel, 1981; Fergusson & Vargas, 2013). This changed after 1988 with the introduction of local elections when, for the first time, citizens had a say in the type of leader they wanted and local political movements had a real possibility of accessing power (Bergquist, Peñaranda, & Sánchez, 2001).

In this context, women emerged as political outsiders advocating for peace and vindicating the claims of the less privileged segments of the population. While still relatively low in number, the proportion of female local mayors in Colombia doubled between 1997 and 2015. One out of every four seats was occupied by a woman, and a female candidate secured one of the top two positions in roughly half of the mayoral elections of 2015.⁴ Figure 1 illustrates the share of local elections in which a female candidate participated or won between 1997 and 2015, the sample period utilized in the following sections.

Female leadership and conflict In this context of limited access to political power and prevailing violence, a distinct form of female leadership emerged. Specifically, women who rose as community advocates for peace, often engaging with armed actors in nonviolent ways and eventually ascending to positions of political authority. An illustrative example of this journey is Gloria Cuartas, who was elected as the mayor of Apartadó in 1994.⁵ Since the late 1980s, Cuartas was a highly regarded local activist. Her work as a housing councilor for conflict victims in Apartadó allowed her to actively oppose the actions of armed groups in the region, becoming a beacon for

⁴Those who come in second place do not secure any political position merely for their runner-up status. The underrepresentation of women is prevalent across different political institutions, with women comprising only 20% of Congress members and 17% of state deputies in 2019 (U.N., 2020). There was only 1 female who was a member of the peace-talks negotiation committee for the government.

⁵Apartadó is a strategically positioned municipality in the northwest of Colombia, situated along the corridor linking the Pacific Ocean and the Caribbean. This area serves as primary route for illegal activities, including drug and arms trafficking. Consequently, it has been a site of violent conflict involving various armed groups since the 1980s. See Appendix Figure A1 for a visual reference.

her community. In 1994, and thanks to this activism, she was selected to run for the mayoral office as part of a coalition of “minor” political parties. Cuarta’s activism and endeavors to de-escalate conflict in Apartadó exposed her to a series of threats on her life. Nonetheless, she remained dedicated to the political arena, becoming a well-known peace advocate and even securing a seat as a Senator in 2010 (Mosquera, 2000).

Another example of female leadership that eventually gained national recognition through a sustained peace effort is that of Aída Avella. Born in 1949, Avella initially pursued a degree in psychology before becoming actively involved in the Ministry of Education workers’ union. She gained prominence for her leadership within the Patriotic Union (UP) party, primarily centered on peace and human rights advocacy. Avella’s unwavering commitment to peace and marginalized communities led to her election to the Bogotá City Council in 1992 and 1994. However, in May 1996, she was forced to flee the country after surviving an assassination attempt from paramilitary groups (Melo-Moreno, 2018). Aída Avella has since returned to Colombian politics and is currently serving her second consecutive term as a Senator.

2.2 Guerrilla’s violence and female involvement

Colombia was immersed in an armed conflict between guerrillas, paramilitary groups, and government forces between the late 1940s and 2016. While the conflict’s nature evolved over decades due to, among others, the emergence of drug cartels in the 1980s, it is possible to categorize illegal actors into two broad groups. On the one side, there were left-wing communist guerrillas which had the objective of overthrowing the government. On the other side, right-wing paramilitary groups that fought for the territorial control they needed to carry on with their illicit activities (Rivera, 2007).⁶ Figure 2 provides a summary of the key events in the Colombian conflict, leading up to its conclusion in 2016 after the demobilization of the FARC, the largest guerrilla group.

Women in the FARC Among the numerous guerrilla groups that have existed in Colombia since the 1960s, the most prominent and influential was the *Fuerzas Armadas*

⁶The Colombian conflict has been extensively examined, as in the work by Safford and Palacios (2002) and Palacios (2012). There is a general consensus that the roots of the guerrilla movements can be traced back to the government’s abandonment of the central highlands in Colombia, coupled with the prevalence of anti-imperialist and communist ideologies during the Cold War in Latin America. In contrast, the emergence of paramilitary groups is closely tied to the surge in cocaine trafficking and the general entanglement of the landed and political elites with drug trafficking organizations.

Revolucionarias de Colombia - FARC.⁷ Initially led by Pedro Antonio Marín and Luis Alberto Morantes, better known as Manuel Marulanda Velez and Jacobo Arenas, this guerrilla group had a notable gender imbalance within its ranks (de Colombia, 2017). Only a small number of women ever achieved the rank of *Front Commander* (Criselda Lobo, personal communication, February 10, 2021).⁸

However, existing qualitative research on this group has shown that the FARC’s “gender practices” were relatively progressive compared to other armed organizations. For example, they implemented a tenure system entirely based on ideological indoctrination and proven commitment to their cause, completely disregarding the gender of its members as criteria for promotion (Barrios Sabogal & Richter, 2019).⁹ Additionally, the guerrilla explicitly advocated for the role of women as peacemakers and community leaders. To illustrate this, Appendix Section F presents excerpts from statements by FARC leaders, emphasizing the significance of women in the peace-building efforts and of female leadership in general.

Following their demobilization, the political party established by the FARC, also known as FARC (*Fuerza Alternativa Revolucionaria del Común*), was granted five seats in the Senate for the 2018-22 electoral cycle. After an internal deliberation process, the party selected senators Criselda Lobo and Victoria Sandino due to their influence within the organization, their extensive experience, and their wealth of knowledge. Among the unsuccessful candidates was Erika Montero, who held the distinction of being the sole female member of the *Estado Mayor* and another influential female within the guerrilla.¹⁰ Montero was a seasoned combatant who ascended to the leadership of the north-western block of the guerrillas in the early 2000s, following a brief period of incarceration on charges of terrorism and rebellion.

These case studies indicate that these influential women have a set of traits and characteristics that their male counterparts may not. Education and experience in the

⁷The FARC was first created in 1963 in the Andean region of central Colombia. Over the next 40 years, it expanded its presence across the entire Colombian territory, reaching over 70% of the municipalities and enlisting over 21,000 combatants at the height of its strength (Osorio, Mohamed, Pavon, & Brewer-Osorio, 2019). The group demobilized in 2016 after a successful peace process with the government.

⁸The hierarchical structure of the FARC, illustrating its internal administrative organization, can be found in Appendix Section C, figure C1.

⁹This sharply contrasts with the absence of a gender-focused agenda within paramilitary groups, where their identity was rooted in masculinity, brutality, and emotional toughness. To the extent that gender-based violence became a frequent method for instilling terror among local communities (Cruz & Olarte, 2021; Wirtz et al., 2014).

¹⁰Sandino holds a bachelor’s degree in journalism, a highly unusual qualification within the guerrilla ranks. Although Lobo did not pursue any post-secondary education, the mere completion of her school years placed her in a more prepared position than many of her fellow soldiers. This came as a result of the limited formal schooling available within the FARC ranks (de Colombia, 2017). For additional information about these three women, please refer to Appendix Section D for a concise biography.

case of Sandino and other FARC leaders, or a strong commitment to human rights and peace advocacy, as demonstrated by Cuartas and Avella. In what follows, I analyze the effect that females who managed to secure (political) power had over conflict violence in a more systematic manner.

3 Empirical Strategy and Data

3.1 Empirical Strategy

To examine the connection between female leadership and conflict incidence in Colombia, I leverage instances where a woman was elected as mayor in a municipality. To mitigate the potential bias that could arise from a straightforward comparison of the number of violent attacks in municipalities where a woman won versus those where a man did, I employ a Regression Discontinuity Design. In particular, I take advantage of the victory of a female mayoral candidate in an election closely contested against a male.¹¹ The underlying identification assumption is that, conditional on the voting margin for the winning candidate, the outcome of the election is as good as random. Thus, these close elections allow me to identify and estimate the unbiased effect of female leadership on conflict. To validate the previous assumption, and in order to address the common concerns about RDD's, section 5 presents a battery of tests that allow me to argue that the characteristics of both the municipality and the elected official are not correlated with the outcome of the elections.

The baseline empirical strategy considers only municipalities where both a female and a male candidate occupy the top two positions in the mayoral race. Focusing on these elections, let $X_{i,p}$ be the vote share in favor of the female candidate, computed as the percentage of votes cast for the woman out of the total votes for the top two candidates. To ease the interpretation of the magnitude of the bandwidths computed below, I center the vote share at 0 (this does not impact the results). I define the treatment as $F_{i,p} = 1$ whenever $X_{i,p} > 0$, and focus on the set of races where the absolute value of $X_{i,p}$ is smaller than a bandwidth h . To choose the value of h I follow Calonico, Cattaneo, and Titiunik (2014) and present in my baseline specification the bias-corrected and robust optimal bandwidth. Equation (1) shows the main empirical specification used in the paper.

$$y_{i,p} = \alpha + \gamma F_{i,p} + f(X_{i,p}) + \varepsilon_{i,p} \quad (1)$$

¹¹For examples of other studies employing a similar empirical strategy in contexts akin to this one, please refer to Brollo and Troiano (2016) and Fergusson et al. (2019).

$y_{i,p}$ is the outcome for municipality i in electoral period p , γ is the coefficient of interest and $\varepsilon_{i,p}$ is an idiosyncratic error term. In the baseline specifications, $y_{i,p}$ is the number of violent episodes (by violent actor) normalized by population and period length. I show the robustness of the results to all of these different normalizations in Section 5. Finally, $f(X_{i,p})$ represents a polynomial of the vote share. It is linear in the baseline specification, and I show the robustness of the results to this decision in Appendix Table B3.

3.2 Data

3.2.1 Violence

The main source of data on conflict violence is an updated version of the dataset compiled by Restrepo, Spagat, and Vargas (2003) and updated until 2018 by the *Universidad del Rosario*. This dataset offers daily counts of violent events in each Colombian municipality between 1984 and 2018. The events are categorized based on reports from the local NGO *CINEP* (Centro de Investigación y Educación Popular), which draws upon local and national media as sources for their reports.^{12,13}

Each violent event in the dataset is classified as either an attack – an uncontested one-sided episode like a shooting – or a clash, which denotes a confrontation between different actors. The data includes the incident’s date, the affected municipality(ies), the identity of the perpetrator(s) (e.g., guerrillas, paramilitaries, or state forces), as well as the count of casualties, injuries, and captures resulting from each event. Finally, each episode is classified to be politically motivated or not. Actions classified as politically motivated are those that involve selective killings, executions, kidnappings, and threats originating from illegal armed groups and explicitly aimed towards a local political figure or party. In cases involving multiple actors, all parties involved are identified.

3.2.2 Territorial organization and female leadership in the *FARC*

To understand the role of female leadership within the guerrilla, I compiled a novel and unique dataset of the administrative and spatial distribution of the *FARC* across time.

¹²CINEP used 1984 as a starting point for their first report – written in 1996 – due to a lack of reliable violence data before that year. The dataset’s scope extends to 2018 as it was updated in 2019. As discussed earlier, the conflict formally concluded in 2016 following the *FARC*’s demobilization.

¹³The series of reports is titled “*Noche y Niebla*”, and is available online at <https://www.nocheyniebla.org>. An example of these reports can be seen in Appendix Figure A2.

I digitized a series of maps constructed by Medina-Gallego (2011) and the local NGO “Verdad Abierta” (*Verdad Abierta*, 2021), which allow me to geolocate each *Block* and *Front* of the guerrilla, as well as its area of influence.^{14,15} Figure 3 showcases the spatial distribution and geographical boundaries of the different units constituting the FARC, as documented by *Verdad Abierta*. There, Blocks are color-coded, with bright areas indicating a stronger presence of the respective unit. Fronts are depicted as black dots scattered throughout the Colombian territory. As is noticeable in Figure 3, and as delineated in Appendix Section C, Blocks are larger entities encompassing multiple distinct Fronts.

I complement these data with information on the gender of the entire command structure within each guerrilla unit, for at least one point during the sample period. To compile this data, I use a combination of sources, including news articles, intelligence reports, and fieldwork, enabling me to ascertain the actual identities or aliases of individuals who held leadership positions within each Block or a Front during this timeframe. This data allows me to determine whether a unit had a female leader at any point during the sample period. For an exhaustive overview of the sources used for each specific unit, please refer to the [Online Appendix](#) accompanying this paper.

3.2.3 Electoral data

I collect data on local elections in Colombia spanning from 1997 to 2016, sourced from the National Registry Office (*Registraduría General de la República*). The duration of local politicians’ terms was inconsistent prior to 2003, with mandates lasting 2 years between 1992 and 1994, and 3 years between 1994 and 2003. Starting from 2003, terms have been standardized at 4 years. The availability of electoral data determines the starting point for my sample period. This is because the National Registry did not maintain a comprehensive record of local election results before to 1997 –only the total vote count and votes for the elected candidate were documented.

In total, I use data from 6 electoral cycles, starting in 1997 and concluding in 2015. This dataset includes the vote count for each candidate, in addition to their complete legal names, party and coalition affiliations.

¹⁴See Appendix Section C for a more detailed description of the FARC’s internal division.

¹⁵Verdad Abierta is a digital-press founded in 2007 by the “Fundación Ideas para la Paz — FIP”, with a primary objective of “reconstructing, preserving, and disseminating the historical and judicial truth about the Colombian armed conflict.” For more information, visit www.verdadabierta.com.

3.2.4 Descriptive statistics

Figure 4 shows the spatial distribution of guerrilla attacks and municipalities with female mayors during the sample period. In terms of violence, the main pattern that emerges is a concentration of events in three main areas: the north-west strategic corridor between the Caribbean and the Pacific ocean; the eastern frontier with Venezuela; and the Andean region in the southwest. Appendix Figure A3 shows a similar distribution of paramilitary attacks, suggesting that these two armed factions contested over the same territories. Regarding female electoral success, and unlike violence, the figure shows no signs of spatial concentration. This fact will be confirmed in the empirical analysis.

Table 1 presents the summary statistics for the main variables used in the analysis. A detailed description of each variable and its source is presented in Appendix Table B1. Overall, the unit of observation is the municipality per electoral period of which there are 1,045 and 7 respectively between 1997 and 2016. A municipality in the sample received on average 3 attacks per year and per 100,000 inhabitants, and saw the government forces run 2 operatives against illegal actors. Paramilitaries seem to not have been involved in clashes (neither with the guerrillas nor the state forces), while the latter's activity is mainly driven by the national army (85% of the state forces' actions are carried by the army). Guerrilla attacks produce on average 5.7 casualties per 100,000 inhabitants in an electoral cycle, twice as many as those generated by the paramilitary.

In terms of electoral outcomes and candidate characteristics, women won in 44% of the races where they came in the top 2 spots, and run as candidates for traditional parties 44% of the times.¹⁶ As for the municipalities in the sample, they typically have around 37,000 residents, with roughly half of these inhabitants residing in rural areas. Furthermore, two out of every five were originally indigenous settlements during the colonial era; and approximately one in every four intersects with illicit smuggling routes. On average, these municipalities are located about 75 kilometers away from their respective state capitals. Finally, there are, on average, 76 ongoing corruption investigations against local officials in these municipalities.

3.2.5 Balance on observable characteristics

One initial concern regarding the regression discontinuity strategy described above is the possibility of a correlation between the victory of a female candidate and an unconsidered municipal trait. This characteristic might simultaneously favor women

¹⁶Only 2% of the times (≈ 20 races) female candidates run under left-wing parties or coalitions.

winning closely contested races and reduce conflict levels. To tackle this concern, I first classify municipalities into “Treatment” and “Control” groups based on whether a female or male candidate narrowly won the mayoral race. Then, I assess the differences in average value of observable characteristics between these groups. The results of this analysis are displayed in Table 2, including the corresponding p-values for differences-in-means tests.¹⁷ A first result that emerges is that the “Treated” and “Control” groups display a lack of dissimilarity. None of the characteristics outlined in the table exhibit statistically significant differences between the groups, even at conventional levels of significance.

In Panel A, municipalities in both groups display comparable averages in terms of income, expenditures, and payroll costs. Likewise, when examining election-related indicators, there are no disparities in terms of turnout, local council size, and partisan concentration.

Panel B, in turn, looks for and fails to find differences in time-invariant characteristics such as physical (e.g., area, altitude, ruggedness and soil quality) and historical ones (such as presence of indigenous groups or Spaniards in the colonial period, instances of land conflict in the first half of the 20th century or the presence of latifundia in 1960). Finally, panel C shows the similarity across groups in time-varying characteristics measured before the sample period such as population size, inequality, poverty and rurality indexes, tax revenue and credit from the central government.

In sum, the municipalities where a female candidate narrowly won or lost a mayoral election are comparable in terms of observable characteristics. This, in turn, validates the empirical strategy used in this study to identify the effect that having a female mayor had over the incidence of armed conflict in Colombian municipalities. The following section is devoted to answering this question.

4 Main results: female leadership and violence

4.1 Regression Discontinuity Results

To evaluate the effect of female leadership on conflict violence, I begin by estimating Equation (1) using as outcomes various measures of conflict violence. These results are presented in Table 3. In particular, I use the yearly average number of attacks per 100,000 inhabitants and per electoral cycle as the dependent variable in columns

¹⁷Appendix Table B2 shows the corresponding differences for the complete sample of municipalities — i.e., including non-contested races. The results are identical in terms of magnitude and significance of the differences between groups.

1-5, an indicator of experiencing any attack in column 6, and an indicator of civilian casualties in column 7. Columns 2-4 include different sets of controls and fixed effects, while column 5 allows for a second-degree polynomial of the vote share at both sides of the discontinuity. Panel A uses guerrilla attacks as outcomes, while panel B focuses on paramilitary attacks. In all panels and regressions I follow Calonico et al. (2014) and present in my baseline specification the bias-corrected and robust optimal bandwidth. Figure 6 shows a graphical representation of the result in column 1 of panel A.

Across columns and panels, the first pattern to highlight is the robust negative effect of the (narrow) victory of a female candidate for mayor on the (normalized) number of guerrilla attacks. In the baseline specification (column 1), the decline in violence amounts to 60% of the average conflict incidence or, put another way, 1.5 attacks less per year and 100,000 inhabitants. This stands in contrast to the null-effect on paramilitary violence, which is consistently smaller in magnitude (ranges between one-fourth and two-thirds of the effect on guerrilla violence) and non statistically different from zero across columns (I come back to this in Section 6).

Previous research on the Colombian conflict has found connections between certain municipal characteristics like inequality or historical state presence and violence. To ensure that the result found in column 1 is not masking the correlation between one of these characteristics and conflict violence, I expand the model defined in Equation (1) by including different sets of control variables in columns 2-4. In particular, column 2 introduces economic development and government revenue measures from 1993 and 1987 respectively (the earliest available pre-sample data points in each case). Column 3 further includes historical indicators of state presence. Finally, column 4 adds year fixed effects.¹⁸ The results across these three columns are reassuring. They show that the baseline effect remains stable in terms significance and magnitude (around 60% of the average conflict incidence) after including these covariates. These findings provide evidence against the presence of an unaccounted-for municipal characteristic that could confound the baseline effect.

Columns 6 and 7 explore alternative measures of conflict victimization, yielding similar results. Column 6 explores the extensive margin of the effect and shows that the election of a female candidate reduces the probability of enduring a guerrilla attack during the electoral cycle by 80%, compared to the average likelihood of an attack. Likewise, in column 7 I use as dependent variable the probability of civilian casualties in guerrilla attacks in the municipality during the electoral cycle. Here, I observe an 84% reduction in this probability following the election of a female mayor. Overall,

¹⁸See the footnote of Table 3 for a detailed list of controls included in each regression and Appendix Table B1 for the source of each variable.

these two columns show that the effect found on the normalized number of attacks is not spuriously determined by the conflict metric used, but rather that it represents a broader trend in conflict victimization.

As a way of benchmarking the magnitude of the effects documented in this subsection, Miguel, Satyanath, and Sergenti (2004) find that a negative economic shock of five percentage points to GDP (10 times the yearly average economic growth in their sample) doubles the likelihood of conflict. In my most comparable specification (column 6), I find that the victory of a female candidate for mayor reduces the likelihood of conflict in 80%, which is in the same order of magnitude to the authors’ findings. Overall, the results in Table 3 show that female electoral success had a negative effect on conflict incidence in Colombian municipalities. This effect is substantial in magnitude and driven by a decrease in guerrilla attacks.

4.2 Female leadership in the guerrilla

A question that arises from the results in Table 3 is whether the effects of female leadership on violence extend beyond politicians. Of particular interest for this study is whether influential women in the guerrillas had a comparable impact on the level of violence their organizations engaged in. Furthermore, following seminal work on linguistic sciences, we could expect that having a female leader on each side of the armed conflict had non-linear effects on its deescalation, given how women tend to employ different, less confrontational communication strategies when interacting with each other compared to the ones they use when dealing with males (Tannen, 1994).¹⁹ Although the economics literature has seldom studied the interaction with and between women in informal institutions and settings (Anderson, 2022), existing “lab” evidence has shown that women perform cognitive tasks better when they are teamed up with other women (Gneezy, Niederle, & Rustichini, 2003). Additional work has shown how females tend to display less competitive behavior than males and avoid risky negotiations whenever possible (Niederle & Vesterlund, 2007; Exley et al., 2020). Thus, the study of the role of female leaders in the Colombian guerrillas will allow me to provide further evidence on “gendered interactions in informal settings”, while deepening our understanding of the effects of female leadership on conflict violence.

To answer these questions, I constructed a unique dataset detailing the spatial distribution of all the FARC units. This dataset includes information about the leaders of each guerrilla unit, which allows me to determine the gender composition of the entire line of command within each unit. Consequently, I can classify these units into those

¹⁹For a comprehensive review of the related literature, see Cameron (1998).

with female leaders and those without them. In Table 4, I delve into the question of how female leadership in the guerrilla influences conflict violence, by examining the OLS correlation between the presence of a female leader in a FARC unit and the (normalized) number of attacks in a municipality. It is important to note that due to the non-random assignment of female leaders across guerrilla units, the coefficients in the table are not identified.

In Table 4, columns 1 and 2 focus on FARC blocks as the units of study, while columns 3 and 4 center on fronts. Specifically, column 1 employs the block definition provided by (*Verdad Abierta*, 2021), columns 2 and 3 utilize the block and front definitions from (Medina-Gallego, 2011), and column 4 combines fronts identified by both sources. The results presented in this table show that municipalities under the jurisdiction of a female-led FARC unit experienced fewer armed attacks, regardless of the unit type considered. In terms of magnitude, the presence of a female-led guerrilla unit is correlated with a reduction of 1.4 to 1.6 attacks per year per 100,000 inhabitants, which is equivalent to approximately 70% of the average incidence of violence within the sample. This magnitude is comparable to the baseline effect discussed in the previous subsection.

Interaction between female leaders The results in Table 4 suggest that the baseline effect of female leadership on conflict violence extends beyond the mayoral office and is also present in the guerrilla’s units. Consequently, I now shift my focus to the ensuing question: does the interaction between female leaders lead to a reduction in guerrilla violence that exceeds the sum of their individual effects? To do so, I adopt the framework of a “*Hawk and Dove*” game (Smith and Price (1973) — refer to Appendix Section E for a more detailed explanation of these types of games). These games model the interaction between an agent of type *aggressive* and a *peaceful* one (a male and a female respectively in this context). The agents choose whether to fight for a resource or concede, with the latter incurring in an increased cost for engaging in conflict. One testable implication of these models is that the reduction in violence should be more pronounced when two ‘peaceful’ agents interact with each other. This prediction aligns with the ones in Tannen (1994) and Exley et al. (2020).

I test this prediction in Table 5 by running the RDD model defined in Equation (1). There, I divide the sample of closely contested races between municipalities where a guerrilla unit had a female leader and those where it did not have one. Panel A includes municipalities under the jurisdiction of FARC units with female leadership, Panel B includes areas influenced by non-female-led FARC structures (i.e., no female leader in the FARC unit **conditional** on the presence of a FARC unit), and Panel C

includes all municipalities lacking FARC units with female leaders. Columns 1 and 2 use blocks as the FARC unit of study, while 3 and 4 use fronts. Column 1 follows the block definition from (*Verdad Abierta*, 2021), columns 2 and 3 use the block and front definitions from (Medina-Gallego, 2011), and column 4 utilizes fronts identified by both sources.

The results presented in Table 5 are both remarkable and straightforward: violence decreased more in municipalities under the jurisdiction of a guerrilla unit with a high-ranking female commander, regardless of the type of unit considered and consistently across different data sources. Although the sample size used in some regressions demands caution when interpreting the results, generally speaking, the effects in Panel A are significantly larger than those in the other two panels and larger than those documented in subsection 4.1. Regarding the different columns and specifications, the similarities across regressions suggest that the results are not being driven by the particular source of the data (columns 1 vs. 2; 3 vs. 4) or the type of FARC unit considered.

The interaction between female leaders in the context of the Colombian conflict led to a reduction in the number of guerrilla attacks that ranged from 100% to 240% of the average number of attacks a municipality got in an electoral cycle during the sample period. While somewhat imprecise, these results suggest that the interaction between female leaders results in a non-linear combination of individual effects. This finding aligns with the predictions of a “Hawk and Dove” game, as well as those found in seminal works in the field of linguistic sciences (Tannen, 1994).

4.3 Spatial spillovers

The results in Table 3 suggest an additional aspect worth considering – the spatial dimension. The strategic nature of the guerrillas’ actions implies that the decline in their level of activity following the election of a female mayor should lead to a reoptimization of their fighting strategy, which likely impacts the surrounding region. We are confronted with two scenarios. First, it is possible that the reduced activity in one municipality frees up guerrilla combatants who might shift to neighboring ones, potentially increasing the presence and activity of the group there. Second, if the guerrilla strategies include non-violent options to armed attacks, they might opt for these alternatives, resulting in the observed decline in violence without a corresponding increase in activity in neighboring areas.

The empirical estimation of the spatial diffusion of the baseline effect allows me to distinguish between these different scenarios. Importantly, this analysis contributes

to the understanding of the overall impact of female leadership on violence. In other words, it allows me to estimate the total change in *welfare* attributable to the effect of female leadership on conflict-related violence. To do so, I estimate the following spatial auto-regressive model:

$$y_{i,p}^k = \delta W_n \times F_{i,p} + X' \beta + U_{i,p} \quad (2)$$

$$U_{i,p} = \rho_e W_n U_{i,p} + V_{i,t}; \quad V_{i,t} \sim N(0, 1)$$

In Equation (2), W_n is an adjacency matrix, with entry (i, j) defined as $1/\text{distance}_{i,j}$, and $\text{distance}_{i,j}$ equal to the linear distance between the centroids of municipalities i and j .²⁰ $U_{i,p}$ denotes a disturbance process that follows a first order spatial autoregressive process with autocorrelation constant ρ in each period. $V_{i,t}$ is an individual idiosyncratic error term, and X a vector of municipal characteristics included as controls. Finally, I follow LeSage and Pace (2009) and include all municipalities and electoral cycles in the estimation given that matrix W_n needs to be invertible.

The results of estimating Equation (2) are presented in Table 6. The dependent variable in all panels is the yearly number of attacks by armed group and all regressions control for the total population and the duration of the electoral cycle. As in Table 3, panels A and B refer to guerrilla and paramilitary attacks respectively. Column 1 uses a distance-weighted adjacency matrix, which means that neighboring municipalities located closer to each other receive a higher weight than those located further away. Municipalities further away than half of the average distance between municipalities' centroids receive a weight of zero. Column 2 uses an adjacency matrix in which contiguous municipalities receive a weight of one, while all others receive a weight of zero. Finally, the total effect is divided between the *direct* effect of having a narrowly elected female mayor in a municipality, and the *indirect* one that comes from having a female mayor narrowly elected in a neighboring one.

The table reveals two noteworthy results. Firstly, the primary effect of female leadership on conflict violence, as established in subsection 4.1 (i.e., the direct effect) persists. It shows no significant variation in terms of statistical significance and is only slightly smaller in magnitude. While the coefficients are not directly comparable given the differences in the estimations, their relative magnitudes with respect to the average incidence of conflict violence evidences this reduction. The effect goes from a reduction equivalent to 60% of the average incidence of violence to a range of 34% to 39%. Just like in Table 3, this effect is only present on guerrilla attacks.

²⁰Note that if W_n were a matrix of zeroes, then estimating Equation (2) would be a simple OLS estimation of the correlation between having a female mayor and the level of violence in a municipality.

The second result to highlight is the indirect effect of female leadership on violence. These coefficients capture the relationship between having a female mayor in a municipality and the level of violence in the surrounding ones (varying the definition of “surrounding” across columns). Although the indirect effect of female leadership on guerrilla violence is somewhere between 4.5 and 9 times larger than the direct one, it is important to note that the average Colombian municipality has six neighboring municipalities. Therefore, we should anticipate this spillover effect to be large.²¹

In sum, the spatial analysis shows the presence of a spillover of the main effect. This positive externality indicates that the gains in welfare associated with the reduction in violence following the election of a female mayor are even greater than those documented in subsection 4.1, effectively making them a lower-bound estimate.

5 Validation of the empirical strategy

The validity of the key findings discussed in Section 4 and, consequently, the precision and validity of the impact of female leadership on conflict violence, hinge on several assumptions regarding the data and the choices made during model estimation. In this section, I show how those critical assumptions required for an RDD to be valid hold in this setting. In addition, I show how each decision concerning the sample, data manipulation, and choice of model parameters has no significant influence over the results, and how the latter are robust to different values and definitions.

5.1 Testing RD assumptions

In subsection 3.2.5 above, I already showed that there are no significant differences in the average value of observables between the “treatment” and “control” groups. To further support this argument, I begin this section by looking for evidence of manipulation of the electoral results in the sample of races under consideration. If candidates somehow anticipated that elections were going to be closely contested, they could have had incentives to influence the outcomes through means like fraud or vote buying to secure their victory. This, in turn, would undermine the assumption that election outcomes were “as good as random” when the margin of victory for the elected candidate was narrow.

Following (McCrary, 2008), I show the distribution of the running variable across the sample in Figure 5. As observed, there are no discontinuities around the threshold,

²¹Tables B4 and B5 in the appendix show the robustness of these results to the use of the “full-sample” of female victories and Conley (1999) standard errors respectively.

which indicates that the candidates were not able to anticipate the outcome of these narrow elections beforehand. Taken together, these two exercises show that there are no confounding variables that can explain the victory of female candidates.

A recent discussion in the literature has pointed out that using close elections as quasi-random experiments is problematic in certain contexts where democracy may not be as robust as traditionally assumed (Eggers, Fowler, Hainmueller, Hall, & Snyder Jr, 2015). Importantly, the validity of a close election hinges on the assumption that no actor, whether political or armed, can manipulate the outcome to favor their preferred choice.²² To address this concern, I estimate the model defined by Equation (1) using as outcome the number of attacks carried out by each armed actor in the year immediately preceding the elections. The results, presented in Table B6 in the Appendix, show no statistically significant effects. Thus, there is no evidence to suggest that either the guerrillas or the paramilitaries attempted to influence the outcome of close elections by altering their behavior leading up to them.

I further delve into this point by considering the possibility that political actors manipulate the result of local elections. Although by definition this is an unobservable situation, one could argue that it can be approximated with the City Council election results. In other words, political parties would only be able to accurately predict the result of a mayoral election (and, if desired, actively try to change it) whenever they have a strong signal of their electoral strength such as the results of the elections for City Council. To show that this is not the case, I use data on the political affiliation of Council members in each municipality between 1992 and 2015 to measure the extent of electoral competition in each municipality. Panel A of Table 2 shows that there is no statistical difference in the extent of partisan concentration in Councils between municipalities with and without a female mayor, defined as a Herfindahl-Hirschman concentration index of the number of votes or seats received by a party.

5.2 Robustness

This subsection demonstrates the robustness of the baseline result presented in Table 3, column 1. I begin by examining the sensitivity of this result to the choice of bandwidth. Figure 7 plots the (standardized) estimated effect and corresponding confidence intervals for various bandwidths, ranging from half to double the optimal one. The figure shows that the effects remain robust to the choice of bandwidth (in a close vicinity), and only losing significance and precision when using considerably

²²There is no consensus in the literature as of what a “strong democracy” is. I follow (Barber, 2003) and assume that a strong democracy, in terms of elections, is one where they are not influenced or controlled by any type of actor (i.e., “fair”).

small values.

In Table 7, I shift my focus to the definition of the dependent variable used in columns 1-5 of Table 3. In those columns, I used the yearly average number of attacks per 100,000 inhabitants during an electoral cycle as the dependent variable. Column 1 of Table 7 applies the inverse hyperbolic sine transformation to the dependent variable, resulting in minimal changes (if any, the estimated effect is even more substantial, representing a 75% reduction from the sample average). Columns 2 and 3 delve deeper into this point by using the number of attacks (2) and the number of attacks per 100,000 inhabitants (3) as the dependent variables, respectively. Once again, the effect remains consistently negative and statistically significant across all columns, with comparable magnitudes.

The baseline specification includes all elections and violent events spanning from 1997 (marking the earliest election with complete data) to 2016 (the year of the FARC's demobilization). Nonetheless, the peace negotiations between the government and the FARC had already started in 2014. In order to show that the main effect in Table 3 is not driven by the period during which the peace talks were being held, in columns 4 and 5 of Table 7 I extend and restrict the sample period up to and until 2018 and 2014 respectively. Once again, the magnitude of the effect remains stable albeit it loses some significance. Finally, and in order to omit the potential influence of extremely violent municipalities, I discard the top 5% most violent municipalities in the sample in column (6). As before, this does not entail significant changes in terms of magnitude or significance.

The baseline specification encompasses all elections and violent events spanning from 1997 (marking the earliest fully recorded election) to 2016 (the year of the FARC's demobilization). However, it's important to note that peace negotiations between the government and the FARC had already commenced in 2014. To show that the main effect observed in Table 3 is not driven by the period during which peace talks were underway, I extend and restrict the sample period in columns 4 and 5 of Table 7, considering years up to and including 2018 and 2014, respectively. In both cases, the effect's magnitude remains stable, although it loses some statistical significance. Finally, to mitigate the potential impact of exceptionally violent municipalities, I exclude the top 5% most violent municipalities from the sample in column 6. As before, this does not yield significant changes in terms of effect magnitude or significance.

6 Mechanisms

After having established that female mayors in Colombia reduced the level of armed conflict their municipalities experienced, this section is devoted to understanding what forces were behind the decline in the number of guerrilla attacks. In broad terms, the drop could be attributed to the behavior of these women while they held their office (i.e., their performance); to a decision on the guerrilla's side; or to the interference of third parties. In this section I delve into these potential explanations and present evidence suggesting that the decline in violence can be attributed to differences in the preferences towards peace of female politicians compared to their male counterparts. I further show that the effects are not driven by the guerrillas, other outside actors, or by the ideological affinity between these different players. Thus, the results are consistent with previous influential studies such as Chattopadhyay and Duflo (2004), where female politicians are shown to have different preferences towards public policy than males. This, in turn, can explain how women are able to encounter non-violent resolutions to conflict that their male counterparts are not able to.

6.1 Preferences towards violence

Elucidating previous mayors' preferences in a systematic manner is inherently difficult given that, in most cases, these individuals are no longer part of the public sphere. Moreover, present preferences might differ from those they held during their tenure in office, potentially casting a doubt over any analysis based on recently collected data. To address this challenge, I put together a novel and once again unique database encompassing all available government programs implemented by elected mayors in Colombia between 2003 and 2015. A "government program" is a document in which each candidate running for a public office outlines their campaign platform, enabling voters to make informed decisions. Starting in 2001, the Colombian electoral court encouraged "elected candidates" to submit these programs for preservation; however, it only became mandatory in 2015. Consequently, the collection and preservation of these documents for the sample period of this study predominantly relied on private initiatives, resulting in an incomplete sample. Thus, I leveraged off the efforts of the *Escuela Superior de Administración Pública* — *ESAP*, which entailed downloading all the programs they had amassed for the specified period. In total, my sample comprises 1,162 distinct programs (approximately 20% of the entire universe of elections), out of which 10% belong to female mayors, and are roughly evenly distributed across the time frame.

Originally, these government programs were meant to help the voters make a more

informed decision at the polls. Therefore, it was up to the candidates to decide the type and extent of information they included in their programs. This, in turn, translated into a lack of consistency across programs in terms of format and content which makes it impossible to apply the state-of-the-art machine learning techniques on them.²³ Therefore, I used an unstructured text-mining algorithm which allowed me to count the relative use of “relevant” words in each of the documents, as well as the most recurrent topics in each candidates’ program. Figure A4 in the appendix shows the most common words found in the government programs of women and men, and shows how there are no apparent differences in terms of the most pressing issues they identify. This is reassuring since it illustrates how both females and males are trying to capture the same electorate by following similar campaign strategies. In other words, the effect documented in previous sections doesn’t seem to be stemming from the votes’ preferences but rather from those of the elected (female) candidates.

Initially, these government programs were designed to assist voters in making more informed decisions during elections. Consequently, candidates held the responsibility of determining the type and depth of information they incorporated into their programs. However, this led to a lack of uniformity in terms of both format and content across programs. As a result, applying state-of-the-art machine learning techniques to them becomes unfeasible, given this lack of structure.²⁴ To address this, I relied on an unstructured text-mining algorithm. This approach enables me to assess the relative frequency of “relevant” words in each document, and identify the most recurrent themes within each candidate’s program. In the Appendix, Figure A4 presents the common words found in government programs of both women and men. It is worth highlighting the absence of any noticeable difference regarding the most frequently used terms across gender. This similarity is reassuring as it shows how both female and male candidates try to engage with the same electorate by adopting comparable campaign strategies. In essence, it suggests that the effect described in previous sections does not appear to stem from voters’ preferences but rather from the preferences of the elected (female) candidates themselves.

I use the output of the text-mining process in two distinct yet complementary approaches. Firstly, I run a supervised classification method to categorize all the terms extracted from the programs into various groups, with a primary focus on identifying terms related to peace and those associated with armed conflict. Simultaneously, I em-

²³As an example, while some candidates opted for an itemized list of their priority issues, others included their own CV, the background of the issues that they deemed more pressing as well as the exact manner in which they proposed to tackle said issues.

²⁴For instance, while certain candidates opted only for itemized lists detailing their prioritized matters, others included their CVs, contextual background on crucial issues, and detailed strategies for addressing said issues.

ploy a keyword-based approach by supplying sets of keywords to the algorithm, which then searches for these terms within the collection of documents, subsequently producing a relative frequency measurement for each term within each program. These sets of keywords are organized into categories, and their formation involved the utilization of AI tools. In both instances, the complete set of documents undergoes preprocessing, which involves the removal of special characters, common and uninformative words, as well as stemming.²⁵

Table 8 presents the results of estimating the conditional correlation between the mayor’s gender and the relative usage of different words, following both approaches. Across all columns, the dependent variable is the count of words found in each program that pertain to specific subjects. Columns (1) - (3) use the output of the supervised “word classification” to construct the dependent variables, while columns (4) - (7) use the “keywords” outcome as input for the dependent variables. Finally, all regressions control for the total length of the document and include a full set of electoral-cycle (i.e., year) fixed effects.²⁶

The results, though not identified, are particularly striking. Columns 1 - 3 show that the female mayors use relatively more peaceful statements compared to their male counterparts, all while maintaining their acknowledgment of the internal conflict. In simpler terms, their references to a peaceful resolution do not overshadow their recognition of illegal armed actors as a significant source of concern in their communities. Column 3 uses the relative use of “sports-related” terms as a placebo to demonstrate that the difference in the usage of peace-related terms does not conceal a broader distinction in language utilized by female mayors.

Columns 4 - 7 confirm this finding using the alternative approach described above. Moreover, column 5 includes only those programs that make a mention of the armed conflict and, even within that subset of documents, those belonging to female candidates exhibit a higher likelihood of including peace-related terms. Once again, the lack of differences in the usage of conflict-related or sports-related words underscores the absence of any overarching gender-based disparity in the composition of these programs.

The limitations stemming from both the structure and the sample of the government programs prevent me from drawing stronger conclusions from the exercises conducted in this subsection. However, the results in Table 8 strongly indicate significant differ-

²⁵The stemming process is of particular significance due to the presence of gendered nouns in Spanish.

²⁶Table B7 shows the results when using the logarithm of the word count (panel A), and the logarithm of the word count + 1 (panel B) as dependent variables. The results are identical in terms of sign and significance.

ences in the emphasis placed on potentially deescalating the ongoing armed conflict between female and male mayors. Additionally, the similarity of the programs in other topics implies that, from the perspective of voters, the platforms were comparable. The remainder of this section is dedicated to examining alternative or competing explanations for the drop in violence and demonstrating that the sole plausible explanation is linked to women holding stronger preferences for peaceful alternatives to armed conflict.

6.2 Politicians' performance

One explanation that directly challenges the “preferences” mechanism relates to the performance of public servants. It suggests that if women were more efficient in their roles as mayors compared to males, they could make significant contributions to the improvement of their communities in various ways. For example, they might expedite the construction of public infrastructure, reducing the time required for their completion. In this scenario, the observed reduction in conflict violence could potentially only be a signal of this broader efficiency. Previous influential studies have found evidence in this direction on several different dimensions like the provision of public goods (Chattopadhyay & Duflo, 2004), and corruption (Brollo & Troiano, 2016).

I examine this issues in the Colombian context, as presented in Table 9. In this table, I estimate Equation (1) using various outcomes to capture distinct dimensions of mayoral performance and ability. Columns 1 and 2 utilize data from the Latin American Public Opinion Project (LAPOP), a survey research initiative based at Vanderbilt University. This survey has been conducted annually in Colombia since 2021 and spans across 34 countries throughout the Americas. In Column 1, the outcome variable is an indicator of whether the respondent’s level of trust in their mayor is higher than the median. Column 2 uses an indicator reflecting whether the respondent perceives their local government as transparent in its management of public funds. The results show no relationship between the voters’ perceptions of their mayors and the gender of the latter.

Columns 3 - 6 use as outcomes different observable measures of public policy and public goods provision. Column 3 uses the share of a municipality’s expenses that is invested in public procurement, while Columns 4 and 5 use school enrollment and child mortality rate. Finally, Column 6 uses a measure of land redistribution.²⁷ Across all four regressions, the point estimates are both small in magnitude (compared to their means) and not statistically significant. This shows that the public policy decisions

²⁷Additional dimensions of public policy are studied in Appendix Table B8, always with identical results

made by female mayors did not systematically differ from those made by their male counterparts.

The findings in Table 9 emphasize the absence of differences in terms of performance and public policy choices between female and male mayors. They echo the point previously raised in subsection 6.1, suggesting that the impact of female leadership on conflict violence is not rooted in a distinct approach to conflict “management”. This conclusion, in turn, is supported by the lack of observable differences in the way they handle other aspects of their roles. Finally, the results also suggest that guerrilla groups are not being dissuaded by the provision of any specific type of public goods or policies.²⁸

6.3 Third parties’ involvement

The main finding of fewer guerrilla attacks in female led municipalities may be linked to how other actors respond to the electoral success of a female. For example, the national government might interpret this as a sign of vulnerability and increase the presence of army units in these areas, essentially forcing the guerrillas to retreat. Similarly, the government could show favoritism or penalize female mayors by adjusting the allocation of resources to these municipalities as a way to signal support or neglect. These varying actions could, in turn trigger strategic reactions from guerrilla and paramilitary groups, potentially explaining the main findings in this paper.

I address these potential alternative explanations in Table 10, where I estimate Equation (1) using various observable actions carried out by these “third parties” as dependent variables. I begin by using the (normalized) number of actions conducted by the national army and the local police as outcomes in columns 1 and 2, respectively. Law enforcement actions are defined as the sum of clashes between the state’s forces and illegal groups, as well as crackdowns on the latter. The distinction between the army and police events lies in the fact that, in Colombia, the army reports directly to the national executive, while police departments are led by local authorities. The results in columns 1 and 2 indicate that there is no relationship between the gender of the elected mayor and the level of activity of either of these state agencies. Therefore, we can conclude that the national government is not engaging differently with guerrillas in female-led municipalities, and that these women are not utilizing their local police departments differently either. This result underscores that females are not reducing the level of conflict in their municipalities through the use of violence.

²⁸Of particular significance in the context of the Colombian conflict is land policy, which has historically been a primary concern for guerrilla groups.

Columns 4 and 5 of Table 10 delve into the influence of illegal armed actors. In particular, column 3 uses the normalized number of paramilitary actions (i.e., attacks + clashes) as the dependent variable, and column 4 focuses on the number of clashes involving the guerrillas. Once again, there appears to be no difference in the level of activity exhibited by these groups between municipalities with a female and a male mayor.

Shifting the focus to financial aspects, columns 5 - 8 examine the effects of having a female mayor on various measures of financial support that municipalities receive from the central government. Columns 5 and 6 use the logarithm of the total amount transferred and the capital transfers by the central government, respectively, as dependent variables. Column 7 employs the logarithm of the amount of credit granted by the central government to municipalities, while column 8 uses the percentage of a municipality's income derived from central government transfers. The results in these four columns deliver a clear message: there was no bias from the central government, whether in favor or neglect, toward municipalities with female mayors. The coefficients in each regression are both statistically insignificant and economically negligible. Therefore, it is reasonable to conclude that the national government did not make municipalities with female mayors more or less susceptible to attacks by rent-seeking organizations through financial transfers.

Taken together, the results in Table 10 show that the reduction of conflict violence that followed the election of a female mayor was not influenced by the presence and actions of third parties.

6.4 Female mayors' ideology and traditional political movements

Another alternative explanation for the main effect is related to the ideological affinity between female leaders and guerrillas. As discussed in Section 2, female politicians in Colombia were mostly outsiders to the political establishment. Therefore, they might have been viewed favorably by guerrillas if the latter saw them as a departure from the political elites they were trying to overthrow. In such a scenario, the reduction in violence following the election of a woman mayor might simply reflect this ideological alignment between these female leaders (i.e., outsiders) and the guerrillas (i.e., revolutionaries).

I explore these ideological and political dimensions in Table 11, where I look for heterogeneities of the main effect along different dimensions of ideology and partisanship. I do this by estimating Equation (1) and dividing the sample of municipalities where

the mayoral race was decided between a female and a male candidates along different dimensions in each column. In each column, Panel A estimates the Regression Discontinuity Model using the subset of municipalities where the mayoral race was decided between a female and a male, and the condition specified in the header is met (e.g., in column 1, I only include municipalities where a right-wing candidate won). Panel B includes municipalities where the mayoral election was decided between a male and a female, and the condition in the header is not met.

Column 1 divides the sample between places where a right-wing candidate won or not. I follow the ideological classification of Colombia political parties proposed by Fergusson et al. (2019) to identify right-wing parties.²⁹ The results show no substantial differences between places where right-wing candidates won or lost except for a slight increase of precision in the latter group.

Columns 2 - 4 delve deeper on the role of traditional politics. I define traditional parties as the Liberal and Conservative parties, as they are the only two parties that have been present in the Colombian political landscape since the 19th century. Moreover, between 1958 and 1974 (the period during which the FARC was conceived), these two parties controlled the entire state bureaucracy, alternating presidential appointments to avoid confrontation. In the table, column 2 splits the sample between places where the candidate of a traditional party won and those where they did not; column 3 does the same for places where candidates of traditional parties lost and not; and column 4 does so for places where the incumbent belonged to a traditional party or not. The results show that the decline in guerrilla violence occurred in places where female candidates effectively disrupted the dominance of traditional parties. Column 2 shows that the drop occurred in areas where traditional parties were not elected into power. Column 3 confirms this result by demonstrating that the effect arises in places where these traditional forces were defeated. Finally, column 4 indicates that the effect is also more significant in places where traditional parties held political power and then lost it. In terms of magnitude, the effect ranges from 63% of the average conflict incidence in column 4 to 114% in column 3. These magnitudes are comparable to the ones found in Table 3

Finally, column 5 divides the sample between places where the elected female mayor had or did not have electoral experience, without any noticeable differences across panels.

²⁹This classification follows the algorithm proposed by citebudge2001 and the data from (Keefer, 2012). It is based on the parties' names, slogans and, when not available, on their statutes.

Traditional parties The results in columns 2-4 of Table 11 suggest that the partisan affiliation of female mayors, particularly their connection (or lack thereof) to traditional parties, might provide an explanation for the decrease in guerrilla violence. This could be a consequence of the fact that guerrillas aimed to overthrow political as one of their objectives. Consequently, they might have been inclined to favor (i.e., refrain from attacking) politicians who already represented a departure from these traditional political groups. However, this would potentially undermine the central finding of this paper given that the effect attributed to female leadership would only be masking the effect of being a political outsider on conflict violence.

To address this concern and demonstrate that this explanation is unlikely to hold, I present Table 12. In this table, I conduct a series of exercises designed to alleviate these doubts. In Column 1, I estimate the model defined by Equation (1) varying the discontinuity dimension, focusing on mayoral races between a candidate affiliated with a traditional party (treated) and one from a different political affiliation (control). The results show that the narrow victory of a mayor from one of the two historical political parties is not significantly correlated with the level of conflict violence experienced by a municipality in Colombia.

In Column 2, I employ a different approach to show that partisanship is not the primary factor driving the baseline effect. Specifically, I estimate the Regression Discontinuity model including only the subset of municipalities where the mayoral race was decided between a female and a male candidate, both affiliated with a traditional party. The results indicate that even in this extreme scenario where political continuity is not in question, municipalities with a female mayor experienced a reduction in the number of guerrilla attacks they faced.

Column 3 focuses on the subset of episodes of conflict violence identified as “politically motivated”. These include selective homicides, kidnaps, and killings committed by illegal actors and attributed to their targeting of political figures. The results show a negative effect of female leadership on this type of violence, indicating that even when municipalities are targeted because of their political views, those led by women experience lower levels of violence compared to those with male mayors.

Finally, column 4 includes as a covariate an indicator of whether a woman had previously been elected as mayor in a municipality (prior to the race considered). The similarity between the results in this column and the baseline findings presented in Table 3 suggest that the baseline results are not driven by a temporal adjustment by the guerrillas. Instead, they seem to be attributed to a more fundamental aspect related to how female leaders interact with guerrilla groups.

In sum, the results presented in this subsection show that, while ideology did have a role to play in determining the intensity of the Colombian conflict, it did not confound the drop in violence that followed the election of a female mayor.

7 Conclusion

The potential impact of female leadership on events within an armed conflict has been a relatively overlooked topic in previous quantitative studies within the field of economics. In this paper, I address this gap by examining this issue in the context of the Colombian conflict spanning from 1997 to 2016. I utilize the outcomes of closely contested mayoral elections, where the top 2 contestants were a female and a male, as a key source of identification. The findings show that the election of a female mayor is associated with a reduction in the number of guerrilla attacks experienced by the municipality. This decrease accounts for 60% of the average number of attacks and is consistent across different conflict metrics.

I further explore the internal structure and the gender composition of the FARC's leadership to show that a similar pattern of female leadership and conflict de-escalation emerges within this organization. Finally, I use novel data on the government platforms of these candidate to show that the underlying cause of the decline in violence is linked to differences in the preferences of female and male candidates with regards to peace and conflict.

These results seem to support the notion that women in general, and female leaders in particular, tend to be less prone to violence than men. They indicate that this pattern holds true regardless of the type of leaders or institutions we consider. However, the question that remains is why guerrilla and paramilitary groups react differently to the election of a female mayor. Previous qualitative research on Colombia's armed actors has highlighted a stark contrast in the gender identities of these groups. Paramilitary forces tend to emphasize masculine values, while guerrillas prioritize ideology. This aligns with the gender composition of each group, as only 12% of paramilitary members are female, whereas between 30% and 40% of FARC combatants were women (Salazar, 2019; Vega, 2019). Although these figures should be taken with caution, they suggest that the predominantly male makeup of paramilitary groups might have constrained the actions of female mayors, leaving them with limited room to pursue non-violent alternatives to conflict.

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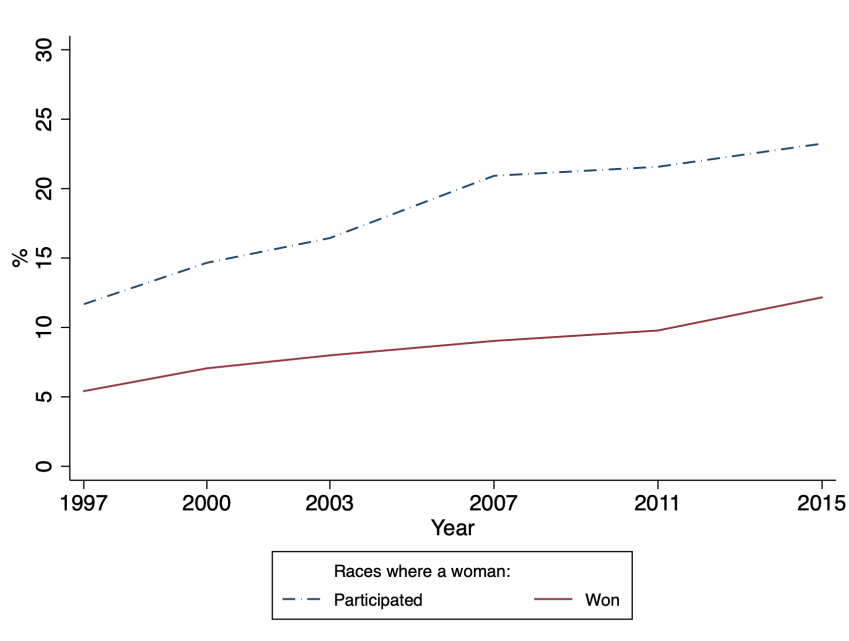
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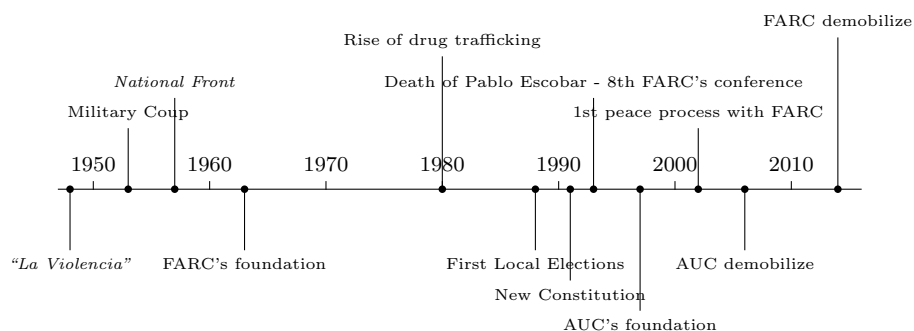
Figure 1: Evolution of female participation and success in local elections. 1997-2015



Notes: Percentage of female candidates (dashed line) and mayors (solid line) in each local election during the sample period.

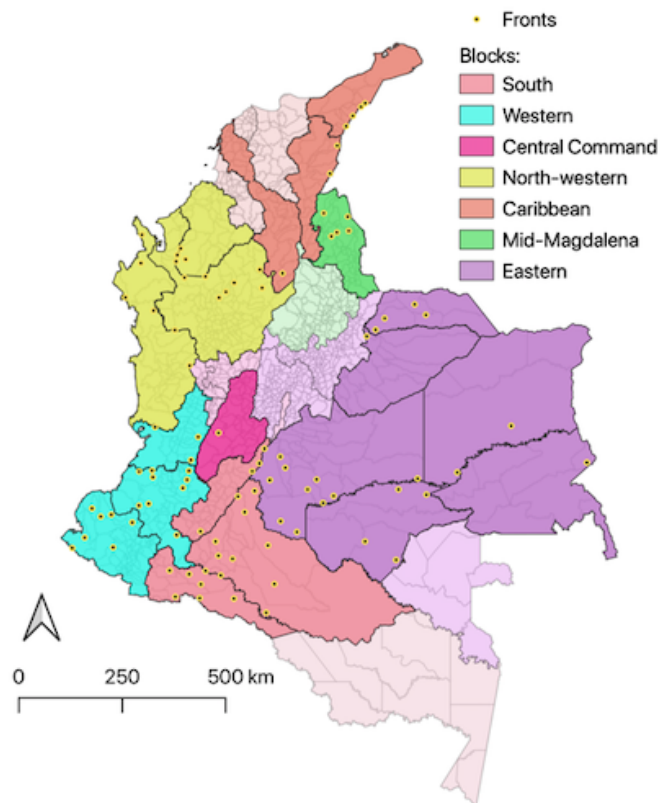
Figures

Figure 2: Relevant events for the Colombian conflict since 1948



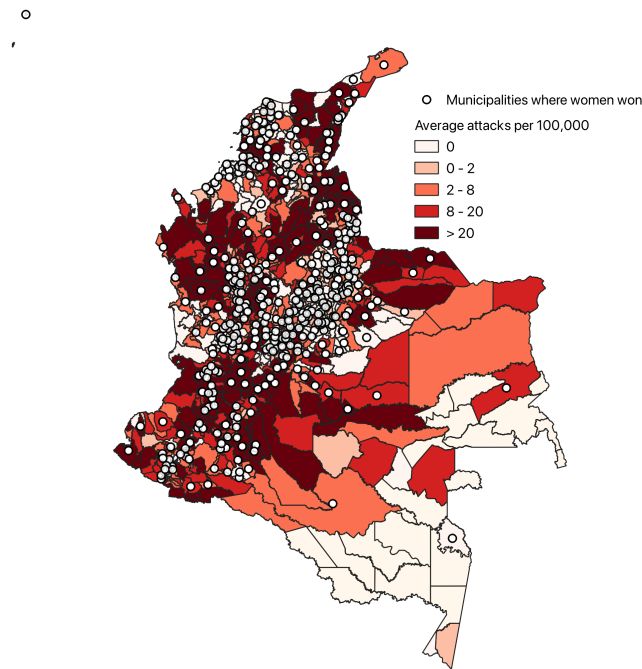
Notes: The figure shows the principal events related to the armed conflict in Colombia, starting with the 1948 outburst of partisan violence known as "La Violencia", and ending with the FARC's demobilization in 2016. Three main periods can be identified: 1) bipartisan government and early guerrilla insurgency (1948-1980). 2) Rise of big drug cartels and private armies (1980-1993). 3) Armed confrontation between guerrillas, paramilitaries and the government (1993-2016).

Figure 3: Jurisdiction of FARC blocks and location of fronts



Notes: FARC's administrative division according to *Verdad Abierta* (2021). Blocks are color coded with bright areas indicating a more active presence of the respective unit. Fronts are represented as dots in their most recent location.

Figure 4: Geographical distribution of guerrilla attacks between 1998 and 2016 and female electoral success



Notes: Incidence of guerrilla attacks between 1998 and 2016 color coded. Violence data from (Restrepo et al., 2003) and updated by Universidad del Rosario. Attacks are normalized by year and 100,000 inhabitants. Municipalities identified with a dot are those places where a female mayor was elected between 1998 and 2016.

Figure 5: McCrary test for sorting around the threshold

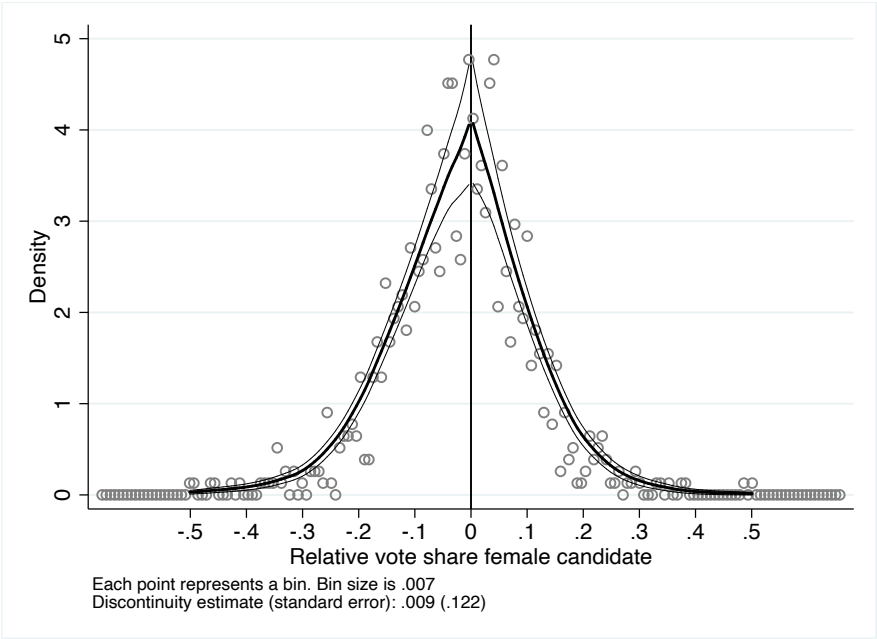
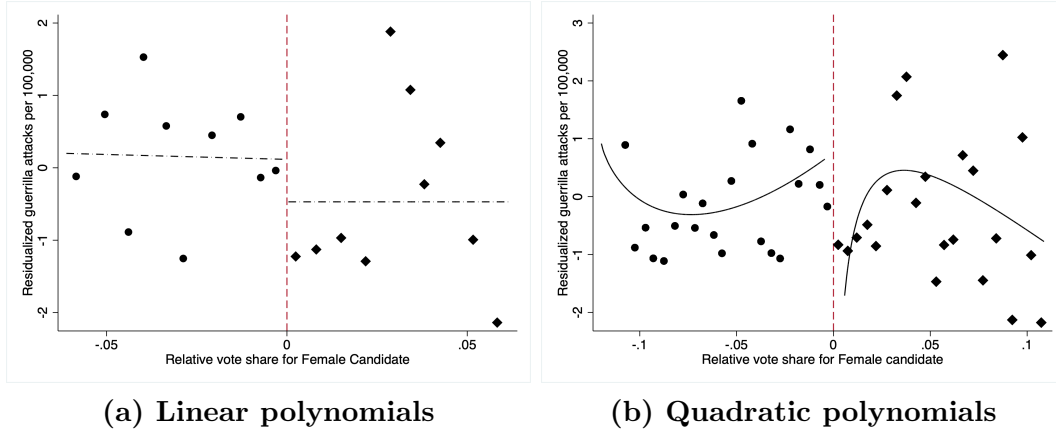
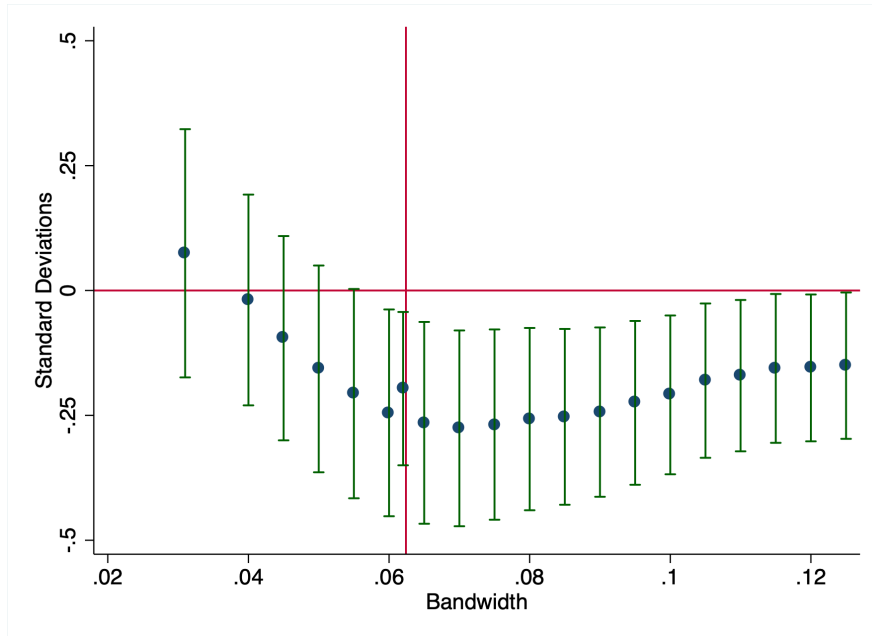


Figure 6: Baseline effects



Notes: Baseline effects. **Non-biased corrected** estimators and robust standard errors. Optimal Calonico et al. (2014) bandwidth at each side of the discontinuity in both panels. Dependent variable is the average residualized number of guerrilla attacks per year and 100,000 inhabitants

Figure 7: Robustness to different bandwidths



Notes: Point estimate and confidence intervals for different bandwidths, ranging from half the optimal (Calonico et al., 2014) up to double its value. Robust standard errors and optimal biased-corrected estimators in all regressions. Standardized effects. Linear local polynomials on both sides of the discontinuity.

Tables

Table 1: Descriptive Statistics of main variables
(Sample: Electoral races where a woman won or came second)

	Mean	Std. Dev	Median	Min	Max
Panel A: Violence outcomes					
<i>Average yearly # of ... per 100,000 inhabitants during government period</i>					
<u>Attacks</u>					
Guerrilla	2.0	6.1	0	0	71
Paramilitary	1.1	4.1	0	0	65
<u>Actions</u>					
Army	1.6	6.8	0	0	119
Police	0.6	2.3	0	0	38
<u>Clashes involving</u>					
Guerrilla	1.4	6.0	0	0	94
Paramilitary	0.1	0.8	0	0	13
Army	1.3	5.7	0	0	94
Police	0.2	1.2	0	0	19
<u>Casualties</u>					
Guerrilla	5.7	29.8	0	0	423
Paramilitary	2.9	17.0	0	0	407
Panel B: Electoral variables					
Vote share	0.481	0.120	0.487	0.0	1.0
% of victories	0.443				
Panel C: Female candidates characteristics					
% of female candidates that represent:					
Traditional parties	0.440				
Right-wing parties	0.128				
Left-wing parties	0.022				
Panel D: Other variables					
Total population	37019	217572	12434	976	6302881
Rurality Index	0.562	0.233	0.597	0.0	1.0
Distance to capital (km)	74.28	51.93	64.39	0	376
Transfers	750.35	865.13	625.99	0	11185
Functionaries investigated*	76.2	651	21.00	0	17813
Indigenous settlement (%)	0.412				
Current smuggling route (%)	0.267				
XIX century smuggling route (%)	0.043				

Notes: 1,045 observations in all panels. Vote share in panel B is percentage of votes for female candidate out of the total votes received by top 2 candidates. Traditional parties in panel C are Liberal and Conservative parties. Ideology in panel C drawn from Fergusson et al. (2019). In panel D, rurality index is the ratio of rural to total population; Distance to capital is linear distance to State's capital city; Transfers corresponds to transfers by central government; Functionaries investigated stands for # of civil servants prosecuted by the General Attorney's office for corruption related charges; Indigenous settlement is an indicator of whether municipality was a pre-colonial settlement. Smuggling routes are indicators of whether a municipality is crossed by each type of route. * only 786 observations available.

Table 2: Balance on observable characteristics
Close races

	Mean	Difference	p-value
<i>Panel A: Time varying characteristics:</i>			
Total income	19070	3,966.1	0.55
Total expenditure	22781	7,910.0	0.44
Payroll expenses	1,480	555.1	0.39
Per capita turnout	0.457	0.003	0.75
Council HHi - votes	0.275	-0.010	0.38
Council HHi - seats	0.311	-0.010	0.41
<i>Panel B: Time invariant characteristics:</i>			
Area (km ²)	750	214.4	0.11
Altitude (masl)	1,038	-48.7	0.43
Soil suitability index	3	0.0	0.81
Flatness index	8	-0.1	0.81
Distance to state capital (km)	75	-1.4	0.70
Distance to Bogotá (km)	324	12.5	0.37
Historical land conflict	0.061	-0.009	0.58
(log) Cadastral value (1960)	9.521	0.019	0.87
(log) Latifundia (1960)	0.558	-0.069	0.42
Indigenous settlement	0.418	0.000	0.99
Spanish occupation	0.388	0.014	0.69
XIX century smuggling route	0.044	-0.018	0.23
Current smuggling route	0.281	-0.017	0.60
<i>Panel C: Baseline:</i>			
Population	29609	8,146.3	0.54
Ethnic pop. > avg.	0.273	0.000	1.00
Rurality index	0.600	-0.001	0.98
GINI	0.434	-0.008	0.25
Poverty index	0.527	-0.011	0.40
Total income	127.5	65.694	0.46
Tax revenues	61.42	64.731	0.37
Total expenditure	145.84	105.961	0.42
Government Credit	19.57	29.505	0.36

Notes: 421 and 376 municipalities where women lost and won respectively. Mean is the average for the full sample. Difference computed as $\bar{X}(F_{i,p} = 1) - \bar{X}(F_{i,p} = 0)$. Total income, expenditure and payroll expenses, tax revenue and government credit measured all in millions of Colombian Pesos (COP). Council concentration measured through Herfindahl-Hirschman index computed for the election held simultaneously to the mayor election. Vote/seats concentration defined as the ratio between the number of votes/seats a party receives and the total number of votes/seats in the election. Historical land conflict, indigenous settlement and Spanish occupation are indicators of whenever a municipality experienced the relevant event. Population, rurality and poverty indexes and GINI coefficient measured in 1993. Financial variables in panel C measured in 1987.

Table 3: Effect of female electoral success on conflict violence - Baseline results

<i>Dependent variable is:</i>							
	Yearly average # of attacks per 100,000 inhabitants					Attacks indicator	Casualties indicator
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
<i>Panel A: Guerrilla Violence</i>							
Female mayor	-1.200** (0.571)	-1.331** (0.582)	-1.308** (0.564)	-0.916* (0.539)	-1.636** (0.738)	-0.195** (0.085)	-0.189** (0.089)
Observations	1,045	1,045	946	946	1,045	1,045	1,045
Observations	1045	1045	946	946	1045	1045	1045
Mean of dep. var	1.979	1.979	1.979	1.979	1.979	0.243	0.224
<i>Panel B: Paramilitary Violence</i>							
Female mayor	-0.267 (0.705)	-0.314 (0.703)	-0.384 (0.731)	-0.121 (0.706)	-0.677 (0.781)	-0.013 (0.076)	-0.071 (0.065)
Observations	1,045	1,045	946	946	1,045	1,045	1,045
Observations	1045	1045	946	946	1045	1045	1045
Mean of dep. var	1.069	1.069	1.069	1.069	1.069	0.200	0.185
Controls:							
Development	X	✓	✓	✓	X	X	X
Historical	X	X	✓	✓	X	X	X
Year Fixed Effects	X	X	X	✓	X	X	X
Degree of polynomial	1	1	1	1	2	1	1

Notes: Robust standard errors in parenthesis. *** p<0.01, ** p<0.05, * p<0.1. Observation is the municipality per electoral period. Optimal Calonico et al. (2014) robust bandwidth and bias-corrected estimators used in all regressions. Each coefficient reports a different regression. Running variable is the share of votes out of the two highest votings for female candidate. Panel A only includes conflict events perpetrated by the guerrillas. Panel B only includes conflict events committed by paramilitary groups. Development controls are: population, % of rural population, GINI, poverty index and urbanization index all measured in 1993; tax income, central government transfers and municipal expenditure, all measured in 1987. Historical controls are: # of public and municipal employees, # of police stations and % of paved roads, all drawn from Acemoglu et al. (2015) and measured in 1995; indicators of indigenous settlement, European settlement during the colonies, historical land conflict and historical violence. All control variables are further defined in appendix Table B1. Descriptive statistics included in Table 1 Dependent variables in columns 6 and 7 are indicators of whether municipality experienced any attack or conflict related civilian casualty respectively.

Table 4: Female influence within the guerrillas - Correlation

<i>Dep. var: yearly avg. # of guerrilla attacks (per 100,000 inhabitants)</i>				
	(1)	(2)	(3)	(4)
<i>FARC structure with female influence</i>				
	Block		Front	
Female FARC commander	1.884 (1.420)	-1.626* (0.920)	-1.411** (0.676)	-1.457** (0.636)
Observations	6013	2175	1936	2044
Mean of dep. var	2.195			
Data source:	VA	F&R	F&R	Full

Notes: Standard errors clustered by state-year in parenthesis. *** p<0.01, ** p<0.05, * p<0.1. OLS estimations using the full sample of Colombian municipalities in all columns. All regressions include year and state fixed effects. Columns 1 and 2 define as female of authority the presence of Lobo, Montero or Sandino; columns 3 and 4 add those women who were front commanders (see section 6 for more details). Columns 1 and 2 use blocks as FARC structures, columns 3 and 4 use fronts. Data for column 1 is drawn from (*Verdad Abierta*, 2021) (VA), data for columns 2 and 3 from (Medina-Gallego, 2011) (F&R). Column 4 uses both data sources.

Table 5: Heterogeneous effects by female influence in the FARC structures

<i>Dep. var: yearly avg. # of guerrilla attacks (per 100,000 inhabitants)</i>				
	(1)	(2)	(3)	(4)
Panel A: FARC structure with female influence				
	Block		Front	
Female mayor	-2.698** (1.345)	-6.658*** (2.574)	-2.807* (1.489)	-3.031* (1.615)
Observations	257	161	80	81
Mean of dep. var	2.713	2.914	1.972	2.046
Panel B: FARC structure without female influence (conditional)				
	Block		Front	
Female mayor	-0.848 (0.631)	-1.371 (1.741)	-1.684 (1.363)	-1.671 (1.457)
Observations	788	198	237	252
Mean of dep. var	1.739	3.256	3.869	3.789
Panel C: FARC structure without female influence (unconditional)				
	Block		Front	
Female mayor	-0.848 (0.631)	-0.551 (0.580)	-0.902 (0.597)	-0.892 (0.595)
Observations	788	884	965	964
Mean of dep. var	1.739	1.808	1.979	1.973

Data source: VA F&R F&R Full

Notes: Robust standard errors in parenthesis. *** p<0.01, ** p<0.05, * p<0.1. Linear local polynomials and optimal Calonico et al. (2014) robust and bias-corrected estimators and bandwidths used in all regressions. Each coefficient reports a different regression. Running variable is the share of votes out of the two highest votings for female candidate. Panel A includes only municipalities in the jurisdiction of guerrilla structures (blocks or fronts) with a female figure of authority. Columns 1 and 2 define as female of authority the presence of Lobo, Montero or Sandino; columns 3 and 4 add those women who were front commanders (see section 6 for more details). Panel B includes only municipalities with an active FARC structure different from those in panel A. Panel C includes all municipalities not included in panel A. By definition, column 1 of panel C would be identical to column 1 panel B. Columns 1 and 2 use blocks as FARC structures, columns 3 and 4 use fronts. Data for column 1 is drawn from (*Verdad Abierta*, 2021) (VA), data for columns 2 and 3 from (Medina-Gallego, 2011) (F&R). Column 4 uses both data sources.

Table 6: Spatial spill-over analysis

Dep. var.: # of attacks by...		
<u>Spatial weighting matrix:</u>	<u>Distance</u>	<u>Neighbor</u>
	(1)	(2)
<u>Panel A: Guerrilla violence</u>		
<u>Effect:</u>		
Direct	-0.365** (0.142)	-0.323** (0.141)
Indirect	-1.469*** (0.336)	-2.701*** (0.318)
Mean of dep. var	0.928	
<u>Panel B: Paramilitary violence</u>		
<u>Effect:</u>		
Direct	-0.133 (0.142)	-0.118 (0.141)
Indirect	-0.559 (0.441)	-0.997** (0.420)
Mean of dep. var	0.928	

Notes: Standard errors in parenthesis. *** p<0.01, ** p<0.05, * p<0.1. Observation is the municipality in the electoral period. 6606 observations in all regressions. Distance spatial weighting matrix used in column 1. Contiguous spatial weighting matrix used in column 2. Dependent variable in all columns is the raw count of attacks. All regressions control for population and duration of the electoral cycle. Direct effect captures the effect of a (close) female victory on the municipality. Indirect effect captures the effect of a (close) female victory in neighboring municipalities.

Table 7: Robustness of baseline results

<i>Dependent variable is the # of attacks transformed or adjusted by:</i>						
	<u>IHS</u>	<u>Count</u>	<u>Per 100,000</u>	<u>Until 2018</u>	<u>Until 2014</u>	<u>Outliers</u>
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Panel A: Guerrilla Violence</i>						
Female mayor	-0.340** (0.148)	-0.728* (0.393)	-3.032* (1.688)	-0.706* (0.416)	-0.680* (0.395)	-0.817* (0.452)
Observations	1045	1045	1045	1045	1045	993
Mean of dep. var	0.424	1.108	6.251	1.157	1.073	0.794
<i>Panel B: Paramilitary Violence</i>						
Female mayor	-0.090 (0.162)	-0.077 (0.829)	-1.007 (2.315)	0.082 (0.860)	-0.151 (0.810)	0.037 (0.167)
Observations	1045	1045	1045	1045	1045	993
Mean of dep. var	0.348	0.989	3.402	1.066	0.938	0.346

Notes: Robust standard errors in parenthesis. *** p<0.01, ** p<0.05, * p<0.1. Observation is the municipality per electoral period. Optimal Calonico et al. (2014) robust bandwidth and bias-corrected estimators used in all regressions. Each coefficient reports a different regression. Running variable is the share of votes out of the two highest votings for female candidate. Panel A only includes conflict attacks carried out by the guerrillas. Panel B only includes conflict attacks committed by paramilitary groups. Column 1 uses the inverse hyperbolic sine transformation of the dependent variable. Column 2 uses the raw count of attacks as dependent variable. Column 3 uses the # of attacks per 100,000 inhabitants (not normalized by # of years). Column 4 extends the sample period up to 2018. Column 5 reduces the sample size up to 2014. Column 6 drops the top 5% most violent municipalities in the sample.

Table 8: Mechanisms: preferences towards peace — Government programs

Dependent variable is the # of words in a program that relate to:	<i>Words classification</i>			<i>AI keywords</i>		
	Peace	Conflict	Sports	Peace		Conflict
	(1)	(2)	(3)	Unconditional	Conditional	(7)
Female mayor	1.272** (0.617)	1.261 (1.443)	0.019 (0.729)	1.272** (0.617)	1.376** (0.630)	1.261 (1.443)
Observations	1,114	1,114	1,114	1,114	1,046	1,114

Notes: Standard errors in parenthesis. *** p<0.01, ** p<0.05, * p<0.1. Observation unit is the elected mayor. All regressions control for the total number of words used in the program, and include year fixed effects. Columns (1)-(3) use as dependent variable the # of (peace/conflict/sports) terms found in each program after classifying the universe of words used in programs. Columns (4)-(7) use as dependent variable the # of (peace/conflict/sports) terms found in each program, as defined by an Artificial Intelligence tool. Column (4) uses the total # of peace-related terms in all programs, while column (5) uses the total # of peace related terms found in those programs that make at least one mention to conflict in any terms.

Table 9: Mechanisms: performance and public goods provision

Dependent variable is:	(1)	(2)	(3)	(4)	(5)	(6)
	Trust in mayor	Perceived trans- parency	Investment expenses	School en- rolment	Child mortality	Land dis- tribution
Female mayor	0.137 (0.088)	0.050 (0.078)	4.384 (3.448)	-10.136 (17.124)	-9.973 (9.623)	0.037 (0.093)
Observations	3320	1432	918	810	810	1045
Mean of dep. var	0.604	0.367	82.866	213.589	57.076	0.526

Notes: Robust standard errors in parenthesis. *** p<0.01, ** p<0.05, * p<0.1. Individual level regressions in columns 1 and 2. Observation is the municipality per electoral period in the remaining columns. Columns 1 and 2 are OLS regressions with period fixed effects. Optimal Calonico et al. (2014) robust bandwidth and bias-corrected estimators used in columns 3-6. Each coefficient reports a different regression. Running variable is the share of votes out of the two highest votings for female candidate in columns 3-6. Dependent variables are: indicator of whether respondents' trust in their mayor is higher than the median level of trust on a scale from 1 to 10, indicator of whether respondents think local government is transparent in its use of public funds, percentage of total yearly expenses that go to investment, number of students per 100,000 inhabitants, number of children under 1 dead each year as per 1,000 alive births, and an indicator of whether municipality redistributed more land than the median municipality. All outcomes are further defined in appendix Table B1.

Table 10: Mechanisms: the influence of third actors

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	<u>Violent intrusion</u>			<u>Financial intrusion</u>				
Dependent variable is:	# of actions per 100,000 inhabitants by:	Clashes involving guerrillas			log of ...			
	Army	Police	Paramilitary		Gov't transfers	K transfers	Gov't credit	% of income are transfers
Female mayor	0.907 (1.023)	-0.271 (0.214)	-0.273 (0.728)	0.467 (0.921)	0.213 (0.201)	0.222 (0.187)	0.064 (0.218)	-0.269 (0.323)
Observations	1045	1045	1045	1045	959	997	914	738
Mean of dep. var	1.635	0.555	1.167	1.448	8.360	10.267	6.138	8.842

Notes: Robust standard errors in parenthesis. *** p<0.01, ** p<0.05, * p<0.1. Observation is the municipality per electoral period. Optimal Calonico et al. (2014) robust bandwidth and bias-corrected estimators used in all regressions. Each coefficient reports a different regression. Running variable is the share of votes out of the two highest votings for female candidate. Dependent variables for columns 1-4 are yearly averages per 100,000 inhabitants. In columns 1-3, actions are the sum of clashes and attacks. In column 6, dependent variable is the logarithm of capital transfers from the central government. All outcomes are further defined in appendix Table B1. Descriptive statistics available in Tables ??

Table 11: Mechanisms: Heterogeneous effects on the partisan affiliation of female mayors.

Dependent variable is yearly average # of guerrilla attacks per 100,000 inhabitants.					
Heterogeneity dimension :	Victory of right-wing candidate	Candidate from a traditional party:			Previous electoral experience
		Won	Lost	Incumbent	
	(1)	(2)	(3)	(4)	(5)
<i>Panel A: Municipalities where dimension = 1.</i>					
Female mayor	-1.112 (0.730)	-0.667 (0.912)	-3.189*** (1.117)	-1.665** (0.779)	-0.530* (0.290)
Observations	143	460	446	546	158
Mean of dep. var	0.203	2.626	2.787	2.609	1.580
<i>Panel B: Municipalities where dimension = 0.</i>					
Female mayor	-1.102* (0.632)	-1.231** (0.572)	0.335 (0.578)	-0.382 (0.802)	-1.146* (0.645)
Observations	902	585	599	499	887
Mean of dep. var	2.260	1.470	1.377	1.289	2.050

Notes: Robust standard errors in parenthesis. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Observation is the municipality per electoral period. Optimal Calonico et al. (2014) robust bandwidth and bias-corrected estimators used in all regressions. Each coefficient reports a different regression. Running variable is the share of votes out of the two highest votings for female candidate. Dependent variables for Panel A are all yearly averages per 100,000 inhabitants. Panel A includes only municipalities that satisfy the condition described in the header of each column. Panel B includes municipalities where said condition is not held. Conditions are: victory of a right-wing candidate (1); victory or defeat of the candidate of a traditional party (3 and 4 respectively); incumbent from traditional party (5); elected mayor having previous electoral experience (6). Ideology classifications following (Fergusson et al., 2019). Traditional parties are the Liberal and the Conservative party.

Table 12: Mechanisms: traditional politics and political violence.

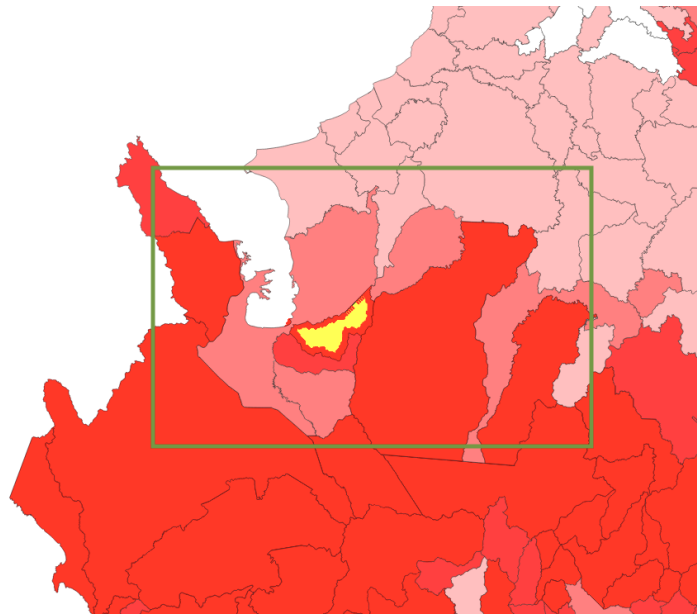
<i>Dependent variable is the average yearly # of attacks per 100,000 inhabitants.</i>				
	<u>“Traditional” close victory</u>	<u>2 “traditional” candidates</u>	<u>Political Violence</u>	<u>Previous fe- male mayor</u>
	(1)	(2)	(3)	(4)
<i>Panel A: Guerrilla Violence</i>				
Traditional mayor	-0.086 (0.553)			
Female mayor		-3.365* (1.890)	-0.454** (0.177)	-1.188** (0.570)
Observations	3196	166	1045	1045
Mean of dep. var	2.000	4.572	0.406	1.979
<i>Panel B: Paramilitary Violence</i>				
Traditional mayor	-0.304 (0.332)			
Female mayor		-1.868 (2.087)	-0.012 (0.800)	-0.250 (0.705)
Observations	3196	166	1045	1045
Mean of dep. var	0.968	2.147	0.918	1.069
Controls:				
Previous mayor’s gender	X	X	X	✓

Notes: Robust standard errors in parenthesis. *** p<0.01, ** p<0.05, * p<0.1. Observation is the municipality per electoral period. Optimal Calonico et al. (2014) robust bandwidth and bias-corrected estimators used in all regressions. Each coefficient reports a different regression. Running variable is the share of votes out of the two highest votings for female candidate. Panels A and B use guerrilla and paramilitary violence respectively. Column 1 includes municipalities where the candidate of a traditional party narrowly won or lost regardless of their gender. Column 2 only includes municipalities where the top 2 candidates represented traditional parties. Column 3 only includes attacks explicitly listed as politically motivated by the perpetrator. Column 4 controls for an indicator of whether a municipality had ever had a female elected as mayor before. “Traditional” parties are the Liberal and Conservative.

Appendix

A Figures

Figure A1: Geographical location of Apartadó and violence incidence



Notes: Close up to the isthmus in the north-west region of Colombia. Apartadó highlighted in yellow. Darker shades of red correspond to higher incidence of violence between 1997 and 2015.

Figure A2: Extract from a “Noche y Niebla” report



Enero - Junio 2012

**BANCO DE DATOS
DE VIOLENCIA POLITICA**

ISSN 0123-3637

Julio 29/2012

DEPARTAMENTO: ANTIOQUIA

MUNICIPIO: ANORÍ

Dos campesinos murieron luego que pisaran en horas de la tarde, en la vereda Montebello un campo minado. Según la fuente el hecho fue atribuido “al Frente 36 de las Farc, que advirtió que había minado los caminos”.

Presunto Responsable: FARC-EP

INFRACCIONES AL DIH

Muerto Por Métodos y Medios Ilícitos

LUIS ARTURO HERRERA MARÍN - CAMPESINO

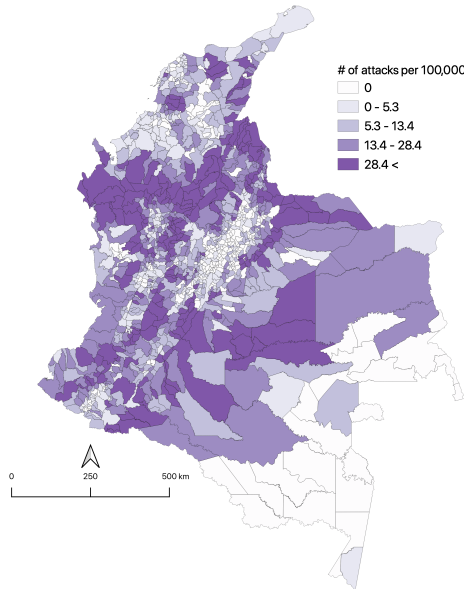
NOEL RENDON HERNÁNDEZ - CAMPESINO

INFRACCIONES AL DIH

Mina Ilícita / Arma Trampa

Notes: Left panel shows the cover page of the report recording the events of the first semester of 2012. Right panel shows an actual report of an event. In this case, it documents the decease of two peasants following them stepping into a mined field. The report points towards the FARC as responsible for the attack, citing how they had already claimed responsibility for having mined the field.

Figure A3: Geographical distribution of paramilitary attacks between 1998 and 2016



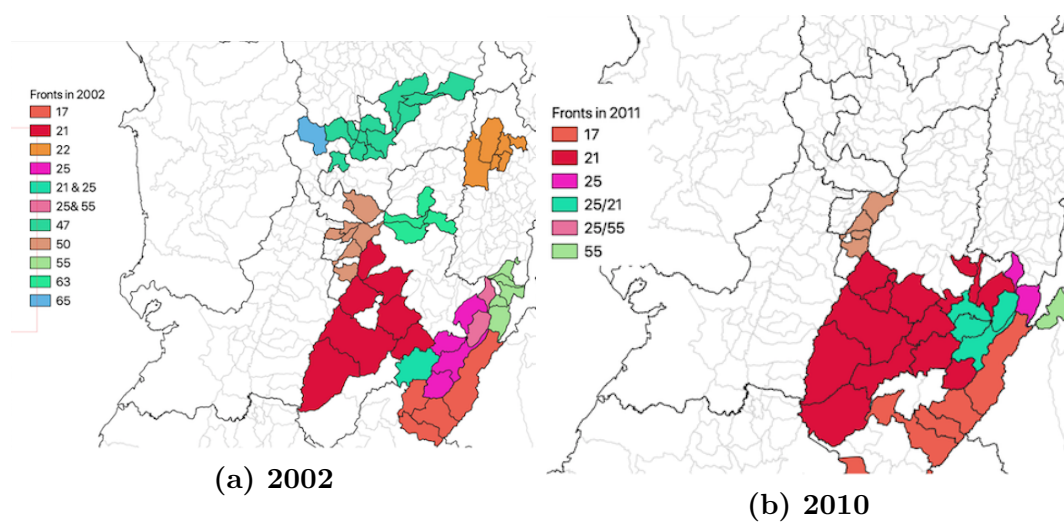
Notes: Incidence of paramilitary attacks between 1998 and 2016 color coded. All data drawn from Restrepo et al. (2003), and normalized by year and 100,000 inhabitants.

Figure A4: Most common words (by gender)



Notes: the figure shows a word-cloud with the most common terms found in the government programs of elected mayors in Colombia between 2003 and 2015, by gender of the official.

Figure A5: Fronts of the Central Joint Command (CCC) in 2002 and 2010



Notes: the figure shows the evolution in time of the location of a series of fronts belonging to the Central Joint Command of the FARC, between 2002 and 2010. The region corresponds to the central Andes mountains, and to the departments of Tolima, Huila, Valle del Cauca, Quindio, Meta and Cundinamarca.

B Tables

Table B1: Variables and sources

Variable	Description	Source
Panel A. Dependent variables: Violence		
Attacks (by group)	Average yearly number of attacks during term in office (per 100,000 inhabitants) perpetrated by guerrillas/paramilitaries. Attacks are defined as Restrepo et al. (2003) and correspond to a violent episode that is not an open confrontation between two groups.	Restrepo et al. (2003) and updated until 2018 by Universidad del Rosario.
Total attacks	Sum of attacks by guerrillas and paramilitaries	
Clashes (by group)	Average yearly number of clashes during term in office (per 100,000 inhabitants) involving guerrillas/paramilitaries/army. Clashes are defined as in Restrepo et al. (2003): armed confrontation between two distinct groups.	
Actions (by group)	Sum of attacks and clashes (if by group, attacks perpetrated by and clashes involving the group).	
Police actions/clashes	Average yearly number of actions/clashes during term in office (per 100,000 inhabitants) undertaken by the police against (with) conflict actors.	
Politically motivated (attacks)	Similar definition as above, but only including (attacks) where the main motive is identified as being a political according to Restrepo et al. (2003)	
Combatants demobilization	# of voluntarily demobilized guerrilla and paramilitary members during electoral cycle.	Acevedo and Bornacelly (2014) with data from Ministry of Defense
Panel B. Other dependent variables		
Government Transfers	Income transferred to municipality by national government entities (logarithm of millions of COP).	Acevedo and Bornacelly (2014) with data from National Planning Department (DNP)
Capital Transfers	Capital revenue from national transfers (logarithm of millions of COP).	
Government Credit	Net income provided by Central Government in the form of credit (logarithm of millions of COP).	
Non-Government transfers	Income from transfers by non-government entities (logarithm of millions of COP).	
% of income corresponding to transfers/own resources	Percentage of total income from transfers/own resources.	
% of expenditure in investment	Fraction of total expenditure that corresponds to investment items	

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Table B1 – Variables and sources, continued from previous page		
Variable	Description	Source
# of servants prosecuted	Number of top local officials (at the rank of Secretary) prosecuted for corruption by <i>Procuraduría General de la Nación</i> .	General Attorney's Office <i>Procuraduría General de la Nación</i> .
# of students enrolled	Total number of students enrolled in pre-school, primary and high school.	Acevedo and Bornacelly (2014) with data from National Statistical Agency (<i>DANE</i>)
Child Mortality Index	Number of child deceased per 1000 alive births.	Faguet, Sánchez, and Villaveces (2020)
Share of land reallocated	(Hectares of land reallocated / municipality area)	
Potential for land reallocation	(Hectares vacant public land / municipality area)	
Relative Transparency	Indicator of whether local government is considered more transparent than State and National	LAPOP (2018)
Budget meeting attendance	Indicator of whether respondent has attended a meeting to discuss municipalities budget in previous year	
Resources execution	Indicator of whether respondent beliefs investment resources should be executed by mayor	
Trust in mayor	Trust in a scale from 0 (minimum) to 7 (maximum)	
Panel C. Forcing Variable		
Female candidate vote share	Share of votes received by female candidate out of the total voting for the top 2 candidates. Centered around 0 so that positive values indicate the victory of a woman.	Colombian National Registry Office.
Panel D. Other covariates		
<u>Political & historic</u>		
Partisan affiliation	Party under which the candidate run in the election (main if run for a coalition)	Colombian National Registry Office
Traditional parties	Partido Liberal and Partido Conservador de Colombia.	Colombian National Registry Office
Council HHI index	Herfindahl-Hirschman index of partisan concentration in Council per municipality-electoral cycle	Colombian National Registry Office
Ideology	Classification between right wing and left wing parties by Fergusson et al. (2019) based on party's statues and/or candidate's campaign program.	Fergusson et al. (2019)
Historical routes	Indicator of whether a route used for illegal gold trafficking in the XIX-th century crosses the municipality	Laurent (2008)

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Table B1 – Variables and sources, continued from previous page		
Variable	Description	Source
Presence of historic violence	Indicator of the occurrence of historic violence events (1948–1953) in the municipality	Acevedo and Bornacelly (2014).
Historical land conflicts	Indicator of whether the municipality experienced land tenure-related conflicts between 1900–1920.	
Indigenous Settlement	Indicator of whether the municipality was an indigenous settlement before the arrival of the Spaniards	
Spanish Occupation	Indicator of whether the municipality was a Spanish settlement during the Colonial times	
# of municipal employees	Number of people employed by municipality in 1995.	Acemoglu et al. (2015)
<u>Demographic</u>		
Initial population	Number of inhabitants in the municipality in 1993	Acevedo and Bornacelly (2014) with data from DANE
% of urban population	Share of population that lives in the urban municipal head,	
GINI	Estimated GINI coefficient (1993).	
Unmet Basic Needs Index	In 1993	
<u>Geographic covariates</u>		
Area	km ²	Acevedo and Bornacelly (2014) with data from Agustin Codazzi Geographic institute.
Current drug routes	Indicator of whether the municipality is identified by either source to be part of a route allegedly used by illegal armed groups to export drugs and import weapons	Cajiao, González, Pardo, and Zapata (2018) and IGC (2017)
Distance to department capital	Straight line distance to the capital of the department in which the municipality is located. (km)	
Index of rurality	(Rural population / total population) in municipality(1993).	Acevedo and Bornacelly (2014) with data from DANE
% of paved roads	Measured in 1995	Acemoglu et al. (2015)
% of dirt roads	Measured in 1995	
<u>Financial covariates</u>		
Tax revenue.	Tax revenue in 1987 (logarithm of millions of COP).	Acevedo and Bornacelly (2014) with data from <i>DNP</i>
Continued on next page		

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Table B1 – Variables and sources, continued from previous page		
Variable	Description	Source
Total expenditure	Municipal expenditure in 1987 (logarithm of millions of COP)	
Transfers from Central Government	Transfers from central government in 1987 (logarithm of millions of COP).	
Panel E. FARC spatial distribution		
Blocks (VA/F&R)	FARC block making presence in a given municipality by source	<i>Verdad</i> (2021)(VA), <i>Abierta</i> Medina-Gallego (2011) (F&R)
Fronts (VA/F&R)	FARC front making presence in a given municipality by source	
Gender of unit commander	Indicator of whether the commander of a FARC unit (block/front) was a woman	News articles, intelligence reports & personal communication with ex-FARC members

Table B2: Balance on observable characteristics
Full set of municipalities

	Mean	Difference	p-value
<i>Panel A: Time varying characteristics:</i>			
Total income	21411	5,103.3	0.40
Total expenditure	24910	7,741.9	0.36
Payroll expenses	1,636	716.9	0.16
Per capita turnout	0.446	-0.003	0.73
Council HHi - votes	0.281	-0.009	0.33
Council HHi - seats	0.320	-0.012	0.27
<i>Panel B: Time invariant characteristics:</i>			
Area (km ²)	749	61.1	0.66
Altitude (masl)	1,074	27.9	0.60
Soil suitability index	3	0.0	0.86
Flatness index	8	-0.1	0.72
Distance to state capital (km)	74	-5.4*	0.10
Distance to Bogotá (km)	315	-6.1	0.61
Historical land conflict	0.056	-0.011	0.45
Indigenous settlement	0.412	0.004	0.90
Spanish settlement	0.385	0.012	0.69
XIX century smuggling route	0.043	-0.016	0.22
Current smuggling route	0.267	-0.021	0.45
<i>Panel C: Baseline:</i>			
Population	32773	12707.6	0.23
Ethnic pop. > avg.	0.284	-0.022	0.57
Rurality index	0.598	0.000	0.98
GINI	0.434	-0.007	0.25
Poverty index	0.524	-0.017	0.12
Total income	138.9	83.826	0.21
Tax revenues	64.33	61.076	0.26
Total expenditure	150.40	108.867	0.27
Government Credit	18.34	23.814	0.31

Notes: 582 and 463 municipalities where women lost and won respectively. Total income, expenditure and payroll expenses, tax revenue and government credit measured all in millions of Colombian Pesos (COP). Council concentration measured through Herfindahl-Hirschman index computed for the election held simultaneously to the mayor election. Vote/seats concentration defined as the ratio between the number of votes/seats a party receives and the total number of votes/seats in the election. Historical land conflict, indigenous settlement and Spanish occupation are indicators of whenever a municipality experienced the relevant event. Population, rurality and poverty indexes and GINI coefficient measured in 1993. Financial variables in panel C measured in 1987.

Table B3: Higher order polynomials - Robustness

<i>Dep. var: yearly avg. # of guerrilla attacks per 100,000 inhabitants</i>				
	(1)	(2)	(3)	(4)
Female mayor	-1.200** (0.571)	-1.636** (0.738)	-1.947** (0.871)	-1.860* (0.952)
Polynomial degree:	1	2	3	4
Notes: Robust standard errors in parenthesis. *** p<0.01, ** p<0.05, * p<0.1. Observation is the municipality per electoral period. 1,045 observations in all regressions. Mean of dependent variable is 1.979. Optimal Calonico et al. (2014) robust bandwidth and bias-corrected estimators used in all regressions. Each coefficient reports a different regression. Running variable is the share of votes out of the two highest votings for female candidate.				

Table B4: Spatial spill-over analysis - Full Sample

Dep. var.: # of attacks		
<u>Spatial weighting matrix:</u>	<u>Distance</u>	<u>Neighbor</u>
	(1)	(2)
<u>Panel A: Guerrilla violence</u>		
<u>Effect:</u>		
Direct	-0.152 (0.126)	-0.085 (0.126)
Indirect	-0.895*** (0.294)	-2.167*** (0.281)
Mean of dep. var	1.199	
<u>Panel B: Paramilitary violence</u>		
<u>Effect:</u>		
Direct	-0.051 (0.126)	-0.023 (0.126)
Indirect	-0.348 (0.385)	-0.891** (0.370)
Mean of dep. var	1.018	
Notes: Standard errors in parenthesis. *** p<0.01, ** p<0.05, * p<0.1. Observation is the municipality in the electoral period. 6606 observations in all regressions. Distance spatial weighting matrix used in column 1. Contiguous spatial weighting matrix used in column 2. Dependent variable in all columns is the raw count of attacks. All regressions control for population and duration of the electoral cycle. Direct effect captures the effect of any female victory on the municipality. Indirect effect captures the effect of any female victory in neighboring municipalities.		

Table B5: Spatial spillovers with Conley Standard Errors
Effect of a female electoral victory in contiguous municipalities.

<i>Dependent variable: # of ... by ... during electoral period</i>						
	Guerrilla			Paramilitary		
	Acts (1)	Attacks (2)	Clashes (3)	Acts (4)	Attacks (5)	Clashes (6)
Panel A: Spill-over of any female victory						
Woman mayor	-0.580	-0.328	-0.295	-0.202	-0.185	-0.021
w=10	(0.123)	(0.11)	(0.07)	(0.109)	(0.101)	(0.011)
w=50	(0.057)	(0.056)	(0.326)	(0.05)	(0.046)	(0.005)
w=100	(0.041)	(0.135)	(0.023)	(0.035)	(0.033)	(0.004)
w=250	(0.026)	(0.135)	(0.015)	(0.022)	(0.021)	(0.002)
Panel B: Spill-over of a <i>Close</i> female victory						
Woman mayor	-0.768	-0.491	-0.333	-0.233	-0.209	-0.026
w=10	(0.171)	(0.092)	(0.1)	(0.129)	(0.12)	(0.012)
w=50	(0.083)	(0.044)	(0.048)	(0.061)	(0.057)	(0.005)
w=100	(0.059)	(0.032)	(0.034)	(0.043)	(0.041)	(0.004)
w=250	(0.038)	(0.02)	(0.022)	(0.028)	(0.026)	(0.002)

Notes: Conley (1999) standard errors for a bandwidth of “*w*” kilometers around municipality in parenthesis. Each line reports the estimated standard errors for a separate regression. Observation is the municipality in the electoral period. Dependent variable in all columns is the raw count of acts/attacks/clashes (acts is the sum of attacks and clashes). Panel B only considers the effect of female victories in *close* elections as defined in table 3.

Table B6: Violence in the year previous to the female victory - Identification

<i>Dependent variable is:</i>							
	Yearly average # of attacks per 100,000 inhabitants					Attacks indicator	Casualties indicator
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
<i>Panel A: Guerrilla Violence</i>							
Female mayor	-0.276 (0.222)	-0.340 (0.224)	-0.221 (0.217)	-0.122 (0.223)	-0.300 (0.248)	-0.036 (0.067)	-0.052 (0.061)
Observations	1045	1045	946	946	1045	1045	1045
Mean of dep. var	0.668	0.668	0.668	0.668	0.668	0.148	0.137
<i>Panel B: Paramilitary Violence</i>							
Female mayor	-0.049 (0.171)	-0.091 (0.169)	-0.171 (0.177)	-0.189 (0.185)	-0.235 (0.194)	-0.024 (0.047)	-0.026 (0.045)
Observations	1045	1045	946	946	1045	1045	1045
Mean of dep. var	0.281	0.281	0.281	0.281	0.281	0.080	0.087
Controls:							
Development	X	✓	✓	✓	X	X	X
Historical	X	X	✓	✓	X	X	X
Year Fixed Effects	X	X	X	✓	X	X	X
Degree of polynomial	1	1	1	1	2	1	1

Notes: Robust standard errors in parenthesis. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Observation is the municipality per electoral period. 1,045 observations in all regressions. Optimal Calonico et al. (2014) robust bandwidth and bias-corrected estimators used in all regressions. Each coefficient reports a different regression. Running variable is the share of votes out of the two highest votings for female candidate. Panel A only includes conflict events perpetrated by the guerrillas. Panel B includes conflict events committed by paramilitary groups. Development controls are: population, % of rural population, GINI, poverty index and urbanization index all measured in 1993; tax income, central government transfers and municipal expenditure, all measured in 1987. Historical controls are: # of public and municipal employees, # of police stations and % of paved roads, all drawn from Acemoglu et al. (2015) and measured in 1995; indicators of indigenous settlement, European settlement during the colonies, historical land conflict and historical violence. Dependent variables in columns 6 and 7 are indicators of whether municipality experienced any attack or conflict related civilian casualty respectively.

Table B7: Robustness: preferences towards peace - logarithms

Dependent variable is the # of words per program that relate to:	<i>Words classification</i>			<i>AI keywords</i>		
	Peace	Conflict	Sports	Peace		Conflict
	(1)	(2)	(3)	Unconditional	Conditional	(7)
				(4)	(5)	
Panel A: Log (#)						
Female mayor	0.134* (0.069)	0.097 (0.062)	-0.015 (0.052)	0.134* (0.069)	0.144** (0.067)	-0.015 (0.052)
Observations	1,024	1,086	1,092	1,024	984	1,092
Panel B: Log (1 + #)						
Female mayor	0.124** (0.062)	0.054 (0.056)	-0.005 (0.052)	0.124** (0.062)	0.154** (0.060)	-0.005 (0.052)
Observations	1,114	1,114	1,114	1,114	1,046	1,114

Notes: Standard errors in parenthesis. *** p<0.01, ** p<0.05, * p<0.1. Observation unit is the elected mayor. All regressions control for the total number of words used in the program, and include year fixed effects. Columns (1)-(3) use as dependent variable the # of (peace/conflict/sports) terms found in each program after classifying the universe of words used in programs. Columns (4)-(7) use as dependent variable the # of (peace/conflict/sports) terms found in each program, as defined by an Artificial Intelligence tool. Column (4) uses the total # of peace-related terms in all programs, while column (5) uses the total # of peace related terms found in those programs that make at least one mention to conflict in any terms.

Table B8: Additional measures of public good provision

	(1)	(2)	(3)	(4)
<i>Panel A: Public goods provision</i>				
Dependent variable is:	# of teachers	# of schools	% subsidized health	Underweight births
Female mayor	17.083 (68.756)	7.088 (39.962)	-0.003 (0.057)	0.007 (0.005)
Observations	807	740	810	810
Mean of dep. var	1080.581	255.146	0.919	0.071

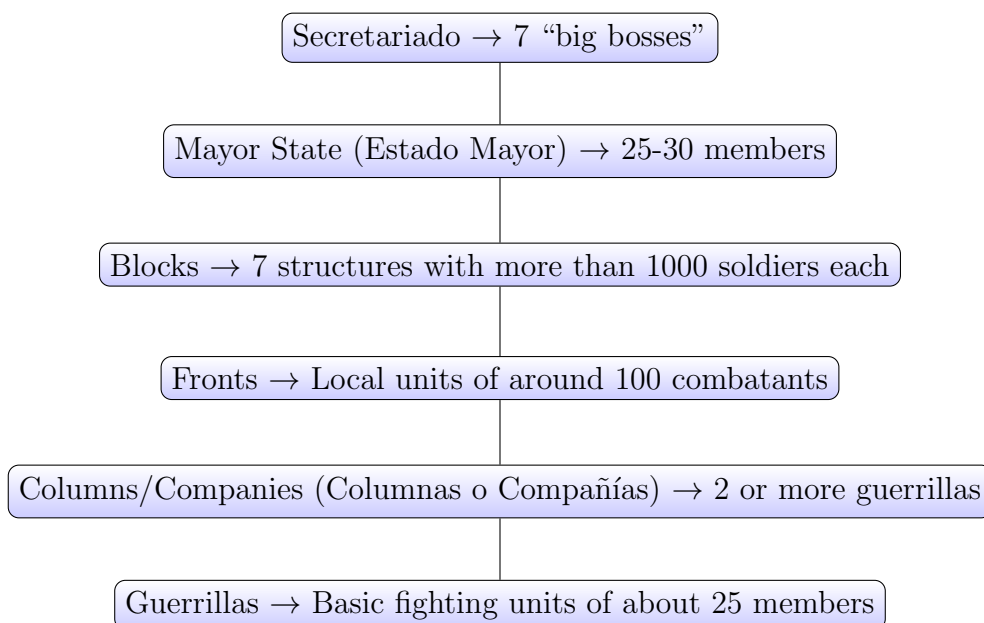
Notes: Robust standard errors in parenthesis. *** p<0.01, ** p<0.05, * p<0.1. Observation is the municipality per electoral period. Optimal Calonico et al. (2014) robust bandwidth and bias-corrected estimators used in all regressions. Each coefficient reports a different regression. Running variable is the share of votes out of the two highest votings for female candidate. Dependent variables are: # of teachers per 100,000 inhabitants, # of schools per 100,000 inhabitants, share of the population who is in the subsidized health regime and ratio of underweight births to total births.

C FARC internal structure

The FARC guerrilla was a centralized organization of national scope, led by a group of 7 individuals known as “*Secretariado*”. These all-male board of directors was always responsible for deciding the nationwide policy of the guerrillas, while delegating the “regional” decisions and strategies to their subordinates. It is worth highlighting that positions in the *Secretariado* were obtained based on a combination of tenure and proven commitment to the organization (Ávila, 2019).

In 1993, the FARC held their 8th guerrilla conference where they decided to divide the Colombian territory into 7 regions, each of which would fall under the jurisdiction of one of the newly created “*Blocks*” (Medina-Gallego, 2011).³⁰ Each Block would be further divided into smaller units of a more local scope called “fronts”, which became the main acting unit of the guerrilla. Figure C1 below shows the administrative division of the FARC guerrilla. I follow Medina-Gallego (2011) and *Verdad Abierta* (2021) to geocode and identify the jurisdiction of the 7 FARC blocks and over 60 fronts.³¹

Figure C1: FARC’s administrative division



Notes: The figure shows a summarized version of the internal hierarchical structure of the FARC. This paper uses the intermediate “blocks” and “fronts” units for lack of more detailed information about the leadership and location of smaller units.

³⁰The number of blocks was defined so that each one was led by a member of the *Secretariado*.

³¹I use two different sources given the inaccuracy of these kinds of intelligence data, and show the robustness of my results to the use of either source. The exact number of fronts that existed is contested between different sources.

D Biographies of FARC female leaders

Criselda Lobo

Known amongst her fellow rank members as Sandra Ramírez, Lobo was born in 1964 in the rural area of Sabana de Torres, a municipality located in the northeast region of Colombia close to the frontier with Venezuela. At age 17 she left her family to join the ranks of the FARC where she was eventually assigned to serve as nurse for the Central Joint Command. There, she met alias Manuel Marulanda, one of the founding fathers of the guerrilla who became her sentimental partner for more than 24 years up to his death in 2008. By that moment, Lobo had gained influence within the organization due to both her closeness to the *Secretariado*, but also to her abilities as nurse and communications officer. She was assigned to the first peace delegation sent by the guerrilla to La Habana in 2013 to negotiate with the government of president Juan Manuel Santos, and remained a part of this negotiation team until the final agreement was reached in 2016 (although only occasionally traveling to Cuba). Finally, in 2018 she became one of the 5 ex-FARC members to be elected as Colombian Senators when she filled one of the Congress seats reserved for the organization in the peace agreement.³²

Victoria Sandino

Born in the coastal municipality of Tierra Alta, Córdoba in 1975 as Judith Simanca Herrera, Sandino became involved with the communist youth movement while still in high school. In 1993, Sandino received her Bachelor's degree in journalism and immediately joined the guerrilla as a public relations commander for the Central Joint Command. In 2013, Sandino joined the first peace commission from the guerrillas and remained a part of it until the final agreement was signed. Sandino was in charged of the gender equality sub-commission during the peace talks. In 2018 she became one of the first ex-guerrilla members in Congress when she received one of the 5 reserved seats for the Senate. From her position as lawmaker, congresswoman Sandino has fought for women rights, gender equality and ethnic communities vindication.³³

Erika Montero

Little is known about Montero's life, other than she was born as Francy María Orrego in 1960 in Santa Rosa de Osos, a little rural municipality located in between the last of the Andes mountains towards the north-west region of Colombia. Montero was a part of the communist youths during the National Front years and eventually joined the FARC ranks in 1978 after turning 18 years old. She spent her early years as a member of the 5th front, until 1986 when she was named the commander of the 34th front. In 2001 she was captured by the army and sentenced for terrorism and rebellion. In 2003 she was released and went back to the front line of combat in the 49th front. Little after she was named commander of the Northwestern block of the FARC, becoming

³²Information drawn from an interview with senator Lobo, conducted on February 10th, 2021.

³³All information drawn from <https://partidofarc.com.co>

the first (and only woman) to hold such position. In 2015 she became a member of the Mayor State of the guerrilla, once again an unheard of position for a female. In 2018 she run for Congress, but was defeated by her fellow ex-combatants (Lobo and Sandino amongst them) and so she became part of the director's board of the newly founded FARC political party.³⁴

³⁴All information drawn from <https://wikipedia.org>

E The “Hawk and Dove” game

Consider the following version of the “Hawk and Dove” game (Smith & Price, 1973). Two players (i, j) have to decide whether to fight for a resource (F), or to concede (C). If one of the players decides to concede while her rival fights, then the rival gets the entire pool of resources which is valued at X (notice that the valuation of the resources is symmetrical). If both players concede or both players fight, then each one takes half of the resources pool ($\frac{X}{2}$).³⁵ There are two types of players, $t_i \in \{w, m\}$ which differ both in the cost that fighting has for them, as well as in their preferences for confrontation. In particular, every player i has to pay a cost c_i when fighting actually occurs, with $\frac{X}{2} > c_w > c_m$, where the first inequality shows that fighting could be profitable for both types of players. Finally, w type players have preferences for no-confrontation that are captured by an additional benefit T that materializes whenever they choose not to fight, as well as by the fact that they face the fighting cost when they decide to fight independently of the outcome.³⁶ The game is summarized in the following payments matrix:

Table E1: Asymmetric “Hawk and Dove” game

$w \backslash m$	F	C
F	$(\frac{X}{2} - c_w, \frac{X}{2} - c_m)$	$(X - c_w, X)$
C	$(Y, 0)$	$(\frac{X}{2} + Y, \frac{X}{2})$

Solution:

For type w players, it is straightforward to notice that C dominates F whenever $Y \geq \frac{X}{2} - c_w$. Similarly, for players of type m , F will always dominate C if and only if $\frac{X}{2} \geq c_m$. Given the assumptions on the cost of fighting for each type of player, the condition for m will always hold and hence F (strictly) dominates C for this type of players.

Finally, the only condition required for an equilibrium in which w players never fight while m always do is that the benefits that the former derive from not having to prepare for a confrontation (regardless of whether it actually happens — Y), are larger than the net benefit of actually having to fight her opponent. In other words, w will never fight if the costs of “going to war” are sufficiently high.

This very simple model allows us to rationalize the results presented in Section 4, inasmuch as it shows that women having a stronger preference for non-violence can help in explain the drop in attacks that follow their election (or their rise to power within the guerrillas). Finally, the results show that this decline in violence 1) requires a woman being involved in the decision making process, and 2) should be more pronounced whenever two women are playing one against another (Table 5).

³⁵Note how this is equivalent to saying that each player will win with probability 0.5.

³⁶These assumptions capture the fact that players of type w have stronger preferences for peace in the most simple way: by rewarding the avoidance of conflict and punishing the decision to fight.

F FARC releases

The following are some extracts of two different statements that the FARC guerrilla made available (while still outside of the law), and that were made available by CEDEMA (www.cedema.org). CEDEMA is an organization devoted to the documentation and study of insurgent organizations in Latin America.

“Aparte de considerarla de manera especial por su condición de mujer colombiana que trabaja por la paz, me dirijo a usted por su condición de líder del movimiento de familiares y militares (captivos) ... por cuya libertad ha librado durante años una incansable batalla.”

“Besides holding a special consideration for you due to your role as a Colombian woman that works in search for peace, I address you in your position as (female) representative of (captives) ... for whose liberty you have fought an endless battle.”

Timoleón Jiménez

Comandante del Estado Mayor Central de las FARC-EP

Montañas de Colombia, 3 de marzo de 2012.

Timoleón Jiménez

Commander of the Board of Directors of the FARC-EP

Colombian mountains, March 3rd, 2012.

“Como posición política y de principios, las FARC-EP abogamos por la igualdad de género ... Para nosotros, la mujer es incuestionablemente la garantía de existencia de la sociedad y el alma de la paz.”

“As a political stance, and as a matter of principles, the FARC-EP advocates for gender equality ... For us, women are without a doubt both a guarantee for the existence of society and the soul of any peace effort.”

Delegación de paz de las FARC-EP

Habana, Cuba. Sede de los diálogos de paz.

Agosto 25 de 2015

La FARC-EP peace delegation.

La Habana, Cuba. Venue for the peace talks.

August 25th, 2015