# Leaning In or Pushing Down: Do Female Leaders Help Other Women Achieve Career Successes in the Indian Bureaucracy?

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**Abstract**

A vital issue in the literature around discrimination in both labor and education is whether teachers, doctors, or bosses who are female are less likely to discriminate against women. We utilize a unique dataset that follows Indian bureaucrats in the elite Indian Administrative Service (IAS) throughout their entire service to examine whether having a female chief secretary leads to better career outcomes for junior female IAS officers who work under them. Chief secretaries serve on the formal promotion committees for all IAS officers in the state. We find strong evidence that having a female chief secretary during a female bureaucrat's first promotion window (year four) has a negative impact on her later career success and weaker evidence of a positive effect at the next promotion window (year nine). The negative result is contradictory to most of the concordance literature, which finds either null or positive impact. Female chief secretaries are also more likely to assign early-career female bureaucrats to positions that are considered less prestigious.

# 1 Introduction

Increasing the diversity of an organization's leadership is often thought to promote diversity across an organization. The theory is that females in senior positions within an organization are more likely to promote other females in the organization. However, there is also the opposite possibility that female bosses could be concerned about the appearance of "favoring" women and end up discriminating against them instead. Men in the organization could also become resentful of women after a female leader is selected.

We focus on the impact of leaders within the Indian civil service. In particular, we examine the careers of elite IAS officers who are centrally recruited and whose careers generally follow a rigid progression. We focus on the gender identity of chief secretaries, who are the most senior bureaucrats in an Indian state. Bureaucrats serve as chief secretaries at the very end of their careers. Chief secretaries have immense power and responsibility for the broader governance of their states as head of the civil service, but one of their primary tasks is managing their fellow IAS officers. While a state might have up to 500 IAS officers serving at a given time, the chief secretary is required to serve on the promotion committee for even the earliest promotion window, four years. This grants them the authority to assign the IAS officers to positions that can propel or impede the officer's future careers.

We investigate whether having a female executive leads to better career outcomes for female subordinate officers in the Indian civil service. The first arm of literature that this paper adds to is the concordance literature. This literature examines the phenomenon for teachers, academic economists, and corporate managers. The education literature shows that teachers or professors of similar gender lead to higher test scores (Muralidharan and Sheth, 2016) and more females taking more STEM courses (Carrell et al., 2010). Teachers of the same gender as a student are less likely to accredit negative behaviors to those students (Dee, 2005). There is some evidence that female mentors reduce gender gaps in career performance among academic economists (Boustan and Langan, 2019). The private sector literature suggests female bosses reduce gender gaps in Norway, but having more female colleagues at the same level appears not to have an effect (Kunze and Miller,

2017).

Given the role that female chief secretaries play in the promotion committees of their subordinates, we expect to find some effect associated with having a female chief secretary. Prior work suggests that female chief secretaries may have a positive impact on the probability of promotion for their female subordinates. However, our setting differs from the health and education arenas in that there are tradeoffs when one chooses to give one person a position versus another. Coveted jobs in the bureaucracy are inherently rival unlike high-quality education. Therefore, this paper adds to the literature by investigating the role that concordance plays in the allocation of rival goods. The Indian Administrative Services setting allows us to observe discrimination at different points in a bureaucrat's career.

The identification relies on the fact that bureaucrats are promoted and subsequently transferred to new jobs on a rigid timeline based on years of service. Most chief secretaries hold their position for two years, so it is improbable that bureaucrats sort out states on the basis of the gender of the chief secretary in four or nine years. Since the treatment of having a female chief secretary at a critical promotion window is year and state specific, we can include year, state, and chief minister fixed effects to control for a wide range of possible confounding variables. For example, if states with more female chief secretaries are also better for female bureaucrats' careers, that is addressed by the state fixed effect. Changing gender attitudes over time are controlled by the year-fixed effect. We can even account for the impact of state political leaders, who appoint chief secretaries and gender attitudes by adding chief minister fixed effects. Another advantage of the setting is that very few male and female bureaucrats leave the IAS, so we can study long-term career effects without having to worry about differential attrition by gender.

We find robust negative effects for female bureaucrats who female chief secretaries reviewed at their fourth-year promotion window and indicative evidence of positive impacts at the ninth-year window. However, our data are limited by the small number of female chief secretaries. At each promotion period, only approximately five percent of bureaucrats in our sample had a female chief bureaucrat. Further, only 16 out of the 32 Indian states in our sample have ever had a female chief secretary. Figure 1 summa-

rizes career success, as defined by eventually working in the central government in Delhi, and observation counts for male and female bureaucrats under male and female chief secretaries at different key promotion windows.

We also analyze whether female chief secretaries are more or less likely to assign female bureaucrats to "good" positions, as defined by Iyer and Mani (Iyer and Mani, 2012). Figures 2 and 3 illustrate this. In general, female chief secretaries assign female bureaucrats to worse postings, but this effect is only statically significant at year nine.

# 2 Data

This paper uses data from the Civil List, which provides detailed information on bureaucrats in the Indian Administrative Service. It contains many administrative datasets, and there appear to be some idiosyncratic errors. Notably, there are also some years where we don't observe a chief secretary either due to mistakes in job titles or an actual vacancy or errors in job start and end dates. The variables used in this paper are summarized in Table 1.

## 2.1 Key Variables

The primary outcome variable is a dummy variable of whether or not the bureaucrat worked for the central government in Delhi at any point in their career. This is viewed widely as a sign of a successful career in the Indian Civil Service (Iyer and Mani, 2012, pg. 730). Note that this isn't a running outcome variable: it takes on one value for each bureaucrat based on the bureaucrat's whole career. We generated the variable based on the whole career due to ambiguities in individual job titles and start and end dates. In general, bureaucrats aren't eligible for jobs in Delhi until after 13 years of service, the final promotion window we consider. Our main independent variable is the interaction of the dummy variable of whether the bureaucrat is female with the one of whether the bureaucrat worked under a female chief secretary at a promotion window.

## 2.2 Institutional Background

The primary source of identification in this analysis is the rigid nature of the Indian Administrative Service. A position in the IAS is coveted. For example, in 2015, 465,882 candidates took the entrance exam in the hope of securing one of 120 places in the IAS (Xu et al., 2020). Officers join the service before they are 30, and only eight percent of officers retire before age 50 (Bertrand et al., 2019). In our data, women appear to stay in the service longer. Male bureaucrats in cohorts before 1980 have an average of 31 years of service, while females have an average of 34 years.

Bureaucrats are allocated to states when they join the service and either work in that state or the central government for the rest of their careers. The allocation is based on an elaborate algorithm to ensure balance in caste and exam scores across states. Other authors explain how the allocation mechanism is quasi-random (Xu et al., 2020). Given the short tenures of chief secretaries, it is unlikely that bureaucrats will try to game the selection algorithm to increase the probability of a female chief secretary being four or nine years in the future. The average female bureaucrat who served under a female chief secretary only served under a female chief secretary for just under two years. Even though bureaucrats do not select states, since state's elected governments select chief secretaries, there is a risk that state governments who select female chief secretaries will differ systematically from governments that do not. Unfortunately, it is largely impossible to control for this kind of selection effect with the data we have available. We are in the process of obtaining a data set that will allow us to add fixed effects for elected state governments that often appoint multiple chief secretaries during their careers.

The IAS is rotational in nature, with bureaucrats starting in rural areas and slowly working up to the state and, possibly, the national capital. Officers rotate across many roles during their careers, with the median officer serving in 13 different departments over the course of their careers (Xu et al., 2020). The median posting is also a relatively short fourteen months (Xu et al., 2020). Bureaucrats are eligible for promotion after 4, 9, 13, 16, 25, and 30 years of service. Chief secretaries serve on the evaluation committee for all of these promotions (Bertrand et al., 2019, Online Appendix Table A1). The chief

secretary is joined at years four and 13 by two mid-career officials with 16-25 years of experience and acts alone at year nine. Some form of promotion is almost guaranteed. In fact, experience explains 89% of variance in pay grade (Bertrand et al., 2019). We focus on promotion windows because they are moments when bureaucrats become eligible for a new class of positions. The kinds of positions the bureaucrat fills after a promotion can have important consequences for career trajectory since some jobs are more prestigious and important than others. For example, the finance department is considered important because it controls budgets for other departments (Iyer and Mani, 2012, pg. 730).

# 3  Methodology

We estimate the effect of a female chief secretary on career success using bureaucrat-wise data. We estimate the specification below to determine the expectation of ever achieving a posting in the central government conditional on a female bureaucrat having a female chief secretary during key promotion windows in her career. The conditional expectation has a causal interpretation under the assumption that having a female chief secretary at key points in a bureaucrat career is random. This is supported by balance tests, using a logistic fixed effects specification due to the rare nature of female chief secretaries, reported in Table 2. The F-stats on the covariates have p-values of .15 and .17 for years four and nine, respectively. Since the outcome is binary, we estimate both a linear probability model and a logistic model with dummies, noting it may be biased due to the incidental parameter problem. We use cohort fixed effects to address time trends in gender attitudes that are consistent across all states. For example, we observed many more women chief secretaries in recent years. The state fixed effects address state differences in gender attitudes that remain fixed throughout time. For example, South India is known to have more progressive gender attitudes.

$$Y_{sci} = \phi_1 + \beta_1 F_{sci} + \beta_2 F_{sci,4} + \beta_3 F_{sci} F_{sci,4} + \beta_2 F_{sci,9} + \beta_3 F_{sci} F_{sci,9} + \beta_2 F_{sci,13} + \beta_3 F_{sci} F_{sci,13}$$
$$+ \phi_2 X_{sci} + \phi_3 P_{sci,4} + \phi_4 P_{sci,9} + \phi_5 P_{sci,13} + \gamma_s + \eta_c + \epsilon_{si} \quad (1)$$

$Y_{sci}$ is dummy for whether the bureaucrat $i$ in state $s$ and cohort $c$ eventually got a

posting with the central government. $F_{sci}$ is a dummy variable for whether the bureaucrat is female. $F_{sci,4}$, $F_{sci,9}$ and $F_{sci,13}$ are dummy variables for whether there was a female chief secretary at the four, ninth, and thirteenth-year promotion windows. Later promotion windows are excluded since later promotions often take place years after a bureaucrat is first eligible. $P_{sci,4}$, $P_{sci,9}$ and $P_{sci,13}$ are controls for the chief secretary at each promotion window: whether they are serving in their home state, their education level, and whether they ever served in the central government. $X_{sci}$ are individual controls for the bureaucrat: education and whether they are working in their home state. $\gamma_s$ are state fixed effects. $\eta_c$ are cohort fixed effects. Since only 16 states have female chief secretaries, we will use the wild bootstrap to estimate clustered standard errors.

## 4    Results and Discussion

Table 3 reports the results with the primary specification of interest given in column seven, and Figure 4 summarizes the main findings from the table. First, we'll discuss the impact of working under a female chief on career outcomes for all bureaucrats, and then we will hone in on the chief's impact on the female bureaucrats. We observe that having a female chief secretary at some point in one's career has a positive effect on a bureaucrat working at the central government - this is shown in row two. Pertaining to the impact of a female chief secretary on female bureaucrats' careers, we observe a negative effect for less experienced female bureaucrats and an equal and opposite positive impact for more experienced female bureaucrats. In particular, female bureaucrats who work for female chief secretaries with four years of experience are 34 percentage points less likely to work at the central government, while those who work under a female chief nine years into their service are 32 percentage points more likely to work at the central government. However, we see that the impact that a female chief secretary has on whether males make it to the central government is positive in year four and negative in year nine. This is simply because of the tradeoffs present in this setting. The number of positions is fixed, so if females are not being promoted to the central government, it must be that the men are. We also included a "placebo" interaction in year seven, which we estimate to be

small and insignificant, which reinforces our theory that promotion windows are the key causal channel.

The other covariates behave as expected. We find that working in one's home state decreases one's likelihood of making it to the central government by 30.7 percentage points - a large and significant effect. Obtaining an additional level of education increases one's likelihood of working at the center by 12.6 percentage points. This reinforces our claim that more successful bureaucrats are more likely to work in the center.

## 4.1 Possible Explanations

The observed reversing effects in years four and nine align with patterns of reversing discrimination over time documented in the discrimination literature. Specifically, this suggests evidence for belief-based discrimination with bias, as discussed by (Bohren et al., 2019). This theory posits that in the absence of sufficient information about an individual, decision-makers rely on potentially discriminatory priors. However, as more information becomes available - seemingly by year nine in our case - decision-makers update their judgments based on the new data. For this model to fit our findings, female chief secretaries would need to have stronger negative priors and update more rapidly than their male counterparts. Figure 1 shows some support for this theory as male chief secretaries appear to have almost no dynamic trend in their promotions of different genders to positions that would lead to a central government posting. In contrast, female chiefs' decisions are quite dynamic. However, this is simply a graphical representation of the results discussed above and not a thorough test of this theory. A more rigorous test would involve examining whether female chiefs hold more negative priors towards female subordinates compared to male subordinates. This could be achieved by conducting surveys with hypothetical scenarios where officers respond to challenges, followed by evaluations from different chiefs. Differences in ratings between female and male chiefs would indicate varying priors.

Our unique setting involves committees making promotion decisions in years four and thirteen, whereas, in year nine, the chief is the sole decision-maker. Notably, other committee members possess significantly less experience (16-25 years) and a lower rank

than the chief secretary. Additionally, these members are unlikely candidates for the chief secretary's position, reducing the likelihood of direct gender animus. However, it remains possible that female chiefs strive to appear "fair" in committees but face less pressure to do so when she is making solo decisions. To rule out this structure as a driving factor, we would need to analyze the gender composition of committees and whether the female chief's decisions remained consistent - holding all other factors constant - in committees where she was the only female on the committee versus where there were other female committee members as well.

A final possible explanation is that female chief secretaries are less sympathetic to the challenges of rural chauvinism, which is likely to affect the younger female officers in year four the most, simply because the female chief secretaries overcame these issues themselves, unlike male chief secretaries. To test this hypothesis, one would need data containing the characteristics of the different districts and a ranking of how challenging each district may be for a female officer. One could then run the primary regression controlling for this measure and see if there is still such a distinct difference in year four and year nine results. We try to account for some of these differences by including state fixed effects.

# 5   Conclusion

The negative effects of female chief secretaries for female bureaucrats in their initial promotion window are surprising. These early career officers are certainly not rivals of the chief secretaries, nor are they likely to have substantial interactions. A possible explanation is that chief secretaries are trying to appear "fair" when they sit on year four promotion committees to the extent they inadvertently end up harming female officers. Female chief secretaries could also spark resentment among other senior men in the bureaucracy, which might make the men on the committees less likely to place other female officers on a successful path. The positive results at the year nine promotion window could be driven by the fact the promotion is "automatic", so only the female chief is responsible for making the decision, and no committee is called. This reduced formal-

ity may give the female chief secretaries more latitude in assigning female bureaucrats to high-quality posts. The large magnitude and opposite signs of these results suggest that the promotion decision might be prone to belief-based bias with discrimination and that there are substantial gender dynamics at play within the Indian Bureaucracy. This indicates that there is reason to investigate this phenomenon further within the Indian bureaucracy.

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# A    Figures
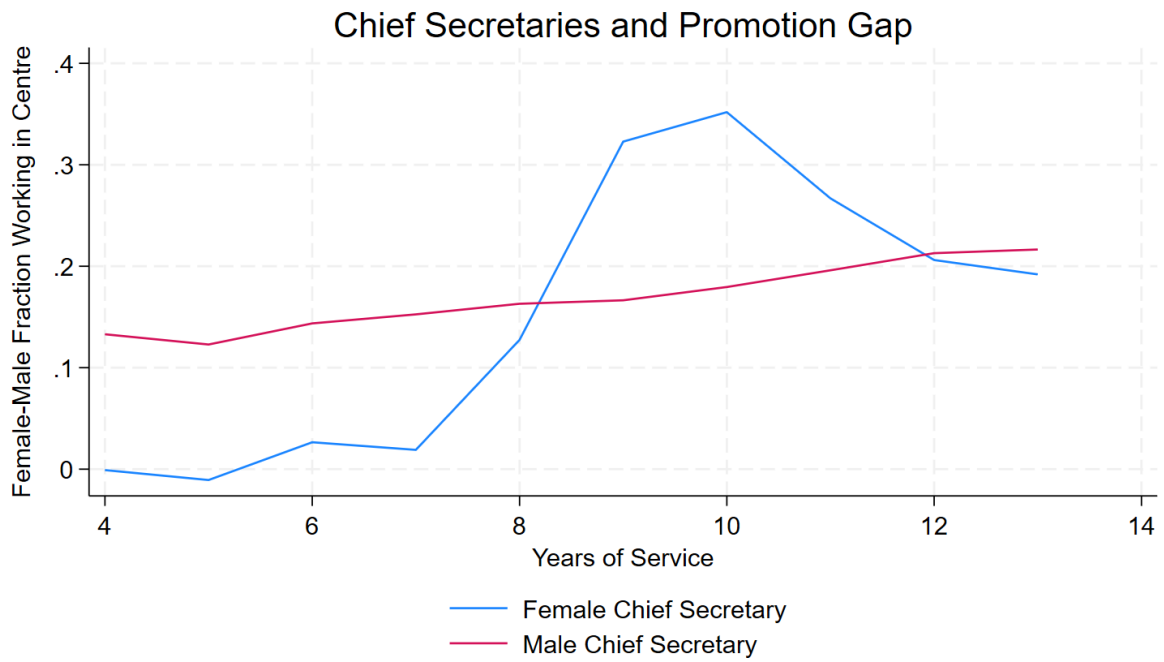


**Figure 1:** This figure illustrates the likelihood that a promotion awarded would lead to working in the central government by gender of the chief secretary.
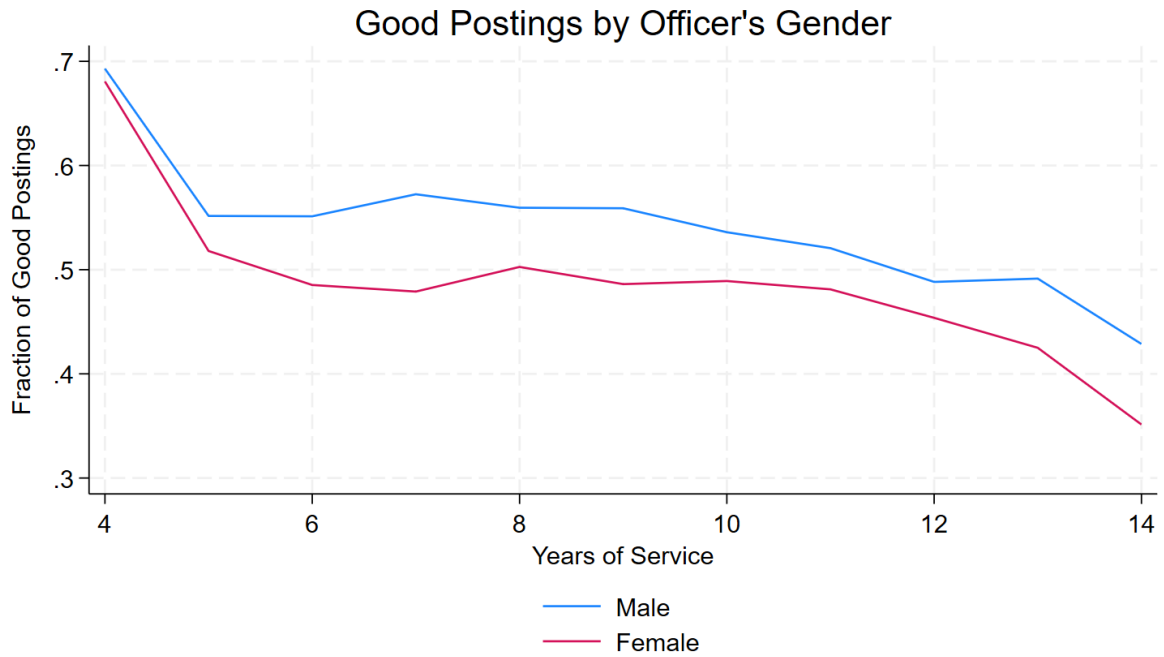
**Figure 2:** This figure illustrates the likelihood that an officer is in a position that is considered a "good" position as defined by Iyer and Mani in (Iyer and Mani, 2012).



**Figure 3:** This figure illustrates the likelihood that female chief secretaries assign female bureaucrats to "good" positions, as defined by Iyer and Mani in (Iyer and Mani, 2012).

**Figure 4:** This figure illustrates the impact of having a female chief secretary during the promotion year windows on female bureaucrats' career success.

# B  Tables

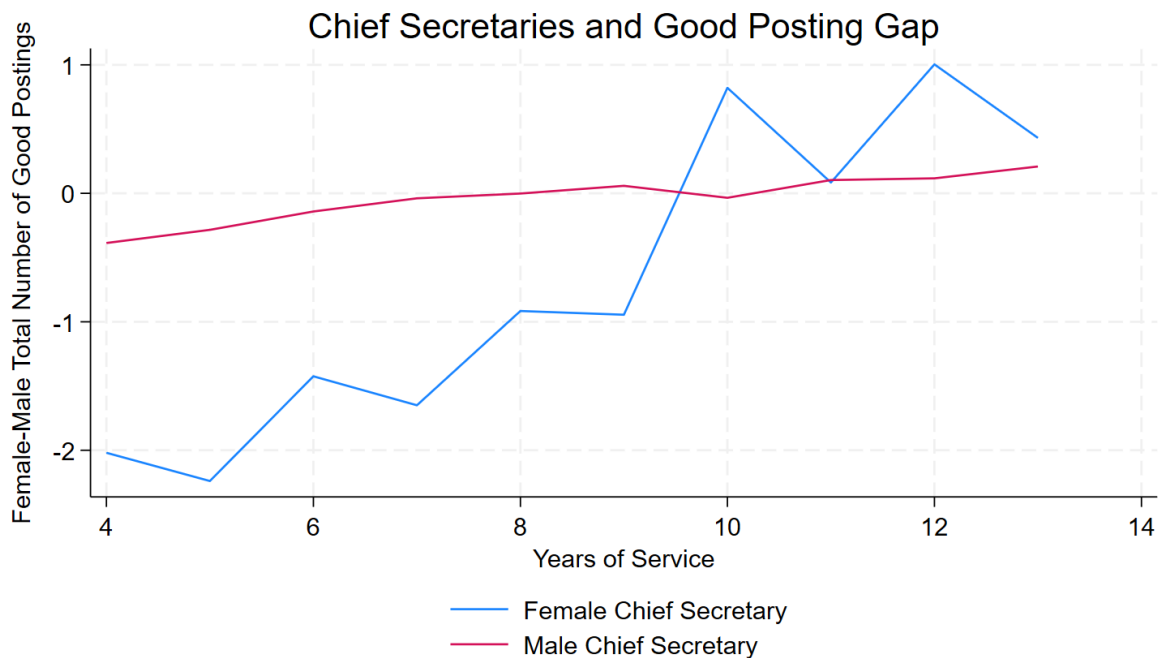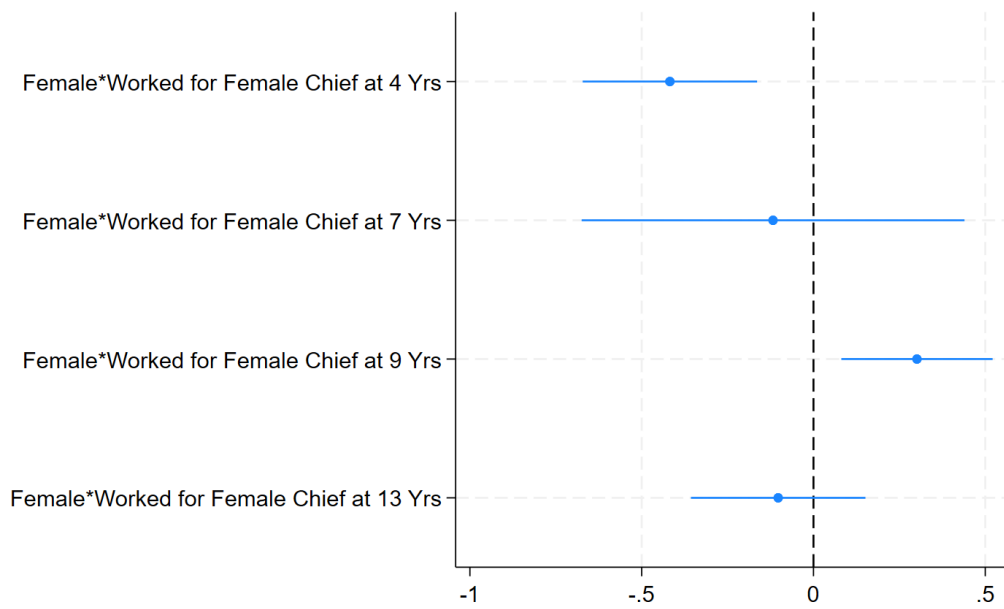| | Full Data | | | | | All Non-Missing | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Obs | Mean | Std.Dev. | Min | Max | Obs | Mean | Std.Dev. | Min | Max |
| Ever Served in Centre | 13509 | 0.33 | 0.47 | 0 | 1 | 3522 | 0.31 | 0.46 | 0 | 1 |
| Female | 13509 | 0.11 | 0.32 | 0 | 1 | 3522 | 0.09 | 0.29 | 0 | 1 |
| Ever Served Under Female Chief Secretary | 13509 | 0.22 | 0.41 | 0 | 1 | 3522 | 0.37 | 0.48 | 0 | 1 |
| Total Number of Quarters under Female | 13509 | 1.44 | 3.40 | 0 | 18 | 3522 | 2.65 | 4.43 | 0 | 18 |
| Work in Home State | 13509 | 0.37 | 0.48 | 0 | 1 | 3522 | 0.55 | 0.50 | 0 | 1 |
| Educational Attainment | 10148 | 3.60 | 0.67 | 1 | 5 | 3522 | 3.54 | 0.70 | 1 | 5 |
| Female | 13509 | 0.11 | 0.32 | 0 | 1 | 3522 | 0.09 | 0.29 | 0 | 1 |
| Female and Worked for Female Chief at 4 Years | 7151 | 0.01 | 0.07 | 0 | 1 | 3522 | 0.00 | 0.05 | 0 | 1 |
| Worked for Female Chief at 4 Years in Service | 7151 | 0.04 | 0.19 | 0 | 1 | 3522 | 0.02 | 0.16 | 0 | 1 |
| Chief at 4 Years Education | 7147 | 3.84 | 0.45 | 3 | 5 | 3522 | 3.81 | 0.46 | 3 | 5 |
| Chief at 4 Years Works in Home State | 7151 | 0.42 | 0.49 | 0 | 1 | 3522 | 0.39 | 0.49 | 0 | 1 |
| Chief at 4 Years Ever Served in Centre | 7151 | 0.87 | 0.33 | 0 | 1 | 3522 | 0.90 | 0.30 | 0 | 1 |
| Female and Worked for Female Chief at 9 Years | 7272 | 0.00 | 0.06 | 0 | 1 | 3522 | 0.00 | 0.07 | 0 | 1 |
| Worked for Female Chief at 9 Years in Service | 7272 | 0.04 | 0.18 | 0 | 1 | 3522 | 0.04 | 0.20 | 0 | 1 |
| Chief at 9 Years Education | 7271 | 3.83 | 0.47 | 3 | 5 | 3522 | 3.82 | 0.50 | 3 | 5 |
| Chief at 9 Years Works in Home State | 7272 | 0.43 | 0.49 | 0 | 1 | 3522 | 0.41 | 0.49 | 0 | 1 |
| Chief at 9 Years Ever Served in Centre | 7272 | 0.86 | 0.34 | 0 | 1 | 3522 | 0.86 | 0.34 | 0 | 1 |
| Female and Worked for Female Chief at 13 Years | 7079 | 0.00 | 0.07 | 0 | 1 | 3522 | 0.01 | 0.08 | 0 | 1 |
| Worked for Female Chief at 13 Years in Service | 7079 | 0.04 | 0.19 | 0 | 1 | 3522 | 0.05 | 0.22 | 0 | 1 |
| Chief at 13 Years Education | 7073 | 3.83 | 0.45 | 3 | 5 | 3522 | 3.84 | 0.47 | 3 | 5 |
| Chief at 13 Years Works in Home State | 7079 | 0.43 | 0.50 | 0 | 1 | 3522 | 0.41 | 0.49 | 0 | 1 |
| Chief at 13 Years Ever Served in Centre | 7079 | 0.87 | 0.34 | 0 | 1 | 3522 | 0.86 | 0.35 | 0 | 1 |

**Table 1: Summary Statistics** Ever served in center is a dummy for whether the bureaucrat ever had a job in the central government which is a sign of success in the bureaucracy. It takes the value of one if the bureaucrat ever held a position in the following organisations: centre, centre (captive post), centre (deputation under rule 6(2)(ii), centre (domestic training), centre (ex-cadre), centre (foreign posting), centre (foreign training), centre (non- central Staffing scheme), centre (PSU), and centre (study leave). Female is a dummy for gender. Served Under a female chief secretary is a dummy for whether a bureaucrat served under a female chief secretary before they moved to the central government. The number of quarters under chief secretary is the number of calendar quarters the bureaucrat served under a female bureaucrat. Work in home state is a dummy variable for whether an employee works in the same state as their home state. To construct this variable, we included home states that might be part of the unions but were missing from the work state variable in the raw data. The adjustments that were made include: adding Andaman & Nicobar, Chandigarh, Dadra& Nagar Haveli, Delhi, Goa, Lakshadweep, Mizoram, and Pondicherry home locations to the AGMUT union in the work location variable. We also did the same for Assam and Meghalya home locations, adding these to the Assam Meghalya work location variable. Educational attainment is a coding of the "Qualification/University/Institute." Broadly five is for doctoral degrees, four is for masters and other post-graduate degrees, three is for bachelors degrees and accounting qualifications, two is for degree types that seem less than a bachelors such as secretarial certificate. One is for what seems to be the equivalent of no posted qualifications such as "N.A.".

| | (1) | (2) |
|---|---|---|
| | Worked for Female Chief at Year 4 | Worked for Female Chief at Year 9 |
| Work in Home State | -0.157 | 0.298 |
| | (0.209) | (0.194) |
| Education | -0.154 | 0.168 |
| | (0.152) | (0.155) |
| Female Bureaucrat | -0.534 | -0.390 |
| | (0.275) | (0.279) |
| F-stat | 5.38 | 5.05 |
| {P-Value} | {0.146} | {0.168} |
| Observations | 4756 | 4781 |
| State FE | YES | YES |
| Cohort FE | YES | YES |

The curly brackets under F-stat are the p-value associated with the F-stat. The parentheses contain the standard error associated with the coefficients

$^*$ $p < 0.05$, $^{**}$ $p < 0.01$, $^{***}$ $p < 0.001$

**Table 2: Predicting Bureaucrat Working for Female Chief on Observables**
This table tests the randomization of the IAS officers assignment. It does this by testing whether or not the likelihood of working for a female chief officer in years 4 and 9 can be predicted based on observable characteristics of the officer.

**Table 3: Results with Wild Bootstrapped Confidence Intervals**

| | (1) Center | (2) Center | (3) Center | (4) Center | (5) Center | (6) Center | (7) Center | (8) Center |
|---|---|---|---|---|---|---|---|---|
| Female Bureaucrat | 0.113*** [0.072, 0.152] | 0.080*** [0.049, 0.112] | 0.109*** [0.066, 0.153] | 0.122*** [0.085, 0.160] | 0.124*** [0.087, 0.162] | 0.135*** [0.071, 0.197] | 0.164*** [0.094, 0.240] | 0.134*** [0.072, 0.194] |
| Female Chief Secretary | 0.219*** [0.170, 0.271] | 0.148*** [0.097, 0.207] | 0.132*** [0.061, 0.215] | 0.129*** [0.048, 0.220] | 0.131** [0.038, 0.231] | 0.127** [0.017, 0.235] | 0.219*** [0.126, 0.302] | 0.132** [0.017, 0.237] |
| Work in Home State | | -0.254*** [-0.280, -0.228] | -0.279*** [-0.317, -0.242] | -0.290*** [-0.335, -0.247] | -0.300*** [-0.345, -0.256] | -0.308*** [-0.359, -0.257] | -0.263*** [-0.326, -0.202] | -0.307*** [-0.360, -0.255] |
| Education | | 0.118*** [0.097, 0.138] | 0.118*** [0.090, 0.145] | 0.126*** [0.098, 0.156] | 0.122*** [0.093, 0.155] | 0.125*** [0.092, 0.165] | | 0.126*** [0.093, 0.164] |
| Worked for Female Chief at 4 Years in Service | | | -0.009 [-0.074, 0.069] | -0.019 [-0.103, 0.075] | -0.011 [-0.104, 0.089] | 0.008 [-0.116, 0.147] | 0.015 [-0.097, 0.155] | -0.001 [-0.152, 0.178] |
| Female*Worked for Female Chief at 4 Yrs | | | -0.193 [-0.420, 0.056] | -0.264* [-0.493, 0.009] | -0.352*** [-0.546, -0.173] | -0.336** [-0.584, -0.091] | -0.312*** [-0.500, -0.146] | -0.340** [-0.559, -0.122] |
| Worked for Female Chief at 7 Years in Service | | | | 0.018 [-0.064, 0.141] | -0.007 [-0.077, 0.093] | -0.013 [-0.100, 0.100] | -0.020 [-0.071, 0.040] | -0.028 [-0.163, 0.124] |
| Female*Worked for Female Chief at 7 Yrs | | | | -0.009 [-0.393, 0.371] | -0.053 [-0.426, 0.500] | -0.177 [-0.645, 0.589] | -0.121 [-0.483, 0.563] | -0.167 [-0.680, 0.642] |
| Worked for Female Chief at 9 Years in Service | | | | | -0.088* [-0.202, 0.014] | -0.131** [-0.222, -0.037] | -0.125** [-0.219, -0.023] | -0.138** [-0.226, -0.041] |
| Female*Worked for Female Chief at 9 Yrs | | | | | 0.241** [0.003, 0.570] | 0.329** [0.057, 0.623] | 0.335** [0.072, 0.666] | 0.319** [0.040, 0.642] |
| Worked for Female Chief at 13 Years in Service | | | | | | -0.042* [-0.100, 0.002] | -0.040 [-0.111, 0.029] | -0.056* [-0.129, 0.009] |
| Female*Worked for Female Chief at 13 Yrs | | | | | | -0.018 [-0.279, 0.369] | -0.064 [-0.290, 0.272] | -0.001 [-0.268, 0.389] |
| Chief Secretary Controls | NO | NO | NO | NO | NO | NO | YES | YES |
| State FE | YES | YES | YES | YES | YES | YES | YES | YES |
| Cohort FE | YES | YES | YES | YES | YES | YES | YES | YES |
| Observations | 12778 | 10072 | 5167 | 4384 | 3884 | 3284 | 4113 | 3284 |
| Adjusted $R^2$ | 0.336 | 0.355 | 0.259 | 0.243 | 0.241 | 0.244 | 0.211 | 0.245 |
| Root MSE | 0.390 | 0.397 | 0.391 | 0.394 | 0.397 | 0.401 | 0.383 | 0.400 |

We included State fixed effects in all specifications, and if there were multiple chief secretaries, the values were averaged.

**Table 3: Results with Wild Bootstrapped Confidence Intervals** The above table shows the impact that having a female chief secretary has on one's likelihood of working in the central government during their career. It uses a novel dataset compiled from the Civil List, which provides detailed information on bureaucrats in the Indian Administrative Service. Column (1) examines the impact that being female or ever having a female chief secretary has on an officer's likelihood of working at the center during their career. It also controls for state and cohort fixed effects. Column (2) adds to the importance of working in one's home state as well as the impact of additional years of education. Column (3) shows the effects of having a female chief secretary at year 4 of service as well as the impact that having a female chief has on female chief officers by adding in the interaction term. Column (4) adds in the placebo year 7, where there is no promotion done, and we should, therefore, not see an impact. Columns (5) and (6) do what column (4) did, but for the promotion years 9 and 13, respectively. Column (7) adds fixed effects for Chief Secretary characteristics while removing the education variable. Lastly, Column (8) uses all the above variables.

| | (1) Center | (2) Center | (3) Center | (4) Center | (5) Center | (6) Center | (7) Center | (8) Center | (9) Center |
|---|---|---|---|---|---|---|---|---|---|
| Female Bureaucrat | 0.113*** [0.072, 0.15] | 0.080*** [0.049, 0.11] | 0.109*** [0.066, 0.15] | 0.122*** [0.085, 0.16] | 0.124*** [0.087, 0.16] | 0.135*** [0.071, 0.20] | 0.164*** [0.094, 0.24] | 0.134*** [0.072, 0.19] | 0.117** [0.035, 0.20] |
| Female Chief Secretary | 0.219*** [0.17, 0.27] | 0.148*** [0.097, 0.21] | 0.132*** [0.061, 0.22] | 0.129*** [0.048, 0.22] | 0.131* [0.038, 0.23] | 0.127* [0.017, 0.23] | 0.219*** [0.13, 0.30] | 0.132** [0.017, 0.24] | 0.129** [0.011, 0.24] |
| Female*length of Female Chief Tenure | | | | | | | | | 0.007 [-0.0097, 0.023] |
| Work in Home State | | -0.254*** [-0.28, -0.23] | -0.279*** [-0.32, -0.24] | -0.290*** [-0.33, -0.25] | -0.300*** [-0.35, -0.26] | -0.308*** [-0.36, -0.26] | -0.263*** [-0.33, -0.20] | -0.307*** [-0.36, -0.26] | -0.307*** [-0.36, -0.25] |
| Education | | 0.118*** [0.097, 0.14] | 0.118*** [0.090, 0.14] | 0.126*** [0.098, 0.16] | 0.122*** [0.093, 0.15] | 0.125*** [0.092, 0.16] | | 0.126*** [0.093, 0.16] | 0.126*** [0.094, 0.17] |
| Worked for Female Chief at 4 Years in Service | | | -0.009 [-0.074, 0.069] | -0.019 [-0.10, 0.075] | -0.011 [-0.10, 0.089] | 0.008 [-0.12, 0.15] | 0.015 [-0.097, 0.15] | -0.001 [-0.15, 0.18] | 0.001 [-0.15, 0.17] |
| Female*Worked for Female Chief at 4 Yrs | | | -0.193 [-0.42, 0.056] | -0.264* [-0.49, 0.0088] | -0.352** [-0.55, -0.17] | -0.336** [-0.58, -0.091] | -0.312*** [-0.50, -0.15] | -0.340** [-0.56, -0.12] | -0.368** [-0.59, -0.11] |
| Worked for Female Chief at 7 Years in Service | | | | 0.018 [-0.064, 0.14] | -0.007 [-0.077, 0.093] | -0.013 [-0.10, 0.100] | -0.020 [-0.071, 0.040] | -0.028 [-0.16, 0.12] | -0.025 [-0.16, 0.13] |
| Female*Worked for Female Chief at 7 Yrs | | | | -0.009 [-0.39, 0.37] | -0.053 [-0.43, 0.50] | -0.177 [-0.65, 0.59] | -0.121 [-0.48, 0.56] | -0.167 [-0.68, 0.64] | -0.187 [-0.72, 0.57] |
| Worked for Female Chief at 9 Years in Service | | | | | -0.088* [-0.20, 0.014] | -0.131** [-0.22, -0.037] | -0.125** [-0.22, -0.023] | -0.138** [-0.23, -0.041] | -0.134** [-0.22, -0.034] |
| Female*Worked for Female Chief at 9 Yrs | | | | | 0.241* [0.0029, 0.57] | 0.329** [0.057, 0.62] | 0.335** [0.072, 0.67] | 0.319** [0.040, 0.64] | 0.267* [-0.012, 0.63] |
| Worked for Female Chief at 13 Years in Service | | | | | | -0.042* [-0.10, 0.0017] | -0.040 [-0.11, 0.029] | -0.056* [-0.13, 0.0087] | -0.053 [-0.12, 0.016] |
| Female*Worked for Female Chief at 13 Yrs | | | | | | -0.018 [-0.28, 0.37] | -0.064 [-0.29, 0.27] | -0.001 [-0.27, 0.39] | -0.038 [-0.31, 0.42] |
| Chief Secretary Controls | NO | NO | NO | NO | NO | NO | YES | YES | YES |
| State FE | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Cohort FE | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Observations | 12778 | 10072 | 5167 | 4384 | 3884 | 3284 | 4113 | 3284 | 3284 |
| Adjusted $R^2$ | 0.336 | 0.355 | 0.259 | 0.243 | 0.241 | 0.244 | 0.211 | 0.245 | 0.245 |
| Root MSE | 0.390 | 0.397 | 0.391 | 0.394 | 0.397 | 0.401 | 0.383 | 0.400 | 0.400 |

We included State fixed effects in all specifications, and if there were multiple chief secretaries, the values were averaged.

**Table 4: Impact of Length of Chief's Service** This table illustrates results similar to Table 3 but also adds a term that examines the length of the chief's service. It uses a novel dataset compiled from the Civil List, which provides detailed information on bureaucrats in the Indian Administrative Service.

| | (1) Empanelment proxy | (2) Times served at center | (3) Quarters at centre | (4) Good job year 4, No center | (5) Good Job year 9, No center |
|---|---|---|---|---|---|
| Female Bureaucrat | 0.131* (0.0591) | 0.340 (0.278) | 317.9 (211.1) | 0.0827 (0.0477) | -0.0515 (0.0509) |
| Female Chief Secretary | 0.308*** (0.0785) | 1.042* (0.464) | 671.8* (275.9) | 0.132 (0.0979) | 0.108 (0.0647) |
| Work in Home State | -0.304*** (0.0513) | -1.578*** (0.354) | -992.0** (277.3) | -0.141** (0.0483) | -0.0716* (0.0324) |
| Education | 0.174*** (0.0273) | 0.795*** (0.132) | 538.3*** (100.6) | 0.168*** (0.0359) | 0.0730*** (0.0135) |
| Worked for Female Chief at 4 Years in Service | 0.0693 (0.0811) | 0.209 (0.584) | 103.5 (290.2) | 0.0617 (0.0787) | -0.0423 (0.0995) |
| Female * Worked for Female Chief at 4 Yrs | -0.671*** (0.165) | -1.708* (0.658) | -1442.7** (502.8) | -0.337 (0.242) | -0.158 (0.177) |
| Worked for Female Chief at 7 Years in Service | 0.0486 (0.0624) | -0.569 (0.449) | -358.1 (251.7) | -0.0136 (0.0404) | -0.0244 (0.0492) |
| Female * Worked for Female Chief at 7 Yrs | -0.250 (0.285) | -0.905 (0.652) | -394.7 (639.2) | -0.0364 (0.137) | -0.0917 (0.111) |
| Worked for Female Chief at 9 Years in Service | -0.153** (0.0500) | -0.251 (0.212) | -238.1 (122.9) | -0.116 (0.0747) | 0.0278 (0.0493) |
| Female * Worked for Female Chief at 9 Yrs | 0.163 (0.151) | 1.240* (0.498) | 862.3 (518.1) | -0.146 (0.155) | -0.437** (0.123) |
| Worked for Female Chief at 13 Years in Service | -0.0760 (0.0485) | -0.350 (0.261) | -257.0 (138.7) | -0.0758 (0.0625) | -0.0663 (0.0709) |
| Female * Worked for Female Chief at 13 Yrs | -0.160 (0.176) | -0.621 (0.886) | -512.6 (634.5) | -0.122 (0.104) | 0.104 (0.0583) |

Standard errors in parentheses

We included State fixed effects in all specifications, and if there were multiple chief secretaries the values were averaged.

$* \ p < 0.05$, $** \ p < 0.01$, $*** \ p < 0.001$

**Table 5: Alternative Definitions of Success** The above table shows the impact that having a female chief secretary has on one's likelihood of achieving various milestones that might be considered successful. It uses a novel dataset compiled from the Civil List which provides detailed information on bureaucrats in the Indian Administrative Service.

| | (6)<br>Good Job year 13, No center | (7)<br>Good job only year 4, No center | (8)<br>Good Job only year 9, No center | (9)<br>Quarters in good job posings at year 13 | (10)<br>Quarters in good job postings |
|---|---|---|---|---|---|
| Female Bureaucrat | -0.0951*<br>(0.0448) | 0.0477<br>(0.0336) | -0.0257<br>(0.0333) | -0.643**<br>(0.218) | -0.643<br>(0.432) |
| Female Chief Secretary | 0.246***<br>(0.0624) | 0.172<br>(0.0987) | 0.137<br>(0.0730) | 2.394***<br>(0.586) | 3.110***<br>(0.782) |
| Work in Home State | -0.0526<br>(0.0445) | -0.128<br>(0.0630) | -0.0558<br>(0.0279) | -1.021**<br>(0.309) | -1.872***<br>(0.436) |
| Education | 0.0670***<br>(0.0176) | 0.158***<br>(0.0298) | 0.0630***<br>(0.0148) | 0.866***<br>(0.177) | 1.784***<br>(0.300) |
| Worked for Female Chief at 4 Years in Service | -0.0243<br>(0.0578) | 0.0284<br>(0.0649) | 0.0234<br>(0.0790) | -0.543<br>(0.433) | -0.0382<br>(0.630) |
| Female * Worked for Female Chief at 4 Yrs | -0.0447<br>(0.152) | -0.258<br>(0.207) | -0.106<br>(0.186) | 0.812<br>(0.717) | -1.570<br>(1.296) |
| Worked for Female Chief at 7 Years in Service | -0.0685<br>(0.0400) | | 0.00603<br>(0.0505) | -0.519<br>(0.409) | -0.344<br>(0.484) |
| Female * Worked for Female Chief at 7 Yrs | -0.195<br>(0.153) | | -0.0144<br>(0.112) | -0.431<br>(0.571) | -1.324<br>(1.293) |
| Worked for Female Chief at 9 Years in Service | -0.0470<br>(0.0526) | | 0.0254<br>(0.0440) | -0.399<br>(0.400) | -0.863<br>(0.513) |
| Female * Worked for Female Chief at 9 Yrs | -0.218<br>(0.156) | | -0.349***<br>(0.0832) | -1.073<br>(0.675) | -1.828*<br>(0.813) |
| Worked for Female Chief at 13 Years in Service | 0.0133<br>(0.0554) | | | 0.0890<br>(0.346) | -0.382<br>(0.480) |
| Female * Worked for Female Chief at 13 Yrs | -0.0848<br>(0.0752) | | | 0.382<br>(0.503) | 1.268<br>(0.864) |
| Observations | 3307 | 4538 | 3757 | 3307 | 3307 |
| Adjusted $R^2$ | 0.139 | 0.171 | 0.078 | 0.243 | 0.266 |

Standard errors in parentheses

We included State fixed effects in all specifications, and if there were multiple chief secretaries the values were averaged.

$* p < 0.05$, $** p < 0.01$, $*** p < 0.001$

**Table 6: Alternative Definitions of Success Continued** The above table shows the impact that having a female chief secretary has on one's likelihood of achieving various milestones that might be considered successful

# Appendix

## Table A1: Results with Clustered Standard Errors

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|---|
| | Center | Center | Center | Center | Center | Center | Center | Center |
| Female Bureaucrat | 0.113*** | 0.0804*** | 0.109*** | 0.122*** | 0.124*** | 0.135*** | 0.164*** | 0.134*** |
| | (0.0190) | (0.0151) | (0.0210) | (0.0180) | (0.0183) | (0.0298) | (0.0332) | (0.0291) |
| Female Chief Secretary | 0.219*** | 0.148*** | 0.132*** | 0.129** | 0.131** | 0.127** | 0.219*** | 0.132** |
| | (0.0229) | (0.0238) | (0.0329) | (0.0357) | (0.0384) | (0.0431) | (0.0361) | (0.0446) |
| Work in Home State | | -0.254*** | -0.279*** | -0.290*** | -0.300*** | -0.308*** | -0.263*** | -0.307*** |
| | | (0.0128) | (0.0184) | (0.0212) | (0.0212) | (0.0243) | (0.0285) | (0.0247) |
| Education | | 0.118*** | 0.118*** | 0.126*** | 0.122*** | 0.125*** | | 0.126*** |
| | | (0.00957) | (0.0126) | (0.0136) | (0.0145) | (0.0169) | | (0.0168) |
| Worked for Female Chief at 4 Years in Service | | | -0.00891 | -0.0187 | -0.0114 | 0.00770 | 0.0151 | -0.00145 |
| | | | (0.0302) | (0.0359) | (0.0376) | (0.0507) | (0.0468) | (0.0614) |
| Female*Worked for Female Chief at 4 Yrs | | | -0.193 | -0.264* | -0.352*** | -0.336** | -0.312*** | -0.340*** |
| | | | (0.0964) | (0.106) | (0.0739) | (0.0973) | (0.0738) | (0.0912) |
| Worked for Female Chief at 7 Years in Service | | | | 0.0183 | -0.00717 | -0.0125 | -0.0203 | -0.0281 |
| | | | | (0.0402) | (0.0328) | (0.0363) | (0.0235) | (0.0493) |
| Female*Worked for Female Chief at 7 Yrs | | | | -0.00948 | -0.0531 | -0.177 | -0.121 | -0.167 |
| | | | | (0.153) | (0.180) | (0.214) | (0.162) | (0.223) |
| Worked for Female Chief at 9 Years in Service | | | | | -0.0877 | -0.131** | -0.125** | -0.138*** |
| | | | | | (0.0450) | (0.0398) | (0.0356) | (0.0368) |
| Female*Worked for Female Chief at 9 Yrs | | | | | 0.241* | 0.329** | 0.335** | 0.319** |
| | | | | | (0.0947) | (0.0925) | (0.0966) | (0.0991) |
| Worked for Female Chief at 13 Years in Service | | | | | | -0.0420 | -0.0402 | -0.0561 |
| | | | | | | (0.0238) | (0.0293) | (0.0294) |
| Female*Worked for Female Chief at 13 Yrs | | | | | | -0.0184 | -0.0641 | -0.000585 |
| | | | | | | (0.128) | (0.110) | (0.131) |
| Chief Secretary Controls | NO | NO | NO | NO | NO | NO | YES | YES |
| State FE | YES | YES | YES | YES | YES | YES | YES | YES |
| Cohort FE | YES | YES | YES | YES | YES | YES | YES | YES |
| Observations | 12778 | 10072 | 5167 | 4384 | 3884 | 3284 | 4113 | 3284 |
| Adjusted $R^2$ | 0.336 | 0.355 | 0.259 | 0.243 | 0.241 | 0.244 | 0.211 | 0.245 |

Standard errors in parentheses

We included State fixed effects in all specifications, and if there were multiple chief secretaries the values were averaged.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

**Table A2: Logit Results with Clustered Standard Errors**

|                                                    | (1)<br>Center |
| -------------------------------------------------- | :-----------: |
| Female Bureaucrat                                  | 0.522**       |
|                                                    | (0.174)       |
| Female Chief Secretary                             | 1.001***      |
|                                                    | (0.167)       |
| Work in Home State                                 | -1.540***     |
|                                                    | (0.0959)      |
| Education                                          | 0.943***      |
|                                                    | (0.0782)      |
| Worked for Female Chief at 4 Years in Service      | -0.363        |
|                                                    | (0.294)       |
| Female*Worked for Female Chief at 4 Yrs            | -15.88        |
|                                                    | (1088.5)      |
| Worked for Female Chief at 7 Years in Service      | -0.501        |
|                                                    | (0.295)       |
| Female*Worked for Female Chief at 7 Yrs            | -1.122        |
|                                                    | (0.782)       |
| Worked for Female Chief at 9 Years in Service      | -1.141***     |
|                                                    | (0.294)       |
| Female*Worked for Female Chief at 9 Yrs            | 1.725*        |
|                                                    | (0.788)       |
| Worked for Female Chief at 13 Years in Service     | -0.632*       |
|                                                    | (0.251)       |
| Female*Worked for Female Chief at 13 Yrs           | -0.0318       |
|                                                    | (0.602)       |
| Observations                                       | 3275          |
| State FE                                           | YES           |
| Cohort FE                                          | YES           |

Standard errors in parentheses

If there were multiple chief secretaries, the values were averaged.

$^{*}$ $p < 0.05$, $^{**}$ $p < 0.01$, $^{***}$ $p < 0.001$