

# Meritocracy in a Bureaucracy\*

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August, 2024

## Abstract

This paper examines the Pakistan Administrative Services (PAS), a bureaucracy in a high-corruption, low-transparency environment, to assess whether discretion in promotion decisions allows for the use of private information on bureaucrats' abilities. Using unique data on junior bureaucrats' abilities and their social ties with senior officials, the study finds evidence of meritocratic promotions: senior officials are more likely to promote high-ability juniors over those with social ties, despite limited explicit incentives. I also provide evidence indicating the circumstances under which meritocratic promotions are more likely to take place. These findings suggest that discretion can lead to improved outcomes, even in settings marked by pervasive corruption.

**JEL codes:** D73, M51, O1

**Keywords:** Promotions, discretion, delegation, rules, Weberian bureaucracy, meritocracy, networks, civil service, PAS, Punjab, Pakistan

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\*I would like to thank Oriana Bandiera, Tim Besley, Robin Burgess, and Gerard Padro-i-Miquel for their guidance and support throughout this project. I am also grateful to Karun Adusumilli, Gaurab Aryal, Nava Ashraf, Clare Balboni, Florian Blum, Gharad Bryan, Erika Deserranno, Weihan Ding, Dita Eckardt, Greg Fischer, Leora Friedberg, Maitreesh Ghatak, Clement Imbert, Ruixue Jia, Asim Khwaja, Tatiana Komarova, Fabian Lange, Rocco Macchiavello, Aprajit Mahajan, Rachael Meager, Guy Michaels, Clement Minaudier, Niclas Moneke, Diana Moreira, Torsten Persson, Rachel Augustine Potter, Adnan Qadir, Imran Rasul, Juan Felipe Riaño, Daniel Rogger, Tayyab Safdar, Jorn-Steffen Pischke, Wayne Sandholtz, Claudio Schilter, Sheetal Sekhri, Sandra Sequeira, Jacob Shapiro, Pedro Souza, Daniel Sturm, Sandip Sukhtankar, Jordi Blanes i Vidal, Fabian Waldinger, Torsten Walter, Leonard Wantchekon, Stephane Wolton, Noam Yuchtman, and seminar participants at multiple conferences and workshops for comments and suggestions. I am grateful to the S&GAD, Establishment Division, the Federal Public Service Commission, the Board of Revenue, and officers in the revenue administration in districts of Punjab for sharing data. I would like to thank members of the Pakistani bureaucracy, including Socrat Aman Rana, Saima Ayyaz, Liaquat Bhatti, Humera Ikram, Maryam Kiyani, and Silwat Saeed, for providing support and institutional guidance. Mukhtar Ahmed, Rehan Hussein, Usman Ghaus, Faryal Shahid, Ahsan Ansari, Yuanzhan Gao, Ryan Keller, Eric N. Robertson, Elizabeth Schroppe and Shengyu Wang provided excellent research assistance. Financial support from IDEAS and IGC is gratefully acknowledged. IRB approval was obtained from the University of Virginia. All mistakes are my own. A previous version of the paper was circulated as "In self interest? Meritocracy in a Bureaucracy", "Does Ability Matter for Discretionary Promotions in Bureaucracies? Evidence from Pakistan".

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A well-functioning state that provides public goods, addresses externalities, and supports private enterprise is essential for economic development (Besley and Persson, 2009, 2010; Finan et al., 2017). In low-corruption settings, discretion has been shown to enhance state capacity by improving leader selection (Voth and Xu, 2022). However, this is rarely the case in developing countries, where entrenched corruption norms (Fisman and Miguel, 2007) and pervasive patronage undermine bureaucratic effectiveness.<sup>1</sup>

In such contexts, discretion has led to better outcomes only in a few instances, primarily when political incentives aligned agent and principal interests (Jia et al., 2015; Landry et al., 2018; Toral, 2022; Chamon et al., 2019; Bazzi et al., 2024). Nonetheless, whether discretion can consistently improve outcomes in bureaucracies characterized by weak incentives and limited transparency—conditions that undermine public accountability—remains an open question.

In this paper, I examine the Pakistan Administrative Services (PAS), a bureaucracy operating in a high-corruption, low-transparency setting. I ask whether discretion allows for the use of private information on bureaucrats' abilities in promotion decisions. Using unique data on the abilities of junior bureaucrats and their social ties with seniors, the study shows that meritocracy exists: senior bureaucrats are more likely to promote high-ability juniors rather than those with whom they share social ties, even with limited explicit incentives. Additionally, I outline evidence suggestive of the conditions under which meritocratic promotions may occur. These findings are significant as they underscore that discretion can yield improved outcomes, even in contexts characterized by widespread corruption.

The PAS, responsible for delivering a broad range of public goods and services, recruits its bureaucrats through a competitive exam. Upon entry, officers are typically assigned to tax collection roles in sub-districts, with placements driven by vacancies and the tenures of incumbents. While the PAS operates as a traditional Weberian bureaucracy—where careers are formally based on seniority, mandatory training, and performance evaluations—it also features a parallel track of discretionary, fast-track promotions overseen by senior bureaucrats, designed to circumvent the constraints of rigid rules (Ali, 2022).

Workplace relationships play a significant role in the PAS, with a common belief among

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<sup>1</sup>Decisions are often driven by bribes (Weaver, 2021) or political connections (Colonnelli et al., 2020; Fisman et al., 2018; Riaño, 2021), with transfers shaped by elite networks (Wade, 1985; Iyer and Mani, 2012; Akhtari et al., 2022; Brierley, 2020). Bureaucrats frequently engage in influence-seeking for favorable performance ratings (De Janvry et al., 2023), and corruption is widespread (Hanna and Wang, 2017; Niehaus and Sukhtankar, 2013). In response, restricting bureaucratic discretion and relying on rules is often seen as a second-best solution in these contexts. This view, rooted in Weber (1922), remains central to public sector reform (see Besley et al. (2022)) and was pivotal in the development of East Asian economies such as Japan and Korea (Johnson, 1982; Wade, 1990; Amsden, 1989).

junior officers that “seniors who worked with you early in your career will look after you” (Ali, 2022, p.740). As bureaucrats advance through the hierarchy, they acquire greater influence over the careers of junior officers, with the fast-track careers of those connected to high-ranking seniors first-order stochastically dominating those of their peers with less influential seniors.

To answer the research question, I hand-collected and digitized three main archival datasets to create a bureaucrat-month-year panel from 1983-2013: (1) tax collection performance of bureaucrats in their first job, (2) career records of bureaucrats, and (3) incumbency boards from across Punjab’s sub-districts showing vacancies and incumbents’ tenures.

Senior bureaucrats are defined as those with more experience in the organization than junior bureaucrats, specifically focusing on those who were already working in the districts where the junior bureaucrats began their first job. I focus on the seniors from the first job because the rules for causal identification (described below) only apply to the first job of the juniors. I define the discretion or power of such seniors as their average rank in the organization based on official rules.

Junior bureaucrats’ tax collection data is not publicly available and is observed only by the senior officials who work directly with them, never becoming part of official career records or promotion documents (Cheema and Sayeed, 2006; Husain, 2012; Hanif et al., 2016; Tanwir and Chaudhry, 2016). This provides a unique opportunity to examine how private information influences discretionary decisions, even in the absence of formal incentives to do so.

To measure ability, I use each junior bureaucrat’s average tax performance (relative to targets) in their first job, classifying those above the cohort median as high-ability. This approach mitigates the confounding effects of varying effort levels when evaluating meritocratic promotions, as performance may fluctuate across organizational tiers due to differing incentives (Benson et al., 2019).

As a benchmark for comparison, I also test whether senior officials base promotions on social connections with juniors. Following the literature (Fisman et al., 2018; Jia et al., 2015; Fisman et al., 2020), I define social ties by shared hometowns between senior and junior bureaucrats. These connections may reflect socializing based on common background, genuine friendships or altruistic behavior by seniors toward juniors from their hometown (Cullen and Perez-Truglia, 2023; Rotemberg, 1994; Tabellini, 2008).

Tax-based ability, unlike social ties, is significantly correlated with other service delivery indicators, suggesting that promotions based on tax-based ability are more meritocratic. Moreover, tax-based ability and social ties are negatively, though insignificantly,

correlated. This suggests that promotions based on tax ability or social ties are distinct from each other and that there may be a trade-off between them.

To tackle the identification challenges—namely, that the match between senior and junior bureaucrats should be randomly created, that changes in the discretion of senior bureaucrats over time should be uncorrelated with changes in the unobservable characteristics of juniors, and that there are no omitted variables correlated with ability or social ties which could affect how power influences junior careers based on their ability or social ties with seniors—I combine an instrumental variables strategy with a difference-in-differences approach. Specifically, I use the power of potential seniors as an instrumental variable for the power of seniors and compare the career trajectories of high- and low-ability (or social ties) juniors in cohorts with more powerful potential seniors to those with less powerful seniors. While the instrument overcomes the endogeneity of power of seniors, the differences-in-differences strategy helps to net out the effects of any omitted variables that might be correlated with ability and affect promotions.

The instrument for power draws from two sources of variation: cross-sectional and time-based. First, under government job allocation rules, newly recruited bureaucrats can be assigned their first position either when a vacancy arises or when the incumbent has served for at least one year. I combined data on position vacancies and tenure from the incumbency board with career records to identify a set of potential first seniors with whom junior bureaucrats could have worked. Second, using promotion rules that stipulate fixed promotion intervals—at five, twelve, seventeen, and twenty-two years into their careers—I construct the instrumental variable for power as the average theoretical rank of these potential first seniors.

To support the identifying assumption, I conduct a series of tests and analyses. The first stage demonstrates that the instrument is highly correlated with the endogenous variable, as indicated by an [Angrist and Pischke \(2009\)](#) F-statistic of 50. To address [Young \(2022\)](#)’s concerns related to non-iid errors and leverage in IV regressions, I show that the results are robust to excluding one junior bureaucrat’s career at a time. To support the exclusion restriction, I conduct tests on vacancies at the juniors’ first job and find no changes before their start. I also find that district characteristics do not determine vacancy and tenure of incumbents. Moreover, juniors’ tax-based abilities and social ties with seniors are not influenced by the instrument, power of potential seniors, and the characteristics of the first job are not systematically correlated with a junior bureaucrat being a top tax performer. Last, to lend support to the parallel trends assumption, I used [Callaway et al. \(2024\)](#)’s strategy and report the treatment intensity response function, which shows that at lower power levels, the probability of fast-track promotions for various types of juniors follows a similar path. However, this changes significantly when power exceeded the median.

For the first set of results, I pool the data and present the causal effects as simple mean differences.<sup>2</sup> Results show that above median tax collectors whose seniors have above median power have a 17.8 pp higher probability of being fast-tracked relative to below median tax collectors. This difference disappears when seniors have below median power. Together this results in an overall difference-in-difference of 17.6 pp ( $p$ -value=0.059). A similar difference-in-difference but for social ties of juniors instead of tax-based ability shows that the average difference-in-difference is negative (8.9 pp,  $p$ -value>0.1). These findings suggest that discretionary promotions are meritocratic, even in a setting like the PAS, characterized by weak incentives and low accountability.

Moreover, this meritocratic effect is particularly noteworthy as tax-based ability, rather than social ties, is positively correlated with other dimensions of service delivery. The pooled results are similar to those obtained from the continuous IV estimation, which includes cohort and month-year fixed effects and controls.

I then examine whether public information on juniors' ability, specifically their recruitment exam ranks, plays a significant role in discretionary promotions. In many organizations, both private and public signals of ability are available, and depending on the context, one may be more informative than the other. Understanding how these signals are used has important policy implications. Moreover, since many countries—including China, Brazil, and India—use competitive exams for bureaucratic recruitment (Elman, 2000; Bai and Jia, 2016; Dahis et al., 2023; Moreira and Pérez, 2024; Bertrand et al., 2020), evaluating their effectiveness as measures of ability and their role in promotions is crucial for informing recruitment policies.

To investigate this, I hand-collected and digitized the exam ranks of these junior bureaucrats. The data reveal that exam-based ability is uncorrelated with other key dimensions of service delivery, including tax-based ability, suggesting that promotions based solely on exam rank would not reflect true meritocracy. Indeed, results show that exam rank has no significant impact on promotions (the effects are negative and statistically insignificant), and the main findings remain robust to its inclusion, further reinforcing the meritocratic nature of discretionary promotions in this setting.

These results are surprising given that a "meritocratic favoritism" or favoritism towards the high ability does not appear to be the norm in this context. According to the Corruption Perception Index (2019), Pakistan ranks below average, with a score of thirty-two out of one hundred (least corrupt) in perceived levels of public sector corruption. Two potential mechanisms can explain the results. One possibility is that senior bureaucrats care about

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<sup>2</sup>Since the data is pooled, these results illustrate how seniors exercise discretion from a broader set of potential candidates across cohorts, rather than merely comparing juniors of different abilities or social ties within cohorts.

the performance of their own departments due to career incentives, incentivizing them to only keep and promote high ability juniors. Alternatively, they might care about their reputation when referring junior bureaucrats to other senior bureaucrats, incentivizing them to only refer high ability juniors. I provide several pieces of suggestive evidence consistent with a reputation rather than a career concerns effect.

Results show that within their own department, seniors favor juniors with social ties, who are more likely to work in any of the seniors' departments and be fast-tracked.<sup>3</sup> Conversely, in departments that do not include first seniors, results show that with an increase in the seniors' power promotions are merit-based, relying on tax-based ability. This variation across departments suggests that meritocracy is not the norm, and decision-makers' incentives drive differing outcomes. Therefore, policymakers should focus on better aligning decision-makers' incentives with organizational goals, rather than eliminating discretion altogether.

The paper contributes to the Economics and Political Science literature on bureaucracies. While the previous work on "developmental state" has investigated the importance of the organization of bureaucracies from a macro perspective (see [Pepinsky et al. \(2017\)](#); [Dahlström and Lapuente \(2022\)](#) for a review), recent work using micro data has started opening up the black box of the state. As discussed, these studies provide widespread evidence of patronage and corruption in public sector bureaucracies in developing countries. Such corruption and the absence of meritocratic promotions can profoundly impact performance at lower levels ([Deserranno and León-Ciliotta, Forthcoming](#)).

To the best of my knowledge, this is the first study to demonstrate the existence of meritocratic promotions in a setting characterized by high corruption and low transparency. Additionally, rather than focusing on political-bureaucratic connections, this paper examines relationships among bureaucrats in a context similar to other contemporary bureaucracies in developing countries, where political and bureaucratic leadership are distinct. Lastly, this study provides insights into how privately observed measures of ability compare to social connections and other publicly visible indicators of ability in the promotion process.

Overall results in this paper complements a growing body of work that questions the use of rule-based decision making ([Kelman, 1990, 2005](#); [Bandiera et al., 2009a](#)) and shows the importance of discretion of bureaucrats in public sector bureaucracies for project completion ([Rasul and Rogger, 2018](#)), environmental regulation ([Duflo et al., 2018](#)), procurement prices ([Bandiera et al., 2021](#)), and value-added in SOE ([Kala, Forthcoming](#)). This

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<sup>3</sup>Although the magnitude of this effect remains consistent, I do not place significant emphasis on the result that juniors with social ties are more likely to work in any of the seniors' departments, as the *Wild* bootstrapped *p*-values for the coefficient exceed 0.1 in both the OLS and IV specifications.

paper studies discretionary promotions and shows that it can improve the allocation of talent.

This paper also relates to the literature that emphasizes the importance of “embeddedness” of bureaucrats i.e., bureaucrats’ social relationships with others ([Granovetter, 1985](#)) (see [Ashraf and Bandiera \(2018\)](#) for a review). While existing studies have focused on bureaucrats’ (downward) embeddedness or their relationship with citizens ([Tsai, 2007](#); [Mangla, 2015](#); [Ricks, 2016](#); [Bhavnani and Lee, 2018](#)), and their (upward) embeddedness with the politicians ([Toral, 2022](#); [Hassan, 2020](#)), this paper contributes to the literature that highlights the importance of intra-organization embeddedness of bureaucrats for talent allocation. This paper relates to the work of [Arai and Nakazawa \(2022\)](#) who examine peer effects in promotions within a developed country context, finding that junior employees who work in the same division as a future executive during their first five years are more likely to be promoted to chief executive compared to those who do not. I contribute to this literature by examining a developing country context, utilizing unique data on ability and social ties. My findings demonstrate that even in developing countries with high levels of corruption, discretion can be leveraged for meritocratic promotions of high-ability juniors.

## 1 Pakistan Administrative Services (PAS) bureaucracy

PAS, a small yet influential federal civil servant group, holds significant sway within the government. Occupying top civil service roles across federal and provincial levels, including positions like Secretary of Cabinet and Chief Secretary, PAS officers play crucial roles. Consequently, how talent is distributed in this bureaucracy significantly impacts the delivery of public services to 230 million people.

**Recruitment and initial allocations.** PAS recruitment occurs through a competitive exam conducted by the Federal Public Service Commission (FPSC). Every year approximately 20,000 candidates apply for the civil services, out of which 237 are successfully appointed federal positions. PAS officers are a subset of these federally appointed bureaucrats. The universe of PAS bureaucrats between 1983-2013 is 628.

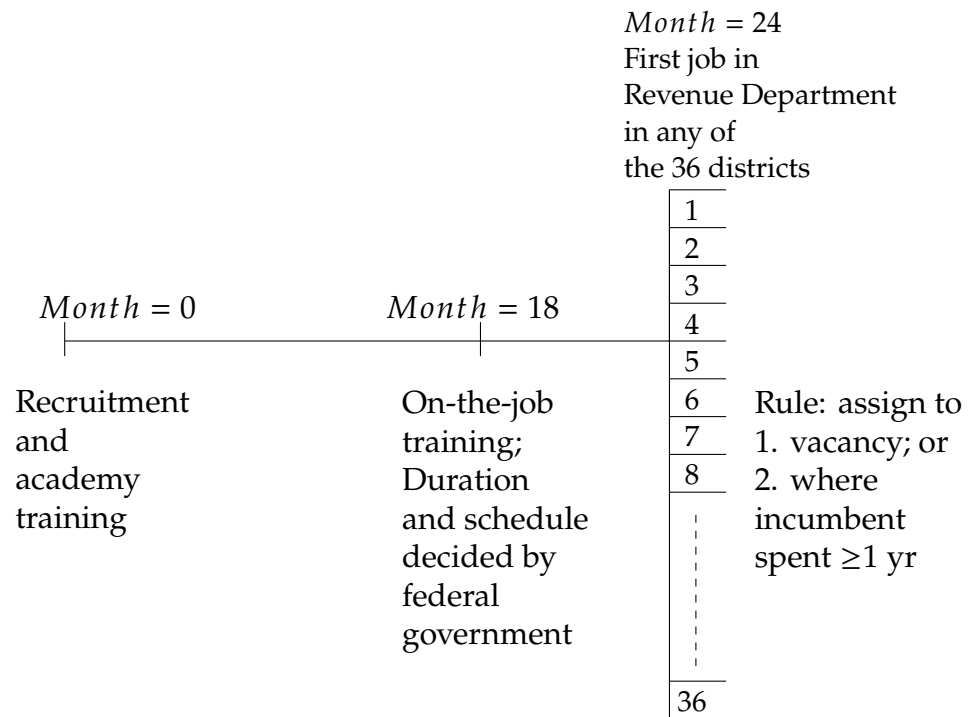
Figure I outlines the initial career timeline for a new PAS recruit. After recruitment, these bureaucrats undergo eighteen months of academic training, followed by a six-month on-the-job training period.<sup>4</sup> The Civil Services Academy and PAS Academy centrally administer this training, with its duration and schedule guided by the federal government.

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<sup>4</sup>This training period historically ranged from eighteen weeks to thirty-seven weeks.

Following twenty-four months of training, new recruits are assigned their first job which can be in the revenue department of any of the 36 districts of Punjab.

Figure I: Timeline of the initial career of junior bureaucrats



Initially, PAS recruits typically commence their careers as heads of revenue departments in Punjab's sub-districts. Their primary responsibilities involve overseeing tax collection and supervising teams of revenue officials.<sup>5</sup> Junior bureaucrats spend on average 12 months in this first job (Figure A.1). After this initial job, they have the opportunity to work in various government departments such as health, education, finance, agriculture or manage significant government projects in collaboration with international financial institutions like the World Bank and United Nations.

The initial allocation of PAS bureaucrats to their first revenue administration roles is guided by the Tenure/Transfer Policy of the government.<sup>6</sup> As per this policy, new recruits can only be placed in vacant positions or where the incumbent bureaucrat has worked

<sup>5</sup>While overseeing the revenue administration is their primary role, additional tasks assigned to these junior bureaucrats are determined by higher political administration and uniformly distributed across the province. Moreover, success in these tasks, similar to tax collection, relies on effective management of revenue officials. Encouragingly, results in Table 1 indicate a positive correlation between tax-related abilities and other performance dimensions.

<sup>6</sup>Such as the Punjab Government Transfer Policy 1980; Inter-Provincial Transfers of DMG/PSP Officers 1988; Government of Punjab Circular Letter 2004; Guidelines for Transfer of Assistant Commissioners 2013.

for at least a year. I leverage this policy to capture variations in the senior bureaucrat set. **Figure 1** shows compliance with this policy. 50% of newly recruited junior bureaucrats are allocated positions where the incumbent has spent at least a year and 18% are allocated positions that were vacant.

**Promotions.** In this context, there exist two types of promotions: official promotions and fast-track promotions. Official promotions adhere to specific experience-based rules.<sup>7</sup> The regulations state that a bureaucrat is entitled to official promotions at five, twelve, seventeen, and twenty-two years after joining the service.<sup>8</sup> Official ranks start from 17 and go to 22. There are very few rank 21 and 22 officials that work in the province. Most high ranking officers move to the federal capital. Therefore, effectively the officials working in the province are between ranks 17-20.

On the contrary, fast-track promotions involve allocating higher-ranked positions to junior bureaucrats regardless of their official promotion status. The government determines the rank of a job at its creation, and this rank usually remains unchanged. While official promotions become a guaranteed right and cannot be reversed, fast-track promotions can be revoked at any point. **Figure A.2** illustrates both types of career trajectories of a subset of cohorts from the 1980s to the 2000s. On average, official careers follow a step-like progression, which is not the case for fast-track promotions.

While the final approval for promotions is granted by the highest provincial offices, such as the Chief Secretary (a grade 22 bureaucrat) or the Chief Minister, senior bureaucrats can significantly influence the careers of junior bureaucrats as they rise in the organization. **Figure 2** illustrates that the career trajectories of juniors with above-median-power seniors first-order stochastically dominate those of juniors with below-median-power seniors.

[Ali \(2022\)](#) presents an in-depth qualitative case study highlighting the importance of work relationships within the PAS bureaucracy. The study states that there is a shared belief among junior PAS bureaucrats that “*seniors who have served with you early on will take care of you*” (p. 740). It also emphasizes the power of senior bureaucrats in creating “networks of effectiveness” and underscores the significance of networks between senior PAS bureaucrats and the bureaucratic leadership in the allocation of junior bureaucrats to various high ranking positions.

More specifically, as the seniors rise in the organization their influence manifests through two main channels: requisitioning a junior bureaucrat for a higher position within

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<sup>7</sup>These rules necessitate completing mandatory training and receiving evaluations by immediate superiors above certain predefined thresholds which vary by grade.

<sup>8</sup>Establishment Division’s O.M.No.1/9/80-R.2 dated 2-6-1983, Minimum Length of Service Rules.

their own department or referring them to other senior officials for higher positions in different departments.

Seniors of any rank can formally (in writing) or informally (via phone or in-person) request the services of a junior bureaucrat for a higher position in their department from the Chief Secretary or the Chief Minister's office. Additionally, any senior can take the initiative and recommend a junior for a higher position in another senior's department, even if the junior has not previously worked with them. If the referral is favorable, the new senior can then request the junior's services for their department from the Chief Secretary or the Chief Minister's office. [Ali \(2022\)](#) demonstrates that the higher a bureaucrat rises, the more weight their requests are given, highlighting the significant influence senior bureaucrats wield in shaping the careers of their juniors.<sup>9</sup>

**Bureaucrats' tax collection performance.** Junior bureaucrats lead teams responsible for collecting agricultural income taxes in a sub-district, aiming to meet annual collection targets. Taxes are imposed based on the higher value between cultivated area and farmer profits. Senior bureaucrats oversee this work at the district level. Proficiency in tax collection reflects the crucial skill of team management, a cornerstone of an official's future bureaucratic career.

While seniors in the district assess individual tax collection performances in regular meetings, the organization only observes district-level aggregated performance data. Seniors relay the overall district performance, including each junior's performance, to the Board of Revenue (BOR) in reports. Despite this detailed assessment, the individual performance records of juniors are stashed away in the BOR building's basement record room by the administrative assistants (see [Figure A.3](#)). This information fails to make it into the juniors' career files.

Further substantiating this, government reports such as the National Commission for Government Reforms ([Husain, 2012](#)) highlight the absence of objective measures in performance evaluation and promotions within civil services. Numerous studies ([Cheema and Sayeed, 2006](#); [Hanif et al., 2016](#); [Tanwir and Chaudhry, 2016](#)) also confirm the lack of concrete performance indicators in evaluations or for promotion within this bureaucracy.

This absence of precise performance measures determining official careers is not unique to the Pakistan Administrative Services, as similar patterns have been observed in other public sector organizations in developing countries like the Indian Administrative Services ([Bertrand et al., 2020](#)) and the Chinese local government ([Su et al., 2012](#); [Jiang, 2018](#)).

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<sup>9</sup>There is no cap on the number of fast-track promotions that they can make.

## 2 Data and empirical strategy

### 2.1 Data and main variables

I hand collected and digitized three main datasets for this research: (1) career charts data from the office of the Chief Secretary<sup>10</sup> providing comprehensive details about the backgrounds and careers of bureaucrats; (2) historical tax collection data from revenue circles across Punjab obtained from the Board of Revenue; and (3) incumbency boards data retrieved from the tax collectors' office from across Punjab's sub-districts showing vacancies and incumbents' tenures.<sup>11</sup>

Appendix Section 1 elaborates on the string matching exercise that was conducted, resulting in the bureaucrat-month panel data crucial for the primary analysis. Appendix Section 2 details the sample used in the analysis, demonstrating its representativeness and discussing the validity of the statistical inference, and the robustness of the results to the possibility of leverage of a few officers (Young, 2022). Throughout the analysis, I present standard errors as well as Wild cluster (at the cohort level) bootstrapped  $p$ -values.

**Career records of bureaucrats** Career records encompass extensive details such as name, date of birth, religion, bureaucracy group, home district, qualifications, training, foreign visits, and official promotion dates and ranks.<sup>12</sup> These records also include a comprehensive service history, detailing job dates, designations, department, district, and subjective evaluations by immediate superiors.

These records, sourced from the Services and General Administration Department (S&GAD), form the basis for defining three key variables: fast-track promotions, discretion or power of seniors, and social ties between seniors and juniors. Fast-track promotions are denoted by a binary variable that takes the value of one where a junior is promoted to a higher-ranked job than their official rank permits, and remains zero otherwise.<sup>13</sup>

Figure A.4 shows the proportion of juniors that are fast-tracked across different job spells. In the first few job spells, fast-tracking is less common, but it increases mid-career.

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<sup>10</sup>This data was collected from the Services and General Administration (S&GAD) Wing of the Chief Secretary's office.

<sup>11</sup>Examples of the data are presented in Appendix Section C

<sup>12</sup>Since official promotion dates were crucial to determine the discretion of seniors, the quality of this data was further checked. A sample of promotion dates in the career charts were double-checked against seniority lists issued by the Establishment Division, available online at: <http://establishment.gov.pk/>. These were found to be accurate.

<sup>13</sup>Job ranks, as designated by the government, were personally obtained and manually assigned after reviewing the government-issued notifications.

Figure A.5 shows the variation in fast-track promotions across different cohorts, indicating that the probability of fast-track promotions was lower for cohorts hired in the 1980s and 1990s, but increased for those in the 2000s.

For causal identification (described in detail in subsection 2.2), only seniors from the first month of the juniors' first job are considered. The discretion or power of seniors is created by averaging the ranks of such seniors based on official promotions.<sup>14</sup>

Figure A.6 shows the variation in the power of seniors across cohorts. The official rank of seniors was higher in the 1980s than in later cohorts. The mean official rank of seniors is around 1. Since the majority of the bureaucracy in the province is effectively staffed by officers between ranks 17 and 20, a mean rank of 1 suggests that seniors have the opportunity to positively influence the careers of juniors from an early stage.

Finally, social ties are quantified by counting the number of seniors (from the junior's first job) who share the junior's hometown and creating a dummy variable that takes the value of one if the number of these ties are above the median and zero otherwise.<sup>15</sup>

**Tax collection** I conducted archival research at the Board of Revenue's record room to access tax collection data in various sub-districts of Punjab. This data, spanning from 1983 to 2013, details monthly tax collections in revenue circles, including information on annual targets, remissions, suspensions, and irrecoverable taxes.<sup>16</sup> The dataset forms an unbalanced panel of revenue circles and months.

Using this data, I initially constructed a sub-district-month year level panel depicting taxes collected as a fraction of the target. This panel was subsequently merged with the bureaucrat-month year panel at the sub-district-month year level. This allows for the observation of each bureaucrat's performance in revenue-related roles at the outset of their careers. To create a tax-based ability I created an average tax collected for each junior bureaucrat. Top 50% tax collectors is a dummy that takes the value of one for those juniors whose tax collection (as a percentage of the annual targets) is above median for their cohort, and remains zero otherwise.

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<sup>14</sup>Defining their rank based on official promotions rather than fast-track ones helps in utilizing the government's Minimum Length of Service Rules, crucial for the instrumental variable (see Section 2.2 for details). Official ranks range between 17 and 22. For ease of exposition, I have scaled them between 0 and 5, with 0 corresponding to rank 17 and 5 to rank 22.

<sup>15</sup>The average number of seniors that share a hometown with juniors is one, with the maximum being 12. For reference, the number of seniors from the first job are 13 on average. Note that while religious ties might have been important in the setting, all officials adhere to the Muslim faith, and there is no religious heterogeneity among them.

<sup>16</sup>The data encompasses ongoing fiscal year collections and arrears from past years, but I solely utilize information from the current fiscal year to better reflect the junior's performance due to minimal incentives for tax collection against arrears.

Figure A.7 illustrates the probability of fast-track promotions among junior bureaucrats based on their ability and social ties. In both cases, we observe a higher probability of fast-track promotions for juniors who are above the median. However, the difference between juniors below and above the median is more pronounced for tax-based ability compared to social ties.

**Incumbency boards and vacancies** To identify the senior officials available to the new cohort of junior bureaucrats during their first job, it was essential to assess the positions open at that time. For that purpose I acquired and digitized data from incumbency boards across every tax collector's office in Punjab.<sup>17</sup>

These boards provide detailed information on the individuals who held each position along with their respective tenures, enabling me to create a daily panel of positions. This data shows information on vacancies and tenures of tax collectors within the sub-district. An example of an incumbency board can be seen at Appendix Figure C.5. By merging this data with bureaucrats' career records, specifically on the dates when training ended for each cohort, I created cross-sectional variation in the instrumental variable (explained below in Section 2.2).

### 2.1.1 Correlations of social ties and ability

In this subsection, I present two sets of results. The first investigates whether tax-based ability and social ties are related to one another. This allows us to understand if there is any trade-off in the promotion decisions of senior bureaucrats. If the two measures are positively correlated, then promotions based on ability will not conflict with patronage-based promotions. However, in the absence of such a positive relationship, and given a limited set of higher-ranked positions, there is a trade-off between allocating a position to a high-ability junior versus a highly connected junior.

The second set of results investigate how these two measures correlate with other measures of service delivery. This includes subjective evaluations of the juniors as well as citizen surveys of service delivery.<sup>18</sup>

Appendix Table B.1 presents results from a correlation of ability and social ties. Results show that these two measures are negatively, though statistically insignificantly correlated

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<sup>17</sup>I contacted each office in sub-districts via telephone, and the staff shared pictures of these boards. These boards, a colonial-era tradition, serve as important status symbols for bureaucrats. Individuals take pride in having their names and tenures displayed, which helps ensure data consistency and reliability.

<sup>18</sup>While useful for understanding these underlying relationships, these data are only available for a limited set of cohorts, making their applicability beyond this scope more constrained.

with each other (*Wild* bootstrapped  $p$  value=0.54). Juniors with above median social ties are no more likely to be above median tax collectors suggesting that with limited number of high-ranked positions, there exists a trade-off between ability and patronage based promotions.

Next I present results from a correlation of these measures with other measures of service delivery. I considered four such measures.: subjective performance evaluation, attitude towards citizens, timeliness of service and whether citizens report that corruption is present. Subjective performance evaluation is a dummy variable that takes the value of one when a junior bureaucrat is evaluated as “very good” or an “outstanding” worker in their subjective performance evaluation by their direct boss.<sup>19</sup> The variable “Attitudes towards citizens” takes the value of one if citizens that received services from the junior bureaucrat’s team reported that the attitude of the team was better than before. Similarly, “Timeliness of service” takes the value of one if such citizens reported that the time taken to deliver services was lower than before. “Whether corruption is present” measures the citizens’ perceptions of corruption in the revenue department. It is a dummy variable that takes the value of one if citizens perceived that there is corruption in the department. Appendix Section 3 provides detailed information on data sources and available samples.

Table 1 shows the results. One clear pattern emerges: the effects’ magnitude is much larger and statistically significant in the case of ability based on tax performance, implying that promotions rooted in this measure may be more meritocratic than those based on social ties.

## 2.2 Empirical Strategy

The study investigates how the effect of the power of seniors on fast-track promotions differs by junior’s ability and their social ties with the seniors. There are three key concerns with causal identification in this context.

First, seniors may not be randomly allocated to juniors. This issue becomes more intractable when considering seniors beyond the junior bureaucrats’ first job. For example, over time, homophily (McPherson et al., 2001; Currarini et al., 2009) may occur, where juniors with better unobserved ability also have better careers and are more likely to be matched with high-ability seniors who rise in the organization and gain more discretion over juniors’ careers. In such cases, estimates based on simple OLS can overestimate the true effect.<sup>20</sup>

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<sup>19</sup>A junior’s boss in their first job is one of the bureaucrats within the set of seniors they work with.

<sup>20</sup>Fisman et al. (2020) show that this is especially likely when considering work place connections.

Even if seniors were randomly allocated, their discretion might still not be random. Omitted variables, such as the political networks of bureaucrats, could lead to the fast-tracking of junior officials and the official promotions of seniors, thereby increasing their discretion.

The third concern involves the measures of ability and social ties. It is crucial that these measures are not influenced by the power of the seniors and that no other omitted variables are correlated with how power affects junior careers based on their ability or social ties with seniors.

To address the first two concerns I use an instrumental variable for power of seniors. I combine this strategy with a differences-in-differences strategy that compares the career trajectories of high and low ability (social ties) juniors in cohorts with more powerful seniors to those with less power. Apart from the relevance and exclusion restriction necessary for the validity of the IV strategy, the identification assumption is that in the absence of changes in power of seniors, the careers of high and low ability (social ties) juniors would have evolved in the same way. The differences-in-differences strategy helps to net out the effects of any omitted variables that might be correlated with ability and affect promotions.

Below I first describe the instrumental variable in detail, followed by the estimation strategy and then present evidence in support of the different identifying assumptions.

**Instrument: power of potential seniors.** The instrument uses exogenous variation in the seniors as well as their discretion and therefore has two sources of variation: a cross-sectional variation and a time variation.

I exploit the government's job allocation rules for the cross-sectional variation in seniors across cohorts of juniors. These rules dictate that newly recruited bureaucrats can be assigned first jobs when the position is vacant or when the incumbent has spent at least one year on the job. Potential seniors are bureaucrats working in districts with open positions at the time of the junior cohorts' end of training and the beginning of their first job, and they are the same for the whole cohort.

**Figure 3** shows the average number of potential and actual seniors per junior across cohorts. The mean number of potential seniors is 30, while the mean number of seniors in the first job is thirteen.

I combine this cross-sectional variation with a *theoretical* time variation in the rise of these potential seniors. The government's rule stipulates that a bureaucrat will get one official promotion at five, twelve, seventeen, and twenty-two years after entering the

service. According to this rule, the career of a bureaucrat is like a step function, as shown in [Figure 4](#). For *each potential senior*, this rule helps build their theoretical promotions in the organization.

The instrumental variable, power of potential seniors, combines both sources of variation and is the average, rule-based rank of potential seniors that the cohorts of juniors could have worked with in their first job. To be conservative, I exclude the entire first job (not just the first month) from the analysis, and the study investigates the fast-track promotions of junior bureaucrats starting from their second job onward.

There is cross-cohort variation in power of potential seniors because the start of the first job of different cohorts is at least a year apart from each other. By the time the new cohort starts their first job, the set of potential places they could be allocated and hence the set of potential seniors (even within the same districts that had vacancies last year) will be different. There is variation over time because the set of potential seniors consists of seniors who are all at different points in their career trajectory. Some potential seniors would have spent for example, 4 years and 11 months in government service, and thus, as per the rule stated above, will be rising one rank in the coming month. This will result in the average theoretical rank of the potential seniors changing. Other potential seniors could have spent 5 years and therefore, will get no promotion in the next few years.

[Figure A.8](#) shows the power of potential seniors across cohorts, while [Figure A.9](#) shows the time variation in the measure across a sample of four cohorts from the 1970s, 1980s, 1990s, and 2000s. The figure shows that the power of seniors does not just go up; it can come down as well. This can be the case when, for instance, seniors retire. [Figure A.10](#) shows the correlation between the power of actual and potential seniors for different cohort of juniors. The figure suggests that the measure is highly correlated.

**Estimation** The OLS estimation for the effect of power of the seniors on careers of the junior  $i$ , in cohort  $c$  and month-year  $t$  is as follows:

$$Fast-track_{ict} = \theta Power_{ct} + \sum_{\tau} (\pi_{\tau} Power_{ct} \times \tau_i + \gamma_{\tau} \tau_i) + \kappa_c + \kappa_t + \rho X_{ict} + \epsilon_{ict} \quad (1)$$

where  $\tau = \{Tax-based\ ability, Social\ ties\ with\ seniors\}$  and  $Fast-track_{ict}$  is a dummy variable that takes a value of one whenever the junior bureaucrat is fast-tracked and remains zero otherwise.  $Power_{ct}$  is the mean official rank of seniors from the first job of a cohort  $c$ , in month-year  $t$ . For ease of interpretation of results, I center  $Power_{ct}$  by subtracting the mean of the variable for each junior.  $Tax_i$  is a dummy variables that takes

a value of one if the junior is in the top 50% of their cohort in tax collection in their first job.  $Social\ ties_i$  is a dummy variable that takes the value of one if the junior bureaucrat has above median social ties with their seniors from the first job.  $\kappa_c$  and  $\kappa_t$  are cohort and month-year fixed effects. Cohort fixed effects control for any time invariant, cohort specific, unobserved heterogeneity such as the total number of seniors in the first job and other time-invariant characteristics of the first job of the juniors. Time-varying characteristics that are similar for all cohorts are captured by  $\kappa_t$ . For example, any policies of the government on the creation of new jobs in higher ranks that affect all cohorts equally are accounted for by the time fixed effects.  $X_{ict}$  includes controls such as the annual time trend of the first job, a dummy variable for female bureaucrats, the total number of languages spoken by juniors, the experience, experience squared and the official rank of the junior, and a dummy variable for whether the job is in the field offices. The error term is clustered at the cohort level, as that is the level at which the juniors' first seniors (treatment) are allocated (Abadie et al., 2023).

Using the power of potential seniors as an instrument, the first stage for the main endogenous regression *Power of seniors* and the reduced form estimation are as follows:

$$Power_{ct} = \Sigma_{\tau}(\eta_{\tau} Power\ of\ potential\ seniors_{ct} \times \tau_i + \beta_{\tau}\tau_i) + \gamma Power\ of\ potential\ seniors_{ct} + \alpha_c + \alpha_t + \psi X_{ict} + v_{ict} \quad (2)$$

$$Fast-track_{ict} = \Sigma_{\tau}(\rho_{\tau} Power\ of\ potential\ seniors_{ct} \times \tau_i + \phi_{\tau}\tau_i) + \lambda Power\ of\ potential\ seniors_{ct} + \mu_c + \mu_t + \tau X_{ict} + u_{ict} \quad (3)$$

where  $\tau = \{Tax-based\ ability, Social\ ties\ with\ seniors\}$  and the rest of the variables are defined in the same way as in Equation 1, except for the instrument: power of potential seniors which is the average rule-based rank of potential seniors from the first job. The error term is clustered at the cohort level.

**Discussion of the identifying assumptions.** There are several assumptions for the analysis to be causal. The first set of assumptions are regarding the IV: relevance of the instrument and the exclusion restriction. For the instrument to be relevant it has to be highly correlated with the endogeneous regressor, power of seniors. Second, the exclusion restriction dictates that the power of potential seniors does not directly affect a junior's

fast-track promotion through, for example, their unobserved ability.

The second set of assumptions are that the careers of high and low ability (social ties) juniors would have evolved in the same way had it not been for changes in the power of potential seniors i.e., parallel trends holds. Note, that since the power of potential seniors is a continuous variable and there is no discrete time at which it switches on, the set of robustness checks that I can present to support this assumption will have to be modified as suggested by [Callaway et al. \(2024\)](#).

Below I will first discuss the identifying assumptions for the instrumental variable, followed by a discussion of the assumptions for the validity of the differences-in-differences.

[Table 2](#) presents results from the first stage of the IV analysis. In Column (1), results are presented without the interaction of seniors' power with ability or social ties. In Column (2), the complete set of variables is added. I report the [Angrist and Pischke \(2009\)](#)  $F$ -statistic at the bottom of the table. For a single regressor (Column 1), the [Angrist and Pischke \(2009\)](#)  $F$ -statistic and Kleibergen-Paap Wald  $F$ -test are the same. I report the [Angrist and Pischke \(2009\)](#)  $F$ -statistic since it tests whether even one of the endogenous regressors is under or weakly identified. The  $F$ -statistic is 50 in Column (1) and is above 100 for each of the three endogenous regressors: power of seniors, power of seniors  $\times$  tax and power of seniors  $\times$  social ties. While such  $F$ -statistic-based tests are not conclusive evidence in favor of the instrument's relevance, they do provide a strong indication that the instruments used are likely to be relevant and not weak.

In [Appendix 2](#), I also address the critique of [Young \(2022\)](#), who argue that weak instrument  $F$ -statistics are largely uninformative of both size and bias, especially in the case of non-iid error processes in highly leveraged regressions. [Young \(2022\)](#) emphasizes examining leverage within the context of instrumental variable regressions and considering the robustness of conclusions. To test this, I exclude the entire career of one junior bureaucrat at a time and report  $p$ -values of the key results, along with the number of observations used to calculate them. [Figure 2.II](#) and [Figure 2.III](#) show that the results are robust and that the paper's core findings are not driven by a small number of bureaucrats.

Next I turn to a discussion of the validity of the Exclusion Restriction in this context. One example of a violation of the Exclusion Restriction can be if vacancies are created for specific cohorts of juniors, who also enjoy better careers. This would suggest that power of potential seniors is directly correlated with promotions and does not affect careers through the power of actual seniors. This manipulation of vacancies can happen either through the manipulation of when training ends for these juniors or more directly.

I find that neither is true in this setting. First, a central agency, rather than the juniors,

selects the time when the juniors begin their first jobs. The start of the first job is based on the time that training ends and the time duration of training is fixed many months in advance of the actual training, by central agency for the whole cohort as per rules. Second, I test whether the quantity of vacancies change around the date when training ended and the junior cohort's first job began. Appendix [Table B.3](#) shows that it is not the case. Third, I also test whether any systematic characteristics of the district determine vacancy and tenure of incumbents. [Table B.4](#) presents the results. Results show that conditional on district and time fixed effects there are no systematic differences between districts with higher vacancies or districts with a longer tenure of incumbents.

I also investigate whether the power of potential seniors determines the junior's ability or their social ties. [Figure 5](#) plots coefficients (and 95% confidence intervals) from a regression of the covariates (standardized) on a dummy variable for whether the power of potential seniors is above median. It shows that there are no systematic differences across power of potential seniors in almost all baseline characteristics, except gender and languages spoken.<sup>21</sup> Most importantly, the power of potential seniors does not determine the tax performance of juniors at baseline and it is uncorrelated with our measure of social ties. The insignificance and low magnitude of the rest of the coefficients is also reassuring.

To test whether top tax ability is correlated with characteristics of the first job, [Table B.2](#) shows results from a regression of the characteristics of the first job on a dummy variable for whether the junior is a top 50% tax collector. To estimate the effects I collapsed the data at the level of the first job of the junior bureaucrat. Cohort fixed effects are included and standard errors are clustered at the cohort level. [Cameron et al., 2008](#) bootstrap  $p$ -values clustered at the cohort level are also presented in brackets. Results show that there is no correlation between the probability of being identified as a top tax collector in the first job and the size of the tax collection target or historical tax arrears in that job. The magnitude of the effect is close to zero with a  $p$ -value of almost 0.5. Being identified as a top tax collector is also uncorrelated with the probability of that job being in a large city. Despite this, to be more conservative, in all specifications I included a control for time trend of the first job.

Since I compare the careers of juniors with high and low ability (social ties) and those with more powerful relative to less powerful seniors, the design combines an instrumental variables approach with a differences-in-differences style strategy. As discussed before, the instrument is a continuous variable and does not switch on at a particular date. Therefore, carrying out a standard event study analysis to provide support for the parallel trends assumption is not possible. I use the approach suggested by [Callaway et al. \(2024\)](#) to

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<sup>21</sup>All specifications include these as controls.

aggregate the data over time and report the estimated treatment dose or treatment intensity response function. As suggested by [Callaway et al. \(2024\)](#), one needs to aggregate and create different intervals based on the treatment dosage by paying close attention to the effective sample size in each partition. I created discrete bins for the power of potential seniors, resulting in integer ranks ranging from zero to four. I then calculated the mean of fast-track promotions (with confidence intervals) for each integer value of senior power.

[Figure 6](#) and [Figure 7](#) plot these values, illustrating the average probability of fast-track promotions for juniors with above and below median tax-based ability and social ties, respectively. The vertical dashed line indicates the median power of potential seniors (2). The figures demonstrate that at lower power levels, the probability of fast-track promotions for various types of juniors follows a similar path. However, this dynamic changes notably once power exceeds the median. [Figure 6](#) and [Figure 7](#) provide strong support for the parallel trends assumption, indicating that the career trajectories of high and low ability (social ties) juniors in cohorts would have evolved similarly if not for the influence of powerful potential seniors.

### 3 Main results

In this section, I first present the main results concerning the effects of the power of seniors, based on the junior bureaucrat's tax-based ability and social ties with the seniors.

Following this, I test whether publicly known information about the junior's ability i.e., their recruitment exam rank influences these main results. As previously noted, organizations often rely on both private and public indicators of ability in promotion decisions. Examining how these signals influence decision-making has important policy implications. Moreover, numerous countries, including China, Brazil, and India, use competitive exams for bureaucratic recruitment, assessing their validity as measures of ability and their impact on promotion decisions is useful for shaping effective recruitment policies.

Results show that as seniors gain more power over the careers of junior bureaucrats, those who are above-median tax performers are more likely to be fast-tracked. This is not the case for those with above-median social ties with seniors. Moreover, publicly available measures of the junior's ability play no role in their long-term fast-track promotions.

### 3.1 Whether ability or social ties matter for fast-track promotions of juniors?

I first present results by pooling the data and conducting a simple means differences-in-differences analysis, where the continuous instrument — the power of potential seniors — is discretized as a dummy variable. This dummy variable takes the value of one when the average theoretical rank of potential seniors is above the median. Since this approach does not control for cohort or month-year fixed effects, the variation arises from all cohorts of juniors that seniors worked with during the juniors' first jobs. By considering juniors from across cohorts as potential candidates for promotion, rather than just comparing juniors of different abilities (social ties) within a cohort, we can assess the general meritocratic nature of promotion decisions by senior bureaucrats.

Table 3 and 4 present the results. In Table 3, we observe that seniors with above-median power are 17.8 percentage points more likely to promote an above-median tax performer compared to a below-median one. Conversely, the difference based on junior's ability is approximately zero for seniors with below-median power. The difference-in-difference amounts to 17.6 percentage points ( $p$ -value = 0.059).

Table 4 presents the differences-in-differences based on the junior's social ties with the seniors rather than ability. In this case, the effects are negative, though not statistically significant ( $p$ -value = 0.49). These results indicate that discretionary promotions are meritocratic.

While informative, the results in Table 3 and 4 do not account for cohort-specific unobserved heterogeneity or allow for time trends that may uniformly affect all cohorts of juniors but vary over time. Moreover, these results do not control for variables such as gender and languages spoken, which were unbalanced at baseline (see Figure 5). Therefore, next I turn to the regression results.

Table 5 and Table 6 present the Ordinary Least Squares (OLS), Instrumental Variables (IV), and Reduced Form (RF) results, respectively, utilizing the continuous measure of power of seniors and the estimation from the previous section. The IV results in Column 3 show that with an increase in power of seniors over the careers of juniors, above-median tax collectors are fast-tracked at a higher rate than those who are below median. The effects are statistically significant and economically meaningful (30% of the mean of fast-track promotions, *Wild* cluster bootstrapped  $p$ -value 0.04).<sup>22</sup>

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<sup>22</sup>In Column 3, the IV estimates exhibit a marginal increase (17.8 percentage points, *Wild* clustered bootstrapped  $p$ -value=0.03) relative to the OLS estimates in Column 1 (16.4 percentage points, *Wild* clustered bootstrapped  $p$ -value=0.03), implying minor negative selection that could downwardly influence the OLS outcomes.

Conversely, the results show that as seniors gain more power in the organization, juniors with above-median social ties to seniors have a statistically and economically insignificant likelihood of being fast-tracked. Column 6 presents results from a saturated model, including all variables, and these results remain robust. An increase in power leads to a higher likelihood of fast-track promotions for juniors with above-median tax-based ability compared to those with below-median ability. Social ties, however, play a negative, though insignificant, role in determining fast-track promotions.

The negative and insignificant IV and reduced form results for juniors with above median social ties are in line with [Fisman et al. \(2020\)](#) who show that sharing a hometown or college connection with an incumbent member of China's Politburo imposed a "connections penalty" owing to intra-factional competition.

Given that tax based ability carries important information about service delivery relative to social ties with seniors ([Table 1](#)), these results suggest that allowing discretion to seniors can improve the allocation of talent in the bureaucracy. These findings are notable, especially in light of the extensive literature highlighting organizational shortcomings within public sector bureaucracies in developing countries, where the misallocation of human resources is often driven by connections and patronage.

To further understand the results, I first investigate whether public information on the junior's ability plays a role in these decisions. This is followed by a discussion of promotions across different types of departments, aiming to shed further light on the incentives of seniors for discretionary promotions.

### **3.2 Does public information on juniors' abilities matter in promotion decisions?**

In this subsection, I investigate whether seniors use public information on juniors' abilities, specifically their exam rank, and whether the main results change when this information is included. To this end, I obtained the recruitment exam rankings of PAS bureaucrats from the Federal Public Service Commission (FPSC), the agency responsible for bureaucratic recruitment. These rankings are also published in newspapers. This dataset includes bureaucrats' names, the year of the exam, and their rank within their cohort. I leverage this information to gauge a junior's publicly observed ability.

The estimation follows [subsection 2.2](#) with the addition of a dummy variable that takes the value of one when a junior is above the median in their cohort in their exam rank, and zero otherwise, along with its interaction with the power of seniors.

Before presenting the regression results, I first test whether tax-based ability and social ties are correlated with exam rank. This helps to understand whether there are any trade-offs in using exam rank as a measure of juniors' abilities for promotion purposes. [Table B.5](#) presents the results and shows that while above-median exam performers are less likely to be above-median tax collectors, they are more likely to have above-median social ties with seniors. However, none of these effects are statistically significant. The data also shows that exam-based ability is not linked to other measures of service delivery indicating that promotions based purely on exam rank would not capture true merit.

[Table B.6](#) and [B.7](#) presents the OLS, IV and reduced form results, respectively. In all specifications, ability measured through exam rank does not seem to play an important role in discretionary promotions by seniors. The interaction of power of seniors and exam dummy are negative and statistically insignificant (*Wild* clustered bootstrapped  $p$ -values  $> 0.1$ ). Moreover, the main results for tax and social ties remain robust to the inclusion of exam based ability. These results further demonstrate the meritocratic nature of discretionary promotions in this context.

Next, I explore the mechanisms behind the main results by examining the promotions of juniors across different departments.

## 4 A discussion of the mechanisms: Promotions across departments

In this section, I investigate whether fast-track promotions are meritocratic across all types of departments - those in which any of the seniors from the junior's first job work and those in which there is no such senior. The presence of heterogeneity can not only illuminate the incentives of seniors for meritocratic promotions but also assist in determining if there exists an organizational norm that favors high performers.

A key parameter that determines whether the senior bureaucrats will make allocations based on ability rather than their social ties is the congruence of their preferences with the organization based on their incentives. While bureaucracies like the PAS do not employ explicit incentives to align incentives, implicit incentives have been shown to be important ([Ali, 2022](#); [Mohmand, 2019](#)).<sup>23</sup> Two such incentives could be competition between seniors

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<sup>23</sup>Studies have shown that in the PAS bureaucracy, substantial career incentives exist; nevertheless, counteracting factors are also at play. On one hand, politicians' chances of reelection are contingent on the effective delivery of services and resources, often relying on cooperative bureaucrats ([Mohmand, 2019](#)). Furthermore, [Ali \(2022\)](#) contends that in Punjab, politicians and bureaucrats collaboratively foster improved performance and establish "networks of effectiveness" through the expedited promotions of bureaucrats. Conversely, as

and their career concerns in the organization, and concerns for their reputation as referrers of juniors in the bureaucracy.

Studies have shown that career incentives are a driver of performance and innovation in public sector organizations (Teodoro, 2009; Dahlström and Lapuente, 2022). Theoretically, if the performance of junior members of the department significantly influences the career progression of senior bureaucrats, this can serve as a subtle incentive for seniors to prioritize promotions based on individual abilities rather than social connections (Prendergast and Topel, 1993).

If this is the case, then seniors' preferences align more closely with ability-based promotions within their own departments but not in departments that do not include them. Consequently, as seniors' power increases, there should be a higher likelihood of meritocratic promotions only within their departments. Additionally, high-ability juniors should be more likely to work in these departments.

While seniors' career concerns are important, bureaucrats also care about how others perceive them (Leaver, 2009; Raffler, 2022; Mattsson, 2023). Bureaucratic reputation concerns among other seniors can also be a driver of meritocracy.<sup>24</sup> Referring a low-ability junior for promotion can damage a senior bureaucrat's reputation within the bureaucracy. If this is the case, then it follows that promotions should be ability-based when discretion is exercised, particularly in departments that do not include seniors from the juniors' first job.<sup>25</sup> Moreover, with an increase in the power of seniors, high-ability juniors should be more likely to work in other seniors' departments.

In the absence of data on communications between seniors in different departments, the analysis can be considered a reduced form one in which I test whether with an increase in the power of seniors allocations of junior bureaucrats vary across departments of different types i.e., those in which any of the seniors from the junior's first job work and those in which there is no such senior.

I first investigate the movement of different types of junior bureaucrats across the two types of departments. I use an estimation similar to that in [subsection 2.2](#), where, instead of using fast-track promotions as the outcome, I use the outcome: whether junior is in the

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seniors ascend within the organizational hierarchy, they exercise greater discretion at a time when career incentives may no longer hold the same level of significance (Dewatripont et al., 1999a,b).

<sup>24</sup>While existing studies have focused on the importance of organizational reputation - a multi dimensional object (Carpenter and Krause, 2012; Bellodi, 2022) - in the public sector and shown that such reputations are an important determinant of the autonomy enjoyed by such organizations (Carpenter, 2000, 2002, 2004, 2014), in this paper I consider the individual bureaucrat's reputation concerns.

<sup>25</sup>It is possible that both types of incentives co-exist, in which case we should observe high-ability juniors being fast-tracked, irrespective of the types of departments. In this case we would not be able to tell apart whether meritocracy is just the norm or whether both types of incentives co-exist.

departments of any of the seniors from their first job. This is a dummy variable that equals one if, after excluding the first job, a junior bureaucrat works in the department of any of their seniors from the first job. Using this estimation I test whether, with changes in their power, seniors from the first job are more likely to bring in high-ability junior bureaucrats relative to those they share a hometown with. Table B.8 and Table B.9 present the OLS, IV, and reduced form results, respectively.

Across all specifications, with an increase in power of seniors above median tax performers are no more likely to work in any of the seniors' departments. These results are consistent with the idea that seniors' career incentives are not particularly strong. On the other hand, seniors with greater power are more likely to have a junior with whom they share social ties within their department. The magnitude of this effect exceeds that of the interaction between the senior's power and tax-based ability.<sup>26</sup>

While the magnitude of the effect is robust, I do not place significant emphasis on this result, as the *Wild* bootstrapped *p*-values for the coefficient exceed 0.1 in both the OLS and IV specifications. The key takeaway from this set of results is that an increase in seniors' discretion does not lead to a higher likelihood of working with high-ability juniors after the juniors' first job. However, there is a weakly positive effect with having a junior in their department with whom they share social ties.

Following this analysis, I subsequently present the results of fast-track promotions across different types of departments. I use the same estimation strategy as in subsection 2.2, but consider different outcomes i.e., fast-track promotions in departments in which any of the seniors from the junior's first job work and those in which there is no such senior. Note, that these outcomes are combinations of the junior's presence in a certain type of department and being fast-tracked by seniors in that department. Figure A.11 shows that in their first job by construction almost all junior bureaucrats work with their seniors,<sup>27</sup> this fraction drops substantially from the second job onward. Moreover, considering the career trajectory of each junior, the probability of working in any of their first senior's departments in the long run is 0.21. This indicates that juniors spend relatively less time in these departments, thereby reducing the power to detect effects in cases of fast-track promotions within the seniors' department compared to other department types.

With this caveat in mind, next, using an estimation similar to that in subsection 2.2, Table 7, Table 8, and Table 9 present OLS, IV, and reduced form results separately for

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<sup>26</sup>These results also support the use of shared hometowns as a measure of social ties between seniors and junior bureaucrats, indicating that it captures a meaningful connection.

<sup>27</sup>Seniors are those that work with juniors in the *first month* of their first job. Since seniors can move departments during the junior bureaucrats' first job spell, which lasts on average a year, this proportion is less than one.

fast-track promotions in other departments (Columns 1-3) and fast-track promotions in any seniors' departments (Columns 4-6).

The first takeaway from these results is that with an increase in power above median tax collecting juniors are 20 percentage points more likely to be fast-tracked when they work in departments that do not include any of the seniors from their first job (Table 8, Column 3). This effect is both statistically significant and economically meaningful (*Wild* cluster bootstrapped  $p$ -value is 0.08, and the effect is 71% of the mean of the dependent variable). On the other hand, juniors that share a hometown with the seniors from the first job are no more likely to be fast-tracked in departments that do not include such seniors. The effect of power for such juniors is negative, although not statistically significant (*Wild* clustered bootstrapped  $p$ -value  $> 0.1$  in all specifications). Overall, this suggests that senior bureaucrats care about their reputation when referring junior bureaucrats to other seniors for promotions.

The second key takeaway is that as seniors' power increases, juniors with above-median tax-based ability are not more likely to be fast-tracked in departments that include any of the seniors from their first job. This is the case across all specifications. Since seniors are no more likely to bring into their departments high-ability junior bureaucrats and they are no more likely to promote those that are in their departments, this suggests that seniors' career incentives are not the key driver of meritocracy in this setting.<sup>28</sup>

On the other hand, there is evidence of patronage within this bureaucracy, particularly in promotions by seniors within their own departments. Juniors with social ties to seniors are 11 percentage points more likely to be fast-tracked than others as the power of seniors increases. This effect, which is twice the mean, is statistically significant (*Wild* cluster bootstrapped  $p$ -value  $< 0.1$  in all specifications).<sup>29</sup>

Within the same organization, the same set of seniors make both meritocratic and patronage-based promotions, depending on the departments for which these decisions are made. The heterogeneity of promotions across departments rules out meritocracy as an organizational norm, underscoring the importance of aligning the incentives of decision-makers with those of the organization. While rule-based promotions could be a response to mitigate the costs of patronage-based promotions, another approach would be to align the incentives of those exercising discretion with the organization. As noted in

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<sup>28</sup>Note that this result can be a function of how power is defined in the context. While discretion increases with an increase in rank in the organization, career incentives fall. As opposed to career incentives, reputation benefits do not dilute with career advancement. These can be reaped both within and outside the civil services even at later stages of the career.

<sup>29</sup>Given that the average probability of a junior remaining in their initial senior's department is 0.21, the influence of patronage-based promotions is relatively lower compared to ability-based promotions in other departments. This results in an overall finding of meritocracy in discretionary promotions.

**Table 1**, tax-based ability is strongly correlated with other dimensions of service delivery. Thus, rule-based promotions impose costs on the organization by disregarding valuable information about ability in promotion decisions. Additionally, relying on rule-based promotions diminishes career incentives for lower-tier bureaucrats (Bertrand et al., 2020). This will not be the case with discretionary promotions.

These ideas have been previously explored in the context of private sector organizations. Existing evidence suggests that changing explicit incentives like moving from flat wages to piece rates (Bandiera et al., 2009b); moving from individual payments to team pay (Hjort, 2014); or increasing the cost of choosing a less productive worker on ethnic grounds (Hedegaard and Tyran, 2018), can affect whether agents act on their biases towards others in the workplace. The results in this paper suggests that rather than solely limiting discretion, these bureaucracies could enhance decision-making by assessing the alignment of decision-makers' incentives. Thoughtful application of discretion in situations where these incentives are aligned has the potential to improve allocations.

**Alternative interpretation.** A different interpretation of the results suggests that the advancement of juniors is not solely due to the discretion of the seniors. Instead, as seniors progress, they impart skills to juniors, which are correlated with the juniors' inherent abilities. This skill transfer enables juniors to be recognized and subsequently fast-tracked.

While plausible, these explanations seem unlikely in this context. First, the IV exploits the Minimum Length of Service Rules, which allow a senior's rank to rise at specific intervals—five, twelve, seventeen, and twenty-two years after entering service. It is improbable that seniors only become capable of transferring skills affecting juniors' careers at these distinct career milestones. Second, the probability of a junior spending time in any of the seniors' department is 0.21 and high-ability juniors are more likely to be fast-tracked in departments that do not include seniors from their first jobs. Together these suggest that such channels are less likely to be operative in this context.

## Conclusion

The study investigates the Pakistan Administrative Services (PAS), a critical bureaucracy responsible for delivering various public services in Pakistan. It examines whether a senior bureaucrat's ability to influence the career trajectory of a junior bureaucrat (discretionary promotion) is driven by their social ties (shared hometown) or the junior's innate ability based on their tax collection performance.

Surprisingly, the results show that discretionary promotions favor high-ability junior bureaucrats rather than those with whom senior bureaucrats share social ties. This suggests that meritocracy plays a role in promotion decisions, even in a setting characterized by high corruption, low transparency, and weak explicit incentives.

The paper contributes to the understanding of decision-making within public sector bureaucracies in developing countries in three key ways: It shifts focus from the traditional examination of connections between politicians and bureaucrats to exploring the relationships between bureaucrats within the same organization. Additionally, it elucidates how private information, such as a junior bureaucrat's tax based ability not recorded in official records, influences promotion decisions. Lastly, it emphasizes the significance of "embeddedness" or social relationships within the bureaucracy in shaping talent allocation.

The results in the paper demonstrate that discretion, when aligned with organizational goals, can significantly enhance talent allocation. By showing that senior bureaucrats can improve this allocation, the findings complement existing literature on the role of public sector managers in boosting workplace productivity ([Otero and Munoz, 2022](#); [Fenizia, 2022](#)). Given the critical role of bureaucratic capacity in industrial policy and economic growth ([Barteska, 2024](#); [Juhász et al., 2023](#)), such improvements have far-reaching implications.

However, the findings pertain to an elite bureaucracy characterized by rigorous selection. Further research is needed to explore whether similar patterns emerge in other bureaucratic contexts, such as those serving front-line roles. Understanding how to design institutions that effectively channel discretion towards merit-based outcomes remains a critical challenge for researchers and policymakers.

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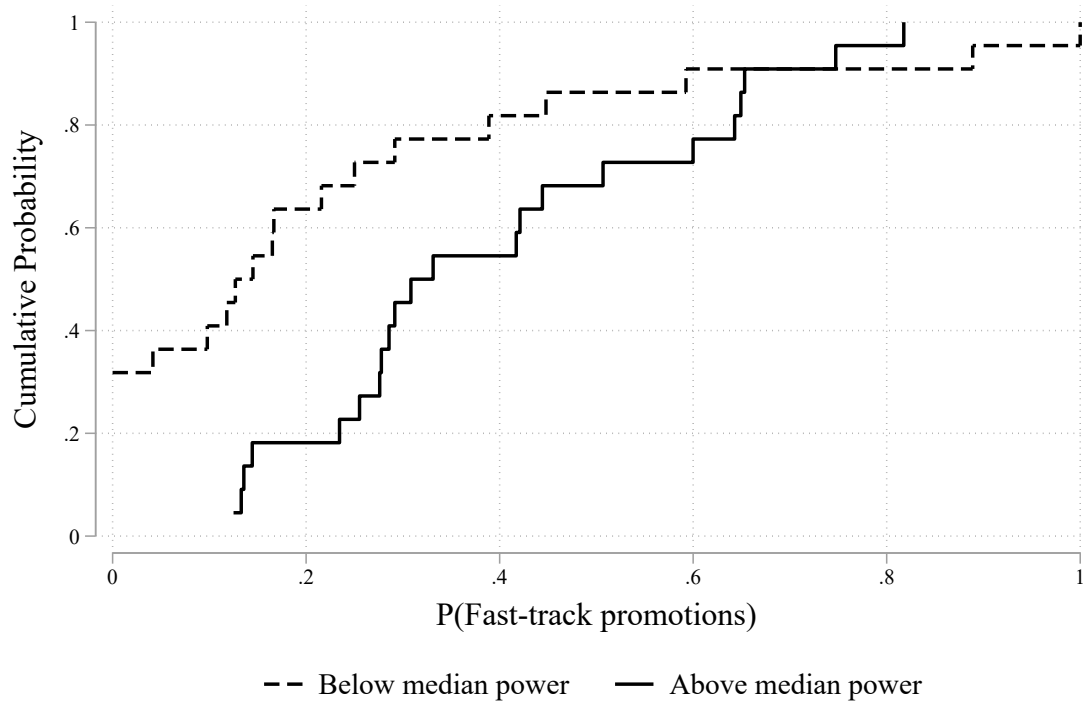
# Figures

Figure 1: Compliance with tenure policy



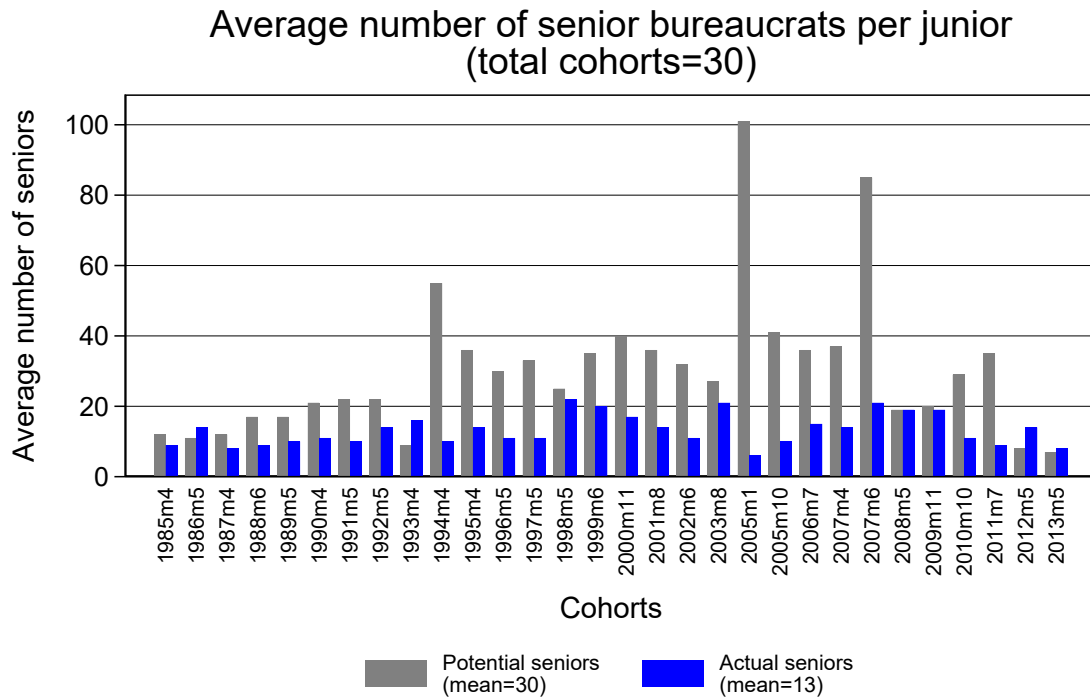
Notes: The figure illustrates the proportion of junior bureaucrats assigned to their first jobs and the tenure of the incumbents they replaced. It also indicates whether the positions were vacant when the juniors joined.

Figure 2: Fast-track promotions and power of potential seniors



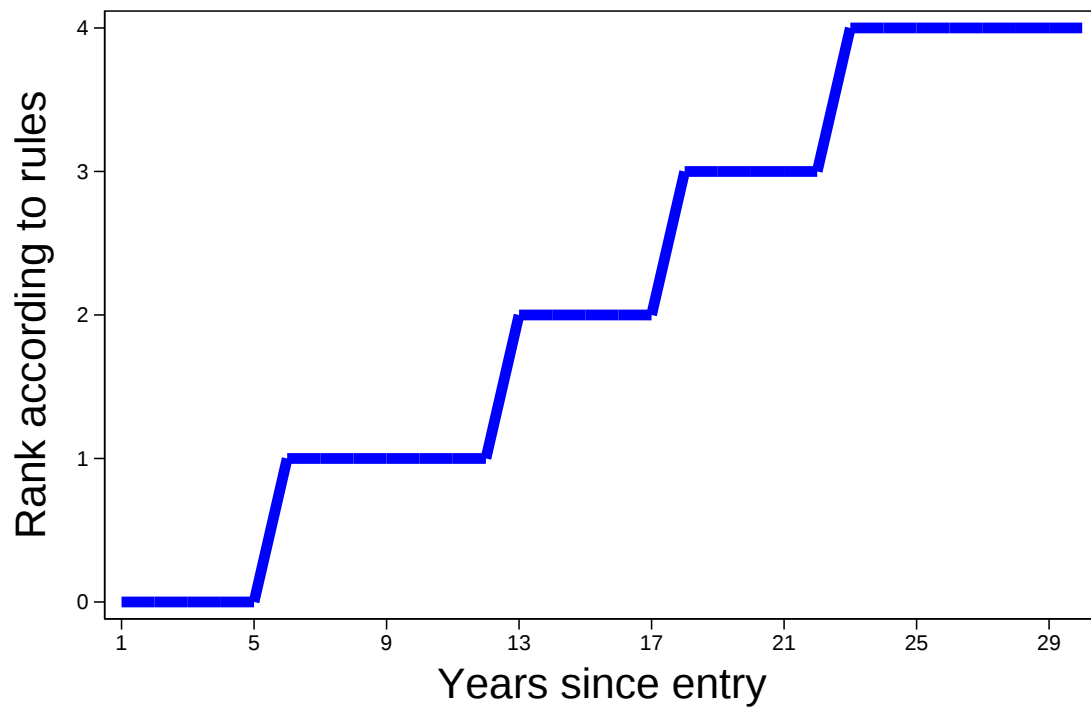
*Notes:* The figure illustrates the cumulative distribution function of fast-track promotions of junior bureaucrats whose potential seniors have above vs. below median power.

Figure 3: Seniors across cohorts



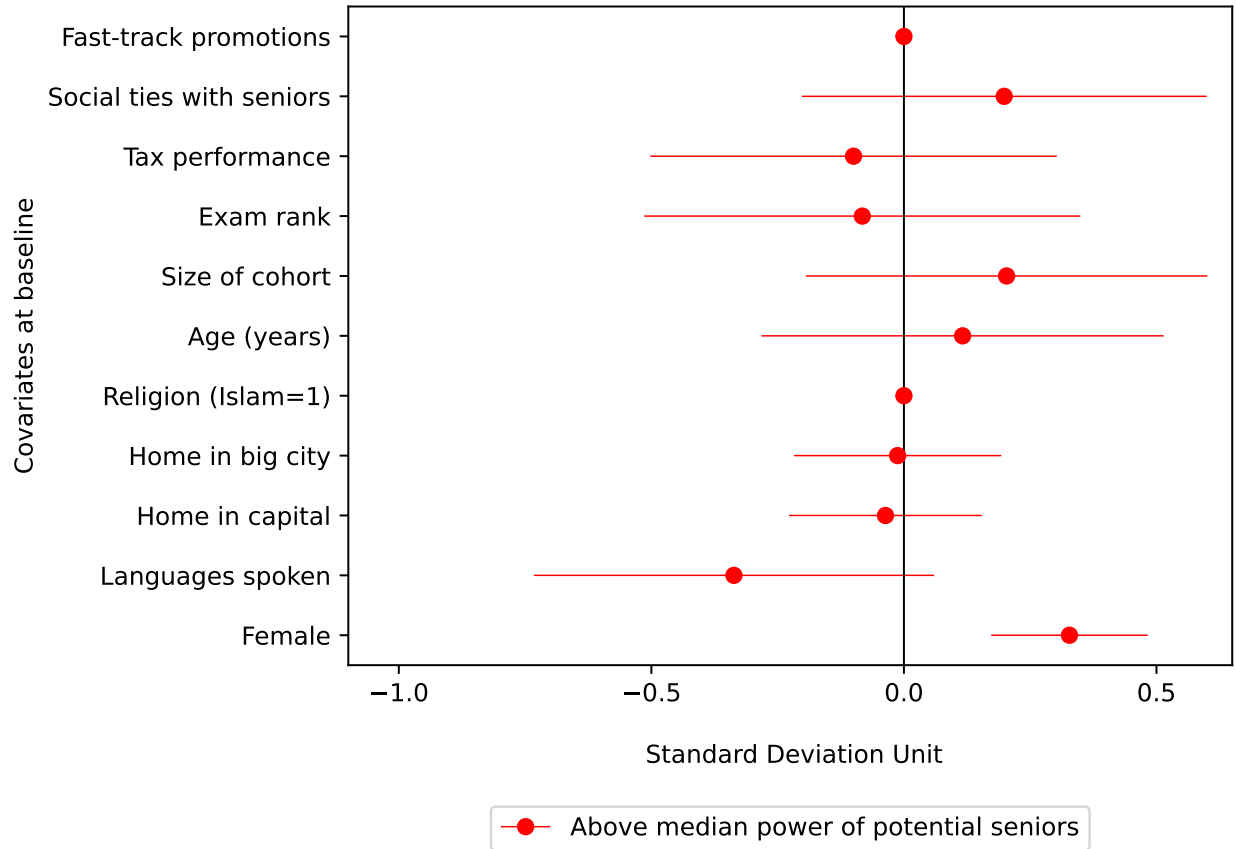
*Notes:* The figure displays the average number of senior bureaucrats per junior across various cohorts of juniors. “Actual seniors” refer to the bureaucrats who were already working in the districts at the time the junior bureaucrats began their first jobs. “Potential seniors” encompass bureaucrats working in districts with vacancies or where the incumbents, whom the juniors could potentially replace, had been in their positions for at least one year.

Figure 4: Rule-based careers of bureaucrats



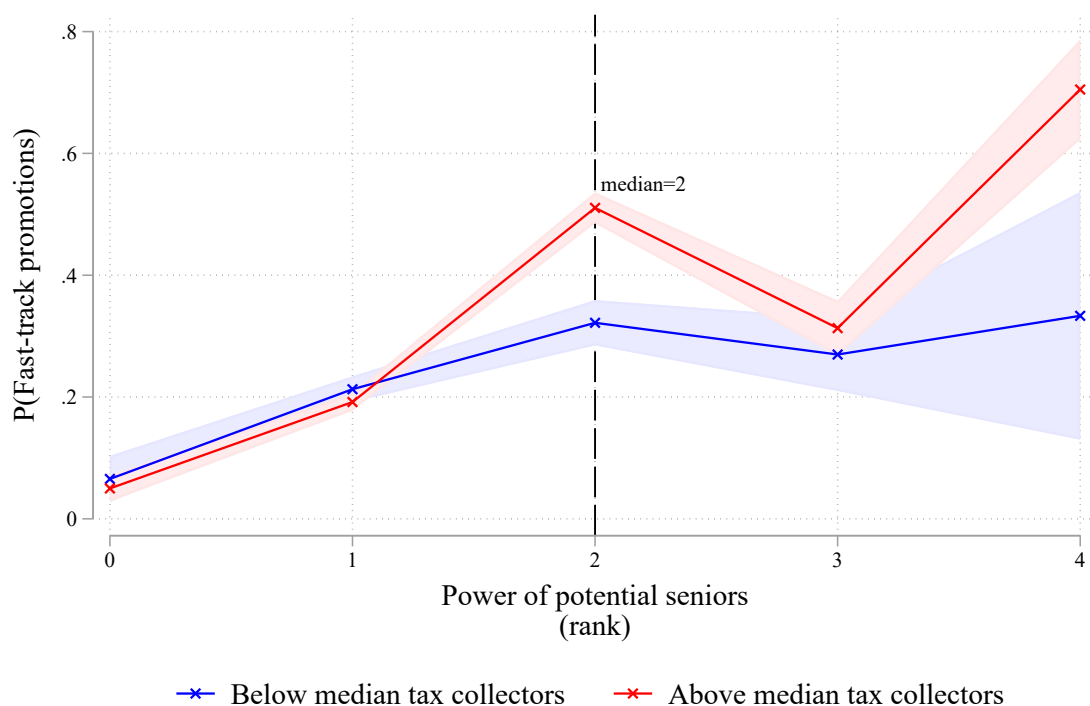
*Notes:* The figure illustrates the rank of bureaucrats based on the Minimum Length of Service Rules of the government. These rules allow the creation of the theoretical rise of potential seniors of junior bureaucrats.

Figure 5: Balance test of characteristics of junior bureaucrats



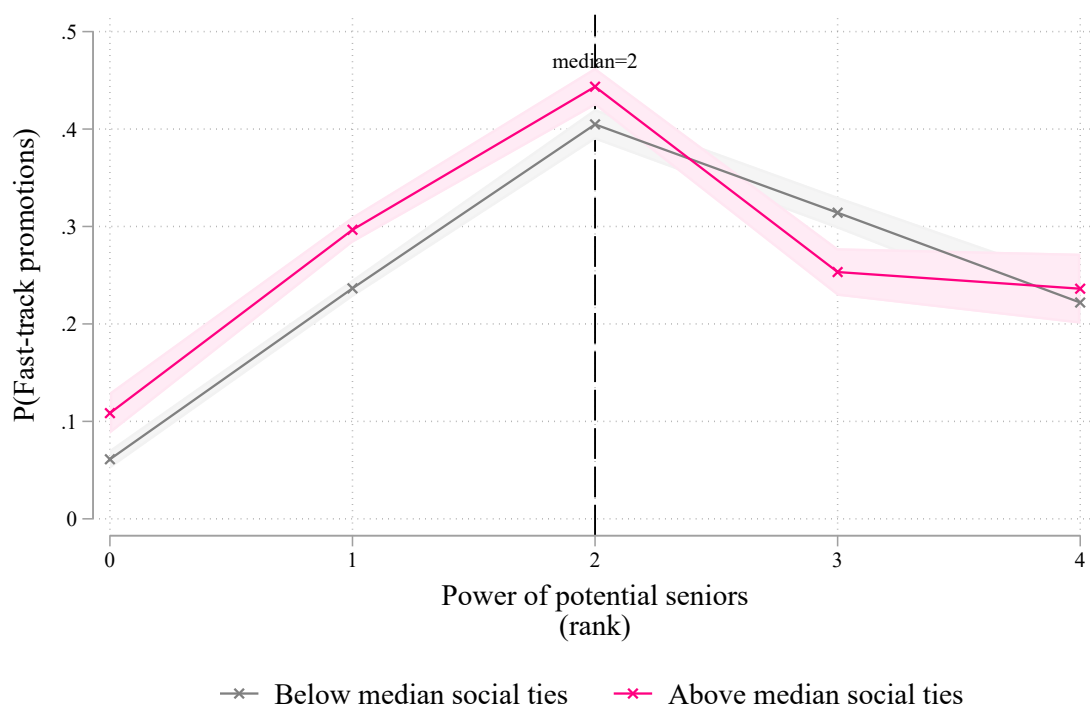
*Notes:* The figure plots the coefficients and 95% confidence intervals from a regression of junior bureaucrats' characteristics on a dummy variable indicating whether potential seniors have above-median power. All outcomes, except binary indicators (fast-track promotions, religion, home in a big city, home in the capital), are standardized. *Social ties* with seniors are the number of seniors from the junior's first job with whom junior bureaucrats share hometown. *Tax performance* is the average tax collected by junior bureaucrats in their first job as a fraction of the targets set. *Exam rank* is the rank of the junior bureaucrat in the civil service competitive recruitment exams. *Size of cohort* is the number of other bureaucrats recruited alongside the junior bureaucrats. *Languages spoken* are the total number of languages spoken by the bureaucrats. Tax performance data is sourced from BOR's historical tax records, exam rank and size of cohort are from FPSC's records, and all other data from the career charts of bureaucrats. Standard errors are clustered at the bureaucrat level.

Figure 6: Tax-based ability and careers of juniors by power of potential seniors



*Notes:* The figure plots the average probability, along with confidence intervals, of fast-track promotions for below-median tax-collecting juniors (blue) and above-median tax collectors (red), based on the power of potential seniors. The *power of potential seniors* refers to the average theoretical or rule-based rank of potential seniors. The dashed vertical line represents the median of the power of potential seniors (2).

Figure 7: Social ties and careers of juniors by power of potential seniors



*Notes:* The figure plots the average probability, along with confidence intervals, of fast-track promotions for below-median social ties juniors (gray) and above-median social ties (pink), based on the power of potential seniors. The *power of potential seniors* refers to the average theoretical or rule-based rank of potential seniors. The dashed vertical line represents the median of the power of potential seniors (2).

## Tables

Table 1: Correlation of the ability and social ties measures with other dimensions of service delivery

| Dependent variables:        | <i>Panel A: Tax performance</i>          |                                |                               |                                |
|-----------------------------|------------------------------------------|--------------------------------|-------------------------------|--------------------------------|
|                             | Subjective performance evaluation        | Attitude towards citizens      | Timeliness of service         | Whether corruption is present? |
|                             | (1)                                      | (2)                            | (3)                           | (4)                            |
| Above median tax collectors | 0.167<br>(0.230)<br>[0.44]               | 0.203***<br>(0.0306)<br>[0.00] | 0.147**<br>(0.0287)<br>[0.00] | -0.151**<br>(0.0265)<br>[0.00] |
| Observations                | 285                                      | 103                            | 103                           | 103                            |
| Clusters                    | 9                                        | 4                              | 4                             | 4                              |
| Dependent variables:        | <i>Panel B: Social ties with seniors</i> |                                |                               |                                |
|                             | Subjective performance evaluation        | Attitude towards citizens      | Timeliness of service         | Whether corruption is present? |
|                             | (1)                                      | (2)                            | (3)                           | (4)                            |
| Above median social ties    | -0.0818<br>(0.170)<br>[0.63]             | 0.0190<br>(0.0478)<br>[0.75]   | 0.0166<br>(0.0367)<br>[0.63]  | -0.0339<br>(0.0274)<br>[0.50]  |
| Observations                | 285                                      | 103                            | 103                           | 103                            |
| Clusters                    | 9                                        | 4                              | 4                             | 4                              |

Notes. Data for the first column is restricted to junior's subjective evaluation when they head the revenue department in the sub-district. Estimation in the last 3 columns are based on the set of citizens who received services from the junior bureaucrats' subordinates. Month-year fixed effects are included in all columns. Columns (2)-(4) includes district fixed effects. No other controls are included. Standard errors, clustered at the cohort level, are in parenthesis. Wild clustered bootstrap  $p$ -values with 10,000 replications are shown in square brackets. Significance levels are denoted as: \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

Table 2: First stage: Whether ability or social ties matter for fast-track promotions of juniors?

| Dependent Variable:                             | Power of seniors    |                      |
|-------------------------------------------------|---------------------|----------------------|
|                                                 | (1)                 | (2)                  |
| Power of potential seniors                      | 0.717***<br>(0.101) | 0.669***<br>(0.102)  |
| Tax                                             |                     | -0.0350*<br>(0.0206) |
| Power of potential seniors $\times$ Tax         |                     | -0.00186<br>(0.0535) |
| Social ties                                     |                     | -0.00119<br>(0.0128) |
| Power of potential seniors $\times$ Social ties |                     | 0.0782<br>(0.0719)   |
| AP F Statistic-I                                | 50.9                | 104.5                |
| AP F Statistic-II                               |                     | 621.5                |
| AP F Statistic-III                              |                     | 630.7                |
| Controls                                        | Yes                 | Yes                  |
| Cohort FE                                       | Yes                 | Yes                  |
| Month year FE                                   | Yes                 | Yes                  |
| Observations                                    | 5482                | 5482                 |
| Clusters                                        | 30                  | 30                   |
| Dep var mean                                    | 0.34                | 0.34                 |

*Notes:* This table displays the results from the first stage of the instrument: power of potential seniors on the endogenous regressor power of seniors. *Power of potential seniors* is the average rule-based rank of potential seniors from the first job, while *Power of seniors* is the mean official rank of seniors from the first month of the first job of the junior bureaucrat. For ease of interpretation, both variables are demeaned by subtracting the average value of each variable for each junior bureaucrat. *Tax* is a dummy variables that takes a value of one if the junior is in the top 50% of their cohort in tax collection in their first job. *Social ties* is a dummy variable that takes the value of one if the junior bureaucrat has above median number of social ties with their seniors from the first job. Controls include the annual time trend of the first job, a dummy variable for female bureaucrats, the total number of languages spoken by juniors, the experience, experience squared and the official rank of the junior, and a dummy variable for whether the job is in the field offices. Angrist and Pischke (2009) F-statistic is reported at the bottom. All specifications exclude the first job of junior bureaucrats. Standard errors, clustered at the cohort level, are in parenthesis. Significance levels are denoted as: \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

Table 3: Average fast-track promotions of high- and low-ability junior bureaucrats based on the power of their potential seniors

|                                             | Tax performance        |                        |                    |
|---------------------------------------------|------------------------|------------------------|--------------------|
|                                             | Above<br>median<br>tax | Below<br>median<br>tax | Difference         |
| <b>Promotion power of potential seniors</b> |                        |                        |                    |
| Above median power                          | 0.508***<br>(0.000)    | 0.330***<br>(0.000)    | 0.178**<br>(0.049) |
| Below median power                          | 0.236***<br>(0.000)    | 0.234***<br>(0.000)    | 0.002**<br>(0.04)  |
| Difference                                  | 0.272**<br>(0.002)     | 0.096**<br>(0.049)     | 0.176*<br>(0.059)  |

*Notes:* This table displays average fast-track promotions of different types of junior bureaucrats, where the continuous instrument, the power of potential seniors, is discretized as a dummy variable. This dummy variable takes the value of one when the average theoretical rank of potential seniors is above the median. Each cell displays the average fast-track promotions of junior bureaucrats with  $p$ -values reported in parenthesis. Fast-track promotions is defined as a dummy variable that takes a value of one whenever the junior bureaucrat is fast-tracked and remains zero otherwise. Column 1 shows the average fast-track promotions when the junior bureaucrat is in the top 50% of their cohort in tax collection in their first job. Column 2 shows the average fast-track promotions when the junior bureaucrat is in the bottom 50% of their cohort in tax collection in their first job. No controls variables were included. All specifications exclude the first job of junior bureaucrats. Standard errors were clustered at the cohort level. Significance levels are denoted as: \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

Table 4: Average fast-track promotions of high- and low-social ties junior bureaucrats based on the power of their potential seniors

|                                             | Social ties with seniors |                         |                   |
|---------------------------------------------|--------------------------|-------------------------|-------------------|
|                                             | Above<br>median<br>ties  | Below<br>median<br>ties | Difference        |
| <b>Promotion power of potential seniors</b> |                          |                         |                   |
| Above median power                          | 0.446***<br>(0.000)      | 0.467***<br>(0.000)     | -0.021<br>(0.847) |
| Below median power                          | 0.276***<br>(0.000)      | 0.208***<br>(0.000)     | 0.068<br>(0.251)  |
| Difference                                  | 0.17<br>(0.847)          | 0.208***<br>(0.000)     | -0.089<br>(0.490) |

*Notes:* This table displays average fast-track promotions of different types of junior bureaucrats, where the continuous instrument, the power of potential seniors, is discretized as a dummy variable. This dummy variable takes the value of one when the average theoretical rank of potential seniors is above the median. Each cell displays the average fast-track promotions of junior bureaucrats with  $p$ -values reported in parenthesis. Fast-track promotions is defined as a dummy variable that takes a value of one whenever the junior bureaucrat is fast-tracked and remains zero otherwise. Column 1 shows the average fast-track promotions when the junior bureaucrat is in the top 50% of their cohort in the number of social ties (shared hometown) with seniors from their first job. Column 2 shows the average fast-track promotions when the junior bureaucrat is in the bottom 50% of their cohort in the number of social ties (shared hometown) with seniors from their first job. No controls variables were included. All specifications exclude the first job of junior bureaucrats. Standard errors were clustered at the cohort level. Significance levels are denoted as: \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

Table 5: OLS and IV results: Whether ability or social ties matter for fast-track promotions of juniors?

| Dependent Variables:                  | Fast-track promotions         |                               |                                |                               |                               |                               |
|---------------------------------------|-------------------------------|-------------------------------|--------------------------------|-------------------------------|-------------------------------|-------------------------------|
|                                       | (1)<br>(OLS)                  | (2)<br>(OLS)                  | (3)<br>(IV)                    | (4)<br>(IV)                   | (5)<br>(OLS)                  | (6)<br>(IV)                   |
| Power of seniors                      | -0.0845<br>(0.116)<br>[0.52]  | 0.0558<br>(0.0825)<br>[0.49]  | -0.0746<br>(0.180)<br>[0.71]   | 0.0136<br>(0.163)<br>[0.94]   | -0.0425<br>(0.0972)<br>[0.67] | -0.0486<br>(0.181)<br>[0.82]  |
| Tax                                   | 0.0636<br>(0.0559)<br>[0.31]  |                               | 0.0648<br>(0.0587)<br>[0.35]   |                               | 0.0782<br>(0.0607)<br>[0.27]  | 0.0817<br>(0.0644)<br>[0.33]  |
| Power of seniors $\times$ Tax         | 0.164**<br>(0.0680)<br>[0.03] |                               | 0.178***<br>(0.0558)<br>[0.04] |                               | 0.184**<br>(0.0797)<br>[0.03] | 0.184**<br>(0.0777)<br>[0.08] |
| Social ties                           |                               | -0.0588<br>(0.0856)<br>[0.55] |                                | -0.0642<br>(0.0839)<br>[0.53] | -0.0737<br>(0.0776)<br>[0.42] | -0.0793<br>(0.0754)<br>[0.42] |
| Power of seniors $\times$ Social ties |                               | -0.0411<br>(0.0858)<br>[0.66] |                                | 0.0309<br>(0.0847)<br>[0.75]  | -0.0816<br>(0.0895)<br>[0.41] | -0.0233<br>(0.101)<br>[0.86]  |
| Controls                              | Yes                           | Yes                           | Yes                            | Yes                           | Yes                           | Yes                           |
| Cohort FE                             | Yes                           | Yes                           | Yes                            | Yes                           | Yes                           | Yes                           |
| Month year FE                         | Yes                           | Yes                           | Yes                            | Yes                           | Yes                           | Yes                           |
| Observations                          | 5482                          | 5482                          | 5482                           | 5482                          | 5482                          | 5482                          |
| Clusters                              | 30                            | 30                            | 30                             | 30                            | 30                            | 30                            |
| Dep var mean                          | 0.34                          | 0.34                          | 0.34                           | 0.34                          | 0.34                          | 0.34                          |

*Notes:* This table displays the results from running an OLS and an IV regression using the instrument: *Power of potential seniors* which is the average rule-based rank of potential seniors from the first job. *Power of seniors* is the mean official rank of seniors from the first month of the first job of the junior bureaucrat. For ease of interpretation, both variables were demeaned by subtracting the average value of each variable for each junior bureaucrat. *Tax* is a dummy variables that takes a value of one if the junior is in the top 50% of their cohort in tax collection in their first job. *Social ties* is a dummy variable that takes the value of one if the junior bureaucrat has above median number of social ties with their seniors from the first job. *Fast – track promotions* is a dummy variable that takes a value of one whenever the junior bureaucrat is fast-tracked and remains zero otherwise. Controls include the annual time trend of the first job, a dummy variable for female bureaucrats, the total number of languages spoken by juniors, the experience, experience squared and the official rank of the junior, and a dummy variable for whether the job is in the field offices. All specifications exclude the first job of junior bureaucrats. Standard errors, clustered at the cohort level, are in parenthesis. Wild clustered bootstrap *p*-values with 10,000 replications are shown in square brackets. Significance levels are denoted as: \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

Table 6: Reduced form results: Whether ability or social ties matter for fast-track promotions of juniors?

| Dependent Variables:                            | Fast-track promotions          |                               |                               |
|-------------------------------------------------|--------------------------------|-------------------------------|-------------------------------|
|                                                 | (1)                            | (2)                           | (3)                           |
| Power of potential seniors                      | -0.0682<br>(0.136)<br>[0.68]   | 0.00796<br>(0.119)<br>[0.95]  | -0.0521<br>(0.134)<br>[0.73]  |
| Tax                                             | 0.0632<br>(0.0603)<br>[0.35]   |                               | 0.0801<br>(0.0657)<br>[0.31]  |
| Power of potential seniors $\times$ Tax         | 0.144***<br>(0.0489)<br>[0.00] |                               | 0.147**<br>(0.0688)<br>[0.05] |
| Social ties                                     |                                | -0.0642<br>(0.0874)<br>[0.53] | -0.0814<br>(0.0804)<br>[0.40] |
| Power of potential seniors $\times$ Social ties |                                | 0.0273<br>(0.0761)<br>[0.74]  | -0.0103<br>(0.0904)<br>[0.92] |
| Controls                                        | Yes                            | Yes                           | Yes                           |
| Cohort FE                                       | Yes                            | Yes                           | Yes                           |
| Month year FE                                   | Yes                            | Yes                           | Yes                           |
| Observations                                    | 5482                           | 5482                          | 5482                          |
| Clusters                                        | 30                             | 30                            | 30                            |
| Dep var mean                                    | 0.34                           | 0.34                          | 0.34                          |

*Notes:* This table displays the results from a reduced form of the IV regression. The instrument *Power of potential seniors* is the average rule-based rank of potential seniors from the first job. For ease of interpretation, the instrument was demeaned by subtracting the average value of each variable for each junior bureaucrat. *Tax* is a dummy variables that takes a value of one if the junior is in the top 50% of their cohort in tax collection in their first job. *Social ties* is a dummy variable that takes the value of one if the junior bureaucrat has above median number of social ties with their seniors from the first job. *Fast – track promotions* is a dummy variable that takes a value of one whenever the junior bureaucrat is fast-tracked and remains zero otherwise. Controls include the annual time trend of the first job, a dummy variable for female bureaucrats, the total number of languages spoken by juniors, the experience, experience squared and the official rank of the junior, and a dummy variable for whether the job is in the field offices. All specifications exclude the first job of junior bureaucrats. Standard errors, clustered at the cohort level, are in parenthesis. Wild clustered bootstrap *p*-values with 10,000 replications are shown in square brackets. Significance levels are denoted as: \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

Table 7: Department results: OLS effects on being fast tracked in different departments

| Dependent Variables:                  | Fast tracked in<br>other departments |                               |                               | Fast tracked in<br>any seniors' departments |                                |                                |
|---------------------------------------|--------------------------------------|-------------------------------|-------------------------------|---------------------------------------------|--------------------------------|--------------------------------|
|                                       | (1)                                  | (2)                           | (3)                           | (4)                                         | (5)                            | (6)                            |
| Power of seniors                      | -0.0883<br>(0.122)<br>[0.52]         | 0.0790<br>(0.0699)<br>[0.26]  | -0.0224<br>(0.0947)<br>[0.81] | 0.0216<br>(0.0232)<br>[0.38]                | -0.0133<br>(0.0445)<br>[0.78]  | -0.0213<br>(0.0388)<br>[0.60]  |
| Tax                                   | 0.0536<br>(0.0484)<br>[0.28]         |                               | 0.0653<br>(0.0511)<br>[0.23]  | 0.0172<br>(0.0274)<br>[0.59]                |                                | 0.0156<br>(0.0359)<br>[0.71]   |
| Power of seniors $\times$ Tax         | 0.147**<br>(0.0698)<br>[0.10]        |                               | 0.184**<br>(0.0805)<br>[0.05] | 0.0463<br>(0.0286)<br>[0.18]                |                                | 0.0188<br>(0.0320)<br>[0.59]   |
| Social ties                           |                                      | -0.0506<br>(0.0802)<br>[0.58] | -0.0624<br>(0.0696)<br>[0.44] |                                             | 0.0154<br>(0.0414)<br>[0.73]   | 0.0121<br>(0.0484)<br>[0.83]   |
| Power of seniors $\times$ Social ties |                                      | -0.104<br>(0.106)<br>[0.40]   | -0.145<br>(0.106)<br>[0.24]   |                                             | 0.108***<br>(0.0355)<br>[0.00] | 0.104***<br>(0.0373)<br>[0.00] |
| Controls                              | Yes                                  | Yes                           | Yes                           | Yes                                         | Yes                            | Yes                            |
| Cohort FE                             | Yes                                  | Yes                           | Yes                           | Yes                                         | Yes                            | Yes                            |
| Month year FE                         | Yes                                  | Yes                           | Yes                           | Yes                                         | Yes                            | Yes                            |
| Observations                          | 5482                                 | 5482                          | 5482                          | 5482                                        | 5482                           | 5482                           |
| Clusters                              | 30                                   | 30                            | 30                            | 30                                          | 30                             | 30                             |
| Dep var mean                          | 0.28                                 | 0.28                          | 0.28                          | 0.069                                       | 0.069                          | 0.069                          |

*Notes:* This table displays the results from running an OLS regression with *Power of seniors* as the endogeneous regressor. It is defined as the mean official rank of seniors from the first month of the first job of the junior bureaucrat. For ease of interpretation, it was demeaned by subtracting the average value of each variable for each junior bureaucrat. *Tax* is a dummy variables that takes a value of one if the junior is in the top 50% of their cohort in tax collection in their first job. *Social ties* is a dummy variable that takes the value of one if the junior bureaucrat has above median number of social ties with their seniors from the first job. *Fast – tracked in other departments* is a dummy variable that takes a value of one whenever the junior bureaucrat is fast-tracked in departments that do not include any of the seniors from the junior's first job, and remains zero otherwise. *Fast – tracked in any seniors' departments* is a dummy variable that takes a value of one whenever the junior bureaucrat is fast-tracked and is working in a department that includes any of the seniors from the junior's first job, and remains zero otherwise. Controls include the annual time trend of the first job, a dummy variable for female bureaucrats, the total number of languages spoken by juniors, the experience, experience squared and the official rank of the junior, and a dummy variable for whether the job is in the field offices. All specifications exclude the first job of junior bureaucrats. Standard errors, clustered at the cohort level, are in parenthesis. Wild clustered bootstrap *p*-values with 10,000 replications are shown in square brackets. Significance levels are denoted as: \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

Table 8: Department results: IV effects on being fast tracked in different departments

| Dependent Variables:                  | Fast tracked in<br>other departments |                             |                              | Fast tracked in<br>any seniors' departments |                              |                              |
|---------------------------------------|--------------------------------------|-----------------------------|------------------------------|---------------------------------------------|------------------------------|------------------------------|
|                                       | (1)                                  | (2)                         | (3)                          | (4)                                         | (5)                          | (6)                          |
| Power of seniors                      | -0.062<br>(0.177)<br>[0.77]          | 0.065<br>(0.156)<br>[0.72]  | -0.010<br>(0.171)<br>[0.95]  | -0.017<br>(0.069)<br>[0.88]                 | -0.068<br>(0.089)<br>[0.66]  | -0.057<br>(0.083)<br>[0.62]  |
| Tax                                   | 0.056<br>(0.050)<br>[0.30]           |                             | 0.069<br>(0.053)<br>[0.25]   | 0.014<br>(0.028)<br>[0.71]                  |                              | 0.012<br>(0.037)<br>[0.81]   |
| Power of seniors $\times$ Tax         | 0.165***<br>(0.055)<br>[0.03]        |                             | 0.200**<br>(0.080)<br>[0.08] | 0.025<br>(0.028)<br>[0.51]                  |                              | -0.011<br>(0.033)<br>[0.79]  |
| Social ties                           |                                      | -0.055<br>(0.077)<br>[0.55] | -0.066<br>(0.066)<br>[0.38]  |                                             | 0.016<br>(0.041)<br>[0.73]   | 0.013<br>(0.048)<br>[0.83]   |
| Power of seniors $\times$ Social ties |                                      | -0.055<br>(0.107)<br>[0.67] | -0.114<br>(0.118)<br>[0.43]  |                                             | 0.111**<br>(0.047)<br>[0.07] | 0.114**<br>(0.050)<br>[0.05] |
| Controls                              | Yes                                  | Yes                         | Yes                          | Yes                                         | Yes                          | Yes                          |
| Cohort FE                             | Yes                                  | Yes                         | Yes                          | Yes                                         | Yes                          | Yes                          |
| Month year FE                         | Yes                                  | Yes                         | Yes                          | Yes                                         | Yes                          | Yes                          |
| Observations                          | 5482                                 | 5482                        | 5482                         | 5482                                        | 5482                         | 5482                         |
| Clusters                              | 30                                   | 30                          | 30                           | 30                                          | 30                           | 30                           |
| Dep var mean                          | 0.28                                 | 0.28                        | 0.28                         | 0.069                                       | 0.069                        | 0.069                        |

Notes: This table displays the results from running an IV regression using the instrument: *Power of potential seniors* which is the average rule-based rank of potential seniors from the first job. *Power of seniors* is the endogeneous regressor and it is defined as the mean official rank of seniors from the first month of the first job of the junior bureaucrat. For ease of interpretation, it was demeaned by subtracting the average value of each variable for each junior bureaucrat. *Tax* is a dummy variables that takes a value of one if the junior is in the top 50% of their cohort in tax collection in their first job. *Social ties* is a dummy variable that takes the value of one if the junior bureaucrat has above median number of social ties with their seniors from the first job. *Fast – tracked in other departments* is a dummy variable that takes a value of one whenever the junior bureaucrat is fast-tracked in departments that dont include any of the seniors from the junior's first job, and remains zero otherwise. *Fast – tracked in any seniors' departments* is a dummy variable that takes a value of one whenever the junior bureaucrat is fast-tracked and is working in a department that includes any of the seniors from the junior's first job, and remains zero otherwise. Controls include the annual time trend of the first job, a dummy variable for female bureaucrats, the total number of languages spoken by juniors, the experience, experience squared and the official rank of the junior, and a dummy variable for whether the job is in the field offices. All specifications exclude the first job of junior bureaucrats. Standard errors, clustered at the cohort level, are in parenthesis. Wild clustered bootstrap  $p$ -values with 10,000 replications are shown in square brackets. Significance levels are denoted as: \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

Table 9: Department results: Reduced form effects on being fast tracked in different departments

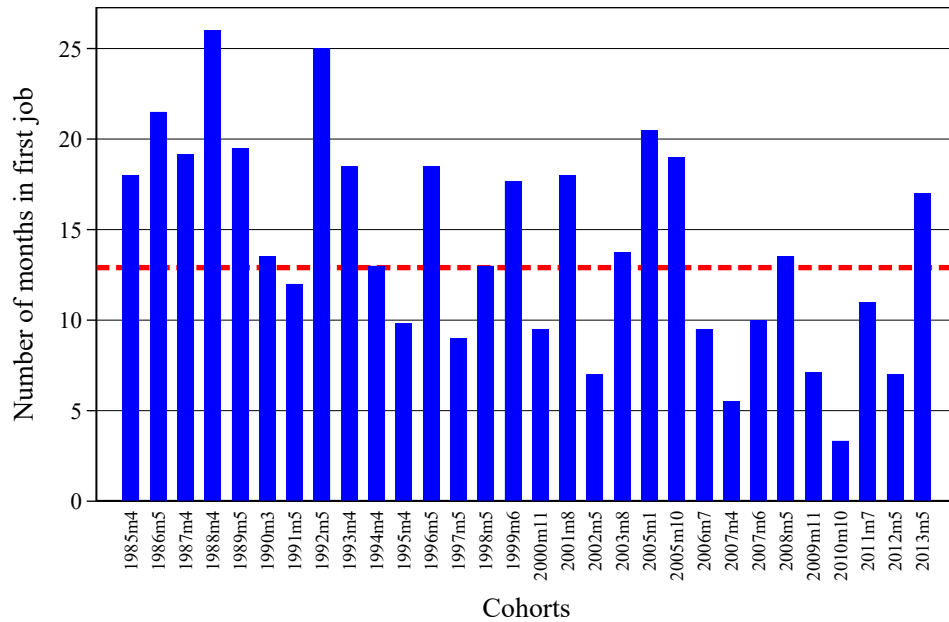
| Dependent Variables:                      | Fast tracked in<br>other departments |                             |                              | Fast tracked in<br>any seniors' departments |                              |                              |
|-------------------------------------------|--------------------------------------|-----------------------------|------------------------------|---------------------------------------------|------------------------------|------------------------------|
|                                           | (1)                                  | (2)                         | (3)                          | (4)                                         | (5)                          | (6)                          |
| Power of pot seniors'                     | -0.059<br>(0.136)<br>[0.76]          | 0.046<br>(0.115)<br>[0.70]  | -0.023<br>(0.127)<br>[0.86]  | -0.014<br>(0.049)<br>[0.84]                 | -0.050<br>(0.065)<br>[0.55]  | -0.064<br>(0.075)<br>[0.52]  |
| Tax                                       | 0.054<br>(0.051)<br>[0.30]           |                             | 0.068<br>(0.054)<br>[0.24]   | 0.014<br>(0.028)<br>[0.70]                  |                              | 0.011<br>(0.039)<br>[0.83]   |
| Power of pot seniors $\times$ Tax         | 0.133***<br>(0.047)<br>[0.00]        |                             | 0.158**<br>(0.072)<br>[0.04] | 0.020<br>(0.025)<br>[0.48]                  |                              | -0.004<br>(0.027)<br>[0.91]  |
| Social ties                               |                                      | -0.055<br>(0.082)<br>[0.56] | -0.070<br>(0.071)<br>[0.41]  |                                             | 0.017<br>(0.043)<br>[0.71]   | 0.006<br>(0.044)<br>[0.90]   |
| Power of pot seniors $\times$ Social ties |                                      | -0.041<br>(0.096)<br>[0.71] | -0.083<br>(0.106)<br>[0.54]  |                                             | 0.089**<br>(0.037)<br>[0.01] | 0.095**<br>(0.039)<br>[0.03] |
| Controls                                  | Yes                                  | Yes                         | Yes                          | Yes                                         | Yes                          | Yes                          |
| Cohort FE                                 | Yes                                  | Yes                         | Yes                          | Yes                                         | Yes                          | Yes                          |
| Month year FE                             | Yes                                  | Yes                         | Yes                          | Yes                                         | Yes                          | Yes                          |
| Observations                              | 5482                                 | 5482                        | 5482                         | 5482                                        | 5482                         | 5482                         |
| Clusters                                  | 30                                   | 30                          | 30                           | 30                                          | 30                           | 30                           |
| Dep var mean                              | 0.28                                 | 0.28                        | 0.28                         | 0.069                                       | 0.069                        | 0.069                        |

*Notes:* This table displays the results from a reduced form of the IV regression. The instrument *Power of potential seniors* is the average rule-based rank of potential seniors from the first job. For ease of interpretation, the instrument was demeaned by subtracting the average value of each variable for each junior bureaucrat. *Tax* is a dummy variables that takes a value of one if the junior is in the top 50% of their cohort in tax collection in their first job. *Social ties* is a dummy variable that takes the value of one if the junior bureaucrat has above median number of social ties with their seniors from the first job. *Fast – tracked in other departments* is a dummy variable that takes a value of one whenever the junior bureaucrat is fast-tracked in departments that dont include any of the seniors from the junior's first job, and remains zero otherwise. *Fast – tracked in any seniors' departments* is a dummy variable that takes a value of one whenever the junior bureaucrat is fast-tracked and is working in a department that includes any of the seniors from the junior's first job, and remains zero otherwise. Controls include the annual time trend of the first job, a dummy variable for female bureaucrats, the total number of languages spoken by juniors, the experience, experience squared and the official rank of the junior, and a dummy variable for whether the job is in the field offices. All specifications exclude the first job of junior bureaucrats. Standard errors, clustered at the cohort level, are in parenthesis. Wild clustered bootstrap *p*-values with 10,000 replications are shown in square brackets. Significance levels are denoted as: \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

## Part A

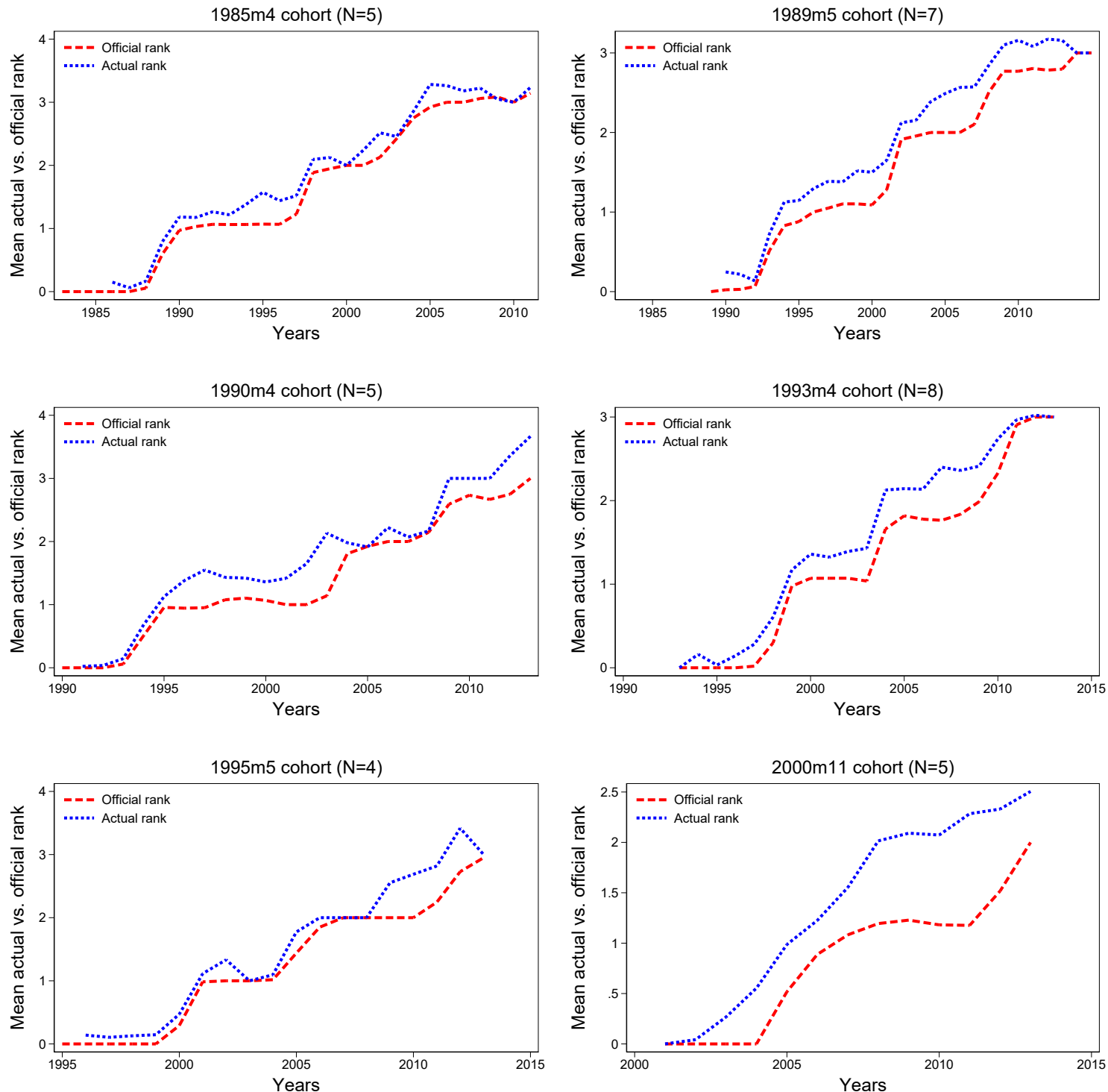
# Appendix Figures

Figure A.1: Average duration of junior bureaucrats in their first job across cohorts



*Notes.* This figure shows the average number of months spent in the first job for different cohorts that were hired between 1983-2013 and started their training between 1985-2013. Each bar represents the mean duration for a specific cohort year. Red dotted line is the overall mean (12.9).

Figure A.2: Official and fast-track careers of some of the cohorts of bureaucrats



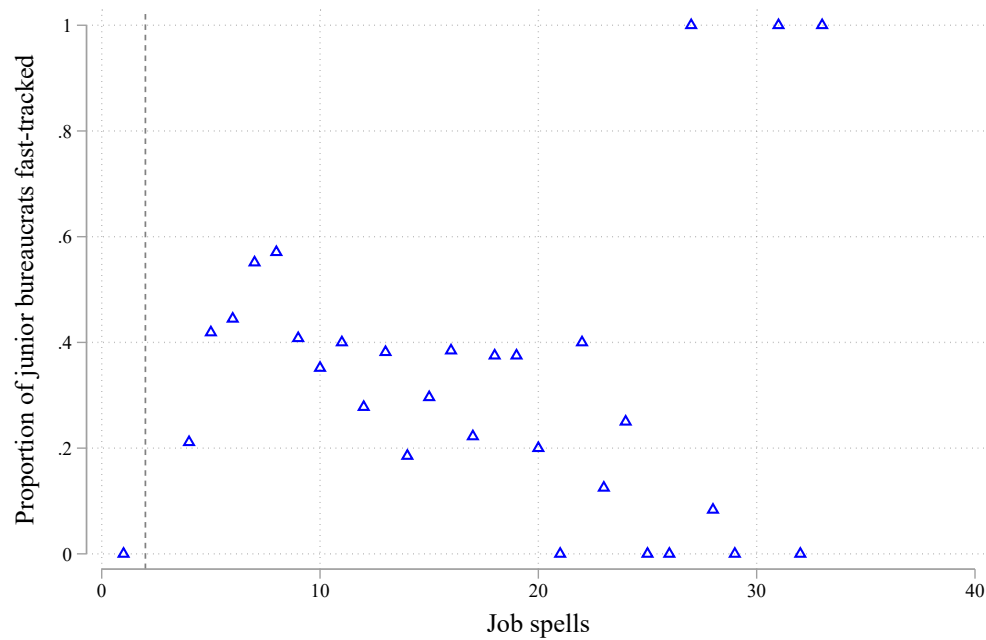
Notes: The figure plots the different types of careers of cohorts of bureaucrat across years. The red dashed line shows their rank, based on official promotions, while the blue dotted line represents the actual rank of the position that they are occupying. Whenever the blue-line is above the red then the bureaucrats are fast-tracked. The data comes from the career charts of bureaucrats. Their actual rank is derived from notifications of job ranks issued by SGAD and information on jobs performed by them in the career charts.

Figure A.3: Tax collection records



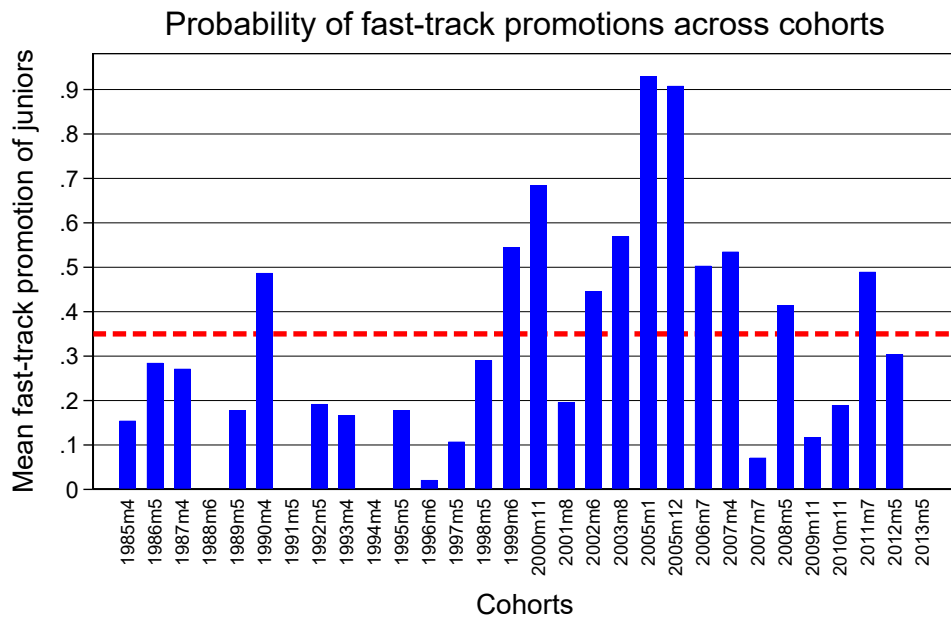
*Notes:* This is a picture of the provincial tax collection agency—Board of Revenue’s (BOR)—record room. Each bag contains files for each year of district-level tax collection, with the individual tax collection performance of each bureaucrat as annexures. While district-level performance is shared with the organization by administrative assistants, the individual performance records of juniors are stashed away in such bags in the basement. This information fails to make it into the juniors’ career files.

Figure A.4: Junior bureaucrats fast-tracked across job spells



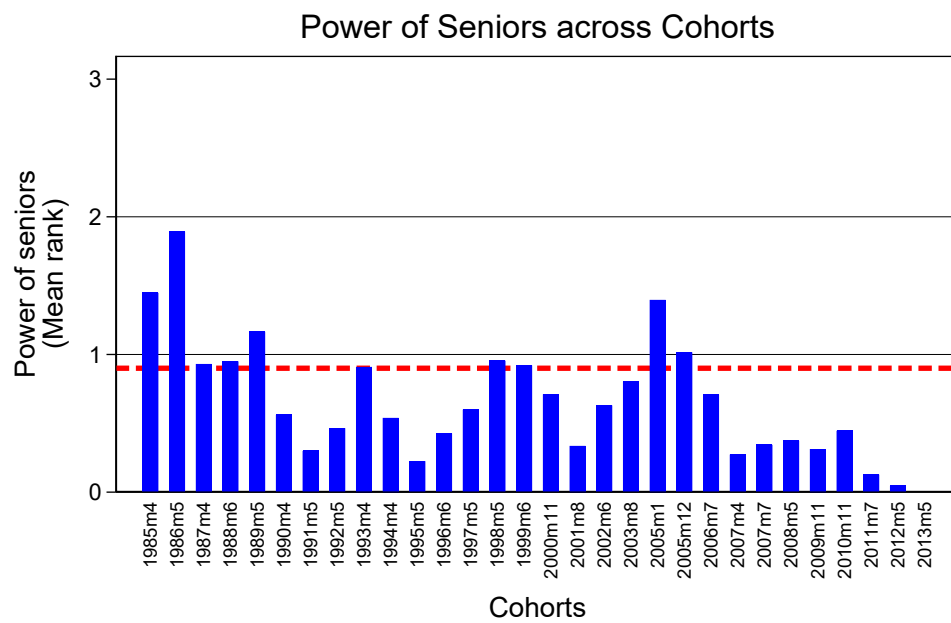
*Notes.* The figure displays the proportion of junior bureaucrats fast-tracked across different job spells in their careers. The gray vertical line marks the first job of the juniors. This job is excluded from all the main analysis.

Figure A.5: Fast-track promotions of juniors across cohorts



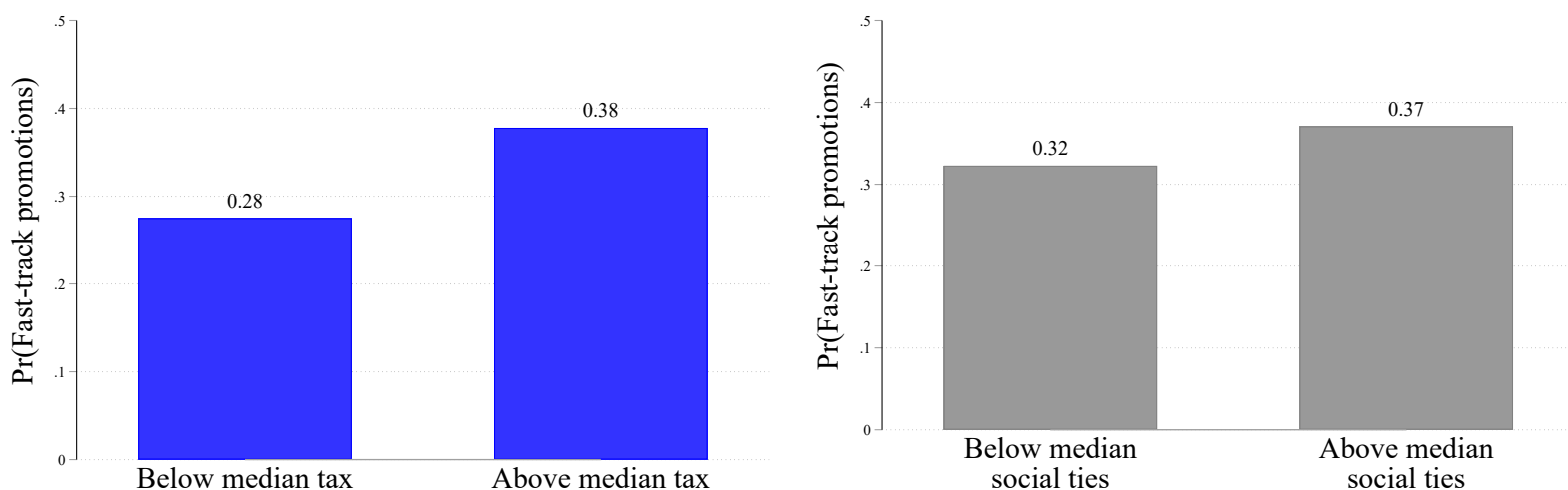
*Notes.* This figure shows the probability of fast-track promotions for different cohorts that were hired between 1983-2013 and started their training between 1985-2013. Each bar represents the mean for a specific cohort year. Red dotted line is the overall mean (0.34).

Figure A.6: Promotion power of seniors across cohorts



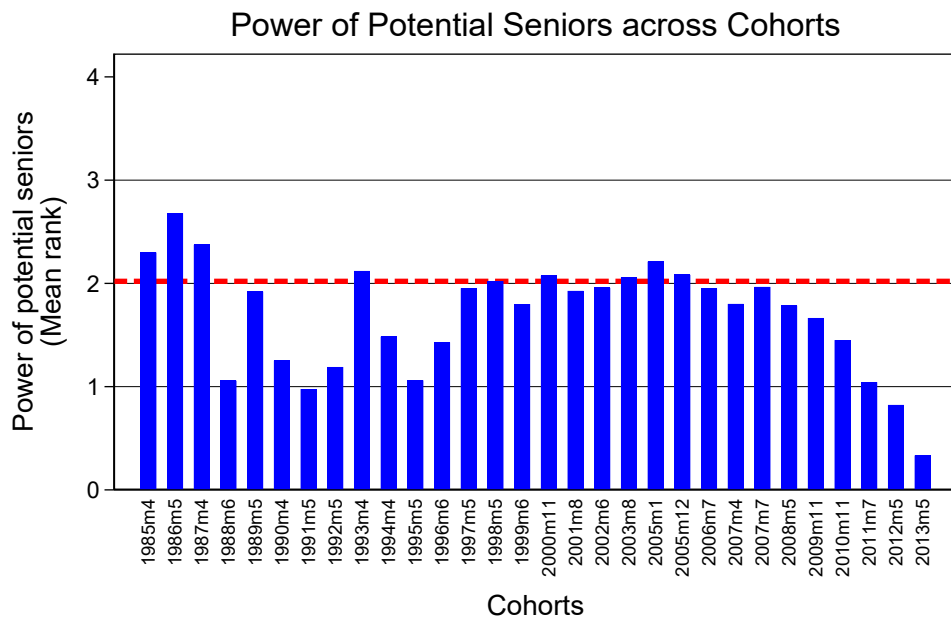
*Notes.* This figure shows the mean rank of seniors that cohorts of juniors worked with in their first job, based on their official promotions. The cohorts began their training between 1985 and 2013. Each bar represents the mean rank for a specific cohort year, with the red dotted line indicating the overall mean rank of 0.92.

Figure A.7: Average probability of fast-track promotions of different types of juniors



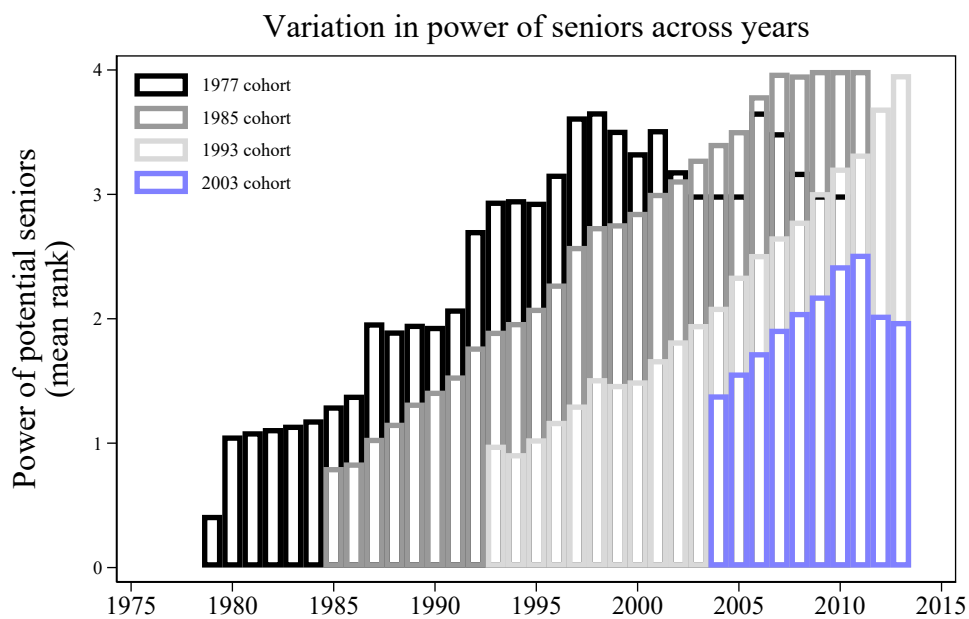
*Notes:* This figure displays the average probability of fast-track promotions for different types of juniors in a given month in their careers. *Above median tax* is a dummy variable that takes a value of one if the junior is in the top 50% of their cohort in tax collection in their first job, and vice versa for *Below median tax*. *Above median social ties* is a dummy variable that takes a value of one if the junior bureaucrat has an above median number of social ties with their seniors from the first job, and vice versa for *Below median social ties*.

Figure A.8: Promotion power of potential seniors across cohorts



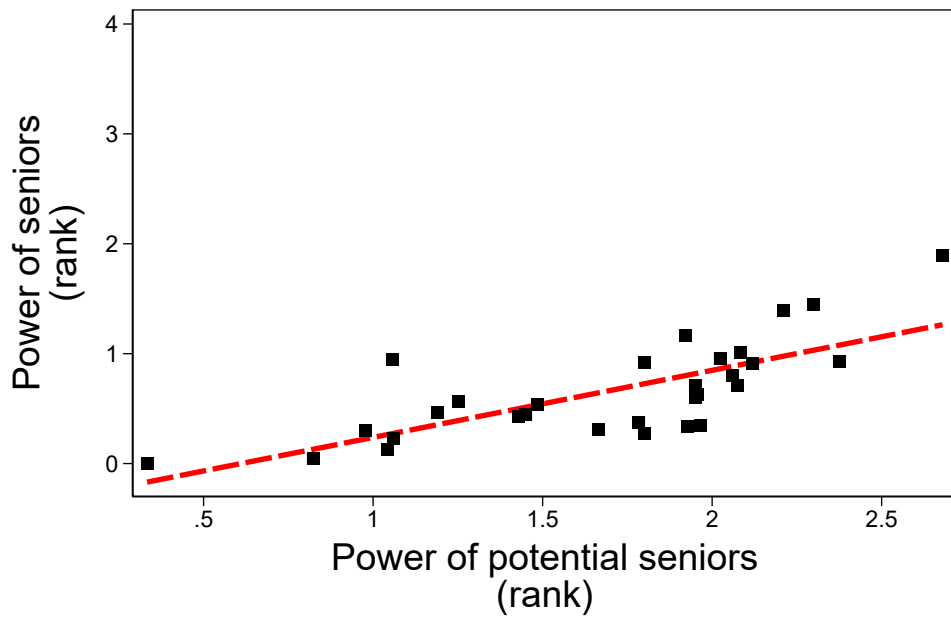
*Notes.* This figure shows the mean rank of potential seniors that cohorts of juniors could have worked with in their first job, based on the theoretical promotions following Minimum Length of Service Rules. The cohorts were recruited between 1983-2013 and began their training between 1985 and 2013. Each bar represents the mean rank for a specific cohort year, with the red dotted line indicating the overall mean rank of 2.1.

Figure A.9: Time variation in the instrument promotion power of potential seniors



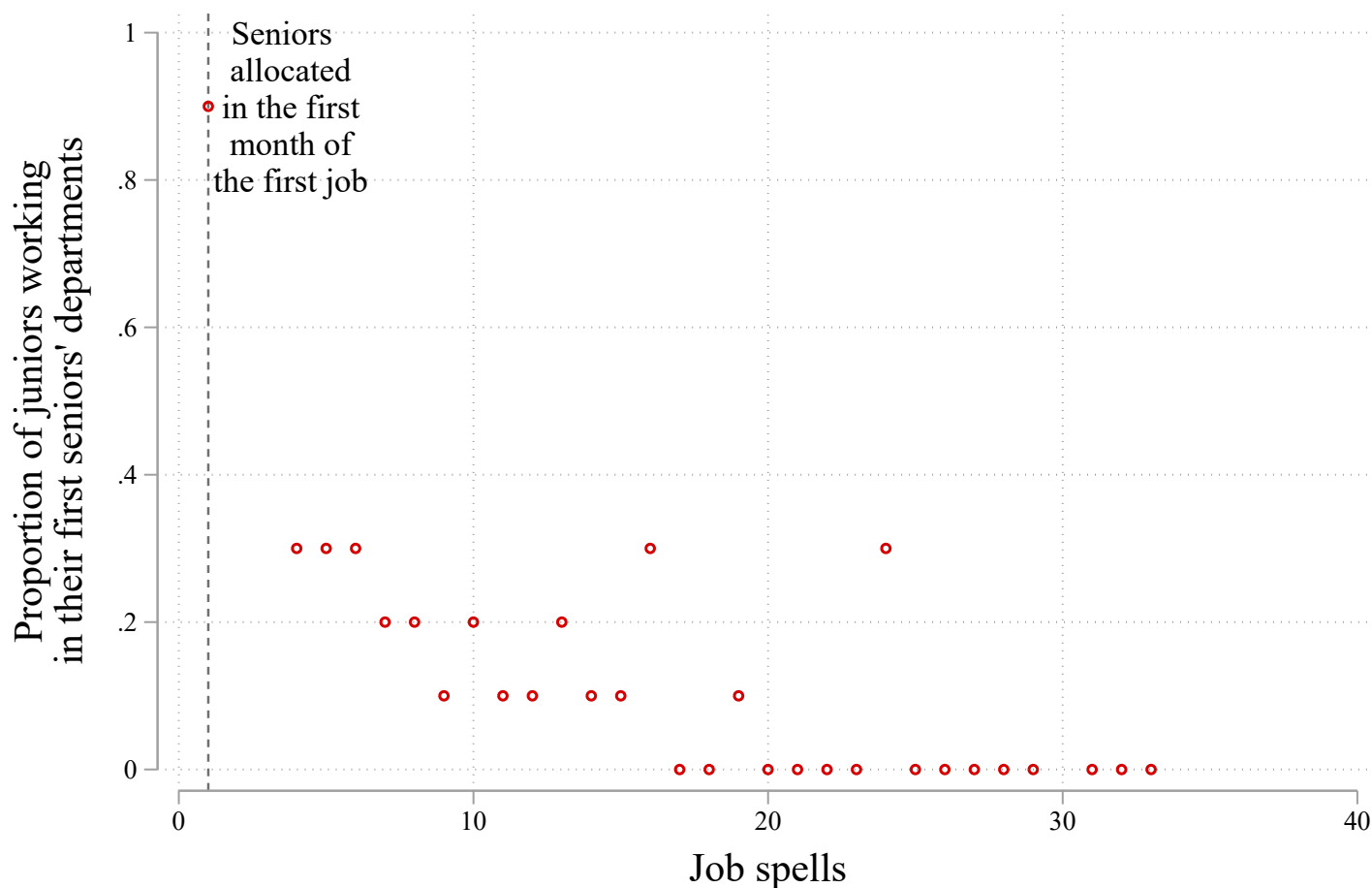
*Notes.* This figure shows the variation over the years in the mean promotion power of potential seniors for a subset of cohorts.

Figure A.10: Correlation between the instrument promotion power of potential and power of seniors for different cohorts



*Notes.* The figure displays the cross-sectional correlation between the instrument, *Power of potential seniors*, which is the average rule-based rank of potential seniors from the first job, and the *Power of seniors*, which is the mean official rank of seniors from the first job of the junior bureaucrat. The data is collapsed at the cohort level.

Figure A.11: Juniors working in any of the first seniors' departments over their careers



*Notes:* This figure displays the proportion of juniors working in their first seniors' department across different job spells in their long-term careers. Seniors from their first job are those who worked with the junior bureaucrats during the first month of their initial job spell. Since seniors can move departments during the junior bureaucrats' first job spell, which lasts on average a year, this proportion is less than one.

## Part B

# Appendix Tables

Table B.1: Correlation of tax-based ability and social ties of junior bureaucrats

| Dependent variables:     | Above median<br>tax collectors<br>(1) |
|--------------------------|---------------------------------------|
| Above median social ties | -0.0528<br>(0.0845)<br>[0.54]         |
| Observations             | 87                                    |
| Controls                 | No                                    |

Notes: Data is a cross-section of junior bureaucrats. *Above median tax collectors* is a dummy variables that takes a value of one if the junior is in the top 50% of their cohort in tax collection in their first job. *Above median social ties* is a dummy variable that takes the value of one if the junior bureaucrat has above median number of social ties with their seniors from the first job. Controls are not included. Standard errors, clustered at the cohort level, are in parenthesis. Wild clustered bootstrap  $p$ -values with 10,000 replications are shown in square brackets. Significance levels are denoted as: \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

Table B.2: Correlation between characteristics of the first job and the probability of being high ability

| Dependent variable:                               | Above median tax collectors  |                              |                              |                              |
|---------------------------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|
|                                                   | (1)                          | (2)                          | (3)                          | (4)                          |
| Tax target in the first job (million PKR)         | -0.005<br>(0.006)<br>[0.487] |                              |                              | -0.002<br>(0.007)<br>[0.680] |
| Tax target arrears in the first job (million PKR) |                              | -0.003<br>(0.007)<br>[0.555] |                              | -0.005<br>(0.011)<br>[0.595] |
| First job in a large city                         |                              |                              | -0.145<br>(0.141)<br>[0.227] | -0.182<br>(0.158)<br>[0.166] |
| Controls                                          | No                           | No                           | No                           | No                           |
| Cohort fixed effects                              | Yes                          | Yes                          | Yes                          | Yes                          |
| Obs                                               | 87                           | 83                           | 87                           | 83                           |
| Cohorts                                           | 30                           | 29                           | 30                           | 29                           |

*Notes:* The unit of observation is a junior bureaucrat. All specifications are restricted to their first job. *Above median tax collectors* is a dummy variables that takes a value of one if the junior is in the top 50% of their cohort in tax collection in their first job. *Tax target in the first job* is measured in million PKR and is the target allocated to a sub-district for agricultural income tax collection. *Tax target arrears in the first job* is measured in million PKR and is the amount of agricultural income tax that has historically left uncollected in a sub-district. *First job in a large city* is a dummy that takes the value of one if the junior bureaucrat was allocated to work in a large city in their first job. Large cities are defined as those that are designated as city-district by the government i.e. Faisalabad, Gujranwala, Lahore, Multan, Rawalpindi. Standard errors, clustered at the cohort level, are in parenthesis. Wild clustered bootstrap *p*-values with 10,000 replications are shown in square brackets. Significance levels are denoted as: \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

Table B.3: Robustness check: Whether the end of training systematically correlates with creation of new vacancies

| Dependent variables: | Vacancies              |                        |                        |                        |
|----------------------|------------------------|------------------------|------------------------|------------------------|
|                      | All districts          |                        | Large districts        |                        |
|                      | (1)                    | (2)                    | (3)                    | (4)                    |
| Training end         | -0.000533<br>(0.00144) | -0.000452<br>(0.00144) | -0.000601<br>(0.00247) | -0.000461<br>(0.00249) |
| Observations         | 1173784                | 1173784                | 387492                 | 387492                 |
| Year FE              | Yes                    | Yes                    | Yes                    | Yes                    |
| Tehsil FE            | No                     | Yes                    | No                     | Yes                    |

*Notes:* The table displays the results from a regression testing whether the quantity of vacancies changes around the date when training ended and the junior cohorts' first job began. The unit of observation is a sub district-month. *Training end* is a dummy that takes the value of one a month before the end of on-the-job training of junior bureaucrats, remains zero otherwise. *Vacancies* is a dummy variable that takes the value of one whenever the position is vacant in a sub-district, and remains zero otherwise. Large districts include Rawalpindi, Lahore, Multan, Gujranwala, Faisalabad, Sargodha, Bahawalpur and Sialkot. Standard errors are clustered at the sub-district level. Significance levels are denoted as: \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

Table B.4: Robustness check: Correlation between district characteristics, vacancies and tenure

| Dependent variables:                     | Vacancies<br>(% per year) |                   | Tenure<br>(days per year) |                      |
|------------------------------------------|---------------------------|-------------------|---------------------------|----------------------|
|                                          | (1)                       | (2)               | (3)                       | (4)                  |
| Whether districts has large city (dummy) | 1.638<br>(1.394)          | 6.939<br>(25.704) | -188.110**<br>(79.934)    | 398.320<br>(674.876) |
| Real wage (PKR)                          | 0.027<br>(0.034)          | 0.062<br>(0.046)  | 0.734<br>(0.770)          | 0.154<br>(0.994)     |
| Total population estimates (million)     | -0.000<br>(0.000)         | -0.000<br>(0.000) | -0.000<br>(0.000)         | -0.000<br>(0.000)    |
| Literacy (%)                             | -0.039<br>(0.062)         | -0.066<br>(0.076) | 0.217<br>(2.601)          | -0.503<br>(3.966)    |
| Rural employment (%)                     | -0.006<br>(0.054)         | -0.066<br>(0.081) | -0.945<br>(2.290)         | 0.995<br>(2.372)     |
| Number of hospitals                      | 0.080<br>(0.228)          | -0.922<br>(0.887) | 11.576<br>(10.084)        | -28.166<br>(55.007)  |
| Number of Rural Health Centers           | -0.044<br>(0.124)         | 0.058<br>(0.437)  | 0.756<br>(7.137)          | 16.330<br>(20.036)   |
| Number of new electricity connections    | -0.031<br>(0.044)         | -0.037<br>(0.064) | 1.774*<br>(1.024)         | -0.002<br>(2.908)    |
| Number of primary schools                | -0.001<br>(0.001)         | 0.002<br>(0.006)  | 0.092<br>(0.077)          | -0.139<br>(0.296)    |
| Primary school enrolment                 | 0.000<br>(0.000)          | 0.000<br>(0.000)  | -0.000<br>(0.000)         | -0.000<br>(0.000)    |
| Terrorist attack (dummy)                 | 0.657<br>(1.530)          | 0.748<br>(2.166)  | -2.959<br>(37.311)        | -16.524<br>(46.020)  |
| Observations                             | 167                       | 167               | 167                       | 167                  |
| Year FE                                  | Yes                       | Yes               | Yes                       | Yes                  |
| District FE                              | No                        | Yes               | No                        | Yes                  |

*Notes:* The unit of observation is a district-year from 2005-2009. *Vacancies* is defined as the percentage of time in a year that a prospective position for junior bureaucrats remained vacant in a given district. *Tenure* is the number of days per year that an incumbent bureaucrat remains in the prospective position for junior bureaucrats. Data on all variables except terrorism attacks and population estimates is from the Pakistan Bureau of Statistics. Terrorist attacks data is from the Global Terrorism Data-set. Population estimates are from the Pakistan census. Standard errors are clustered at the district level. Significance levels are denoted as: \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

Table B.5: Correlation of exam-based ability, tax-based ability and social ties of junior bureaucrats

| Dependent variables:        | Above median exam performers |                            |                              |
|-----------------------------|------------------------------|----------------------------|------------------------------|
|                             | (1)                          | (2)                        | (3)                          |
| Above median tax collectors | -0.0889<br>(0.123)<br>[0.49] |                            | -0.0801<br>(0.125)<br>[0.53] |
| Above median social ties    |                              | 0.157<br>(0.129)<br>[0.25] | 0.153<br>(0.131)<br>[0.27]   |
| Observations                | 87                           | 87                         | 87                           |
| Controls                    | No                           | No                         | No                           |

Notes: Data is a cross-section of junior bureaucrats. *Above median exam performers* is a dummy variable that takes a value of one if the junior is in the top 50% of their cohort in the civil service recruitment exam. *Above median tax collectors* is a dummy variables that takes a value of one if the junior is in the top 50% of their cohort in tax collection in their first job. *Above median social ties* is a dummy variable that takes the value of one if the junior bureaucrat has above median number of social ties with their seniors from the first job. Controls are not included. Standard errors, clustered at the cohort level, are in parenthesis. Wild clustered bootstrap *p*-values with 10,000 replications are shown in square brackets. Significance levels are denoted as: \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

Table B.6: Public information on ability: OLS and IV effects on promotions including exam rank

| Dependent Variables:                  | Fast-track promotions         |                               |                               |                                |
|---------------------------------------|-------------------------------|-------------------------------|-------------------------------|--------------------------------|
|                                       | (1)<br>(OLS)                  | (2)<br>(IV)                   | (3)<br>(OLS)                  | (4)<br>(IV)                    |
| Power of seniors                      | 0.0648<br>(0.0951)<br>[0.51]  | 0.0249<br>(0.193)<br>[0.92]   | -0.0170<br>(0.122)<br>[0.89]  | -0.0696<br>(0.215)<br>[0.78]   |
| Exam                                  | -0.0736<br>(0.0801)<br>[0.41] | -0.0757<br>(0.0772)<br>[0.38] | -0.0870<br>(0.0781)<br>[0.37] | -0.0922<br>(0.0751)<br>[0.36]  |
| Power of seniors $\times$ Exam        | -0.0867<br>(0.0726)<br>[0.28] | -0.0566<br>(0.0936)<br>[0.61] | -0.0596<br>(0.0725)<br>[0.50] | -0.0198<br>(0.0863)<br>[0.86]  |
| Tax                                   |                               |                               | 0.0799<br>(0.0643)<br>[0.29]  | 0.0807<br>(0.0666)<br>[0.38]   |
| Power of seniors $\times$ Tax         |                               |                               | 0.173**<br>(0.0775)<br>[0.04] | 0.180***<br>(0.0678)<br>[0.06] |
| Social ties                           |                               |                               | -0.0912<br>(0.0707)<br>[0.34] | -0.0977<br>(0.0702)<br>[0.31]  |
| Power of seniors $\times$ Social ties |                               |                               | -0.0713<br>(0.0861)<br>[0.49] | -0.0113<br>(0.101)<br>[0.93]   |
| Controls                              | Yes                           | Yes                           | Yes                           | Yes                            |
| Cohort FE                             | Yes                           | Yes                           | Yes                           | Yes                            |
| Month year FE                         | Yes                           | Yes                           | Yes                           | Yes                            |
| Observations                          | 5482                          | 5482                          | 5482                          | 5482                           |
| Clusters                              | 30                            | 30                            | 30                            | 30                             |
| Dep var mean                          | 0.34                          | 0.34                          | 0.34                          | 0.34                           |

*Notes:* This table displays the results from running an OLS and an IV regression using the instrument: *Power of potential seniors* which is the average rule-based rank of potential seniors from the first job. *Power of seniors* is the mean official rank of seniors from the first month of the first job of the junior bureaucrat. For ease of interpretation, both variables were demeaned by subtracting the average value of each variable for each junior bureaucrat. *Exam* is a dummy variable that takes a value of one if the junior is in the top 50% of their cohort in the civil service recruitment exam. *Tax* is a dummy variables that takes a value of one if the junior is in the top 50% of their cohort in tax collection in their first job. *Social ties* is a dummy variable that takes the value of one if the junior bureaucrat has above median number of social ties with their seniors from the first job. *Fast – track promotions* is a dummy variable that takes a value of one whenever the junior bureaucrat is fast-tracked and remains zero otherwise. Controls include the annual time trend of the first job, a dummy variable for female bureaucrats, the total number of languages spoken by juniors, the experience, experience squared and the official rank of the junior, and a dummy variable for whether the job is in the field offices. All specifications exclude the first job of junior bureaucrats. Standard errors, clustered at the cohort level, are in parenthesis. Wild clustered bootstrap *p*-values with 10,000 replications are shown in square brackets. Significance levels are denoted as: \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

Table B.7: Public information on ability: Reduced form effects on promotions including exam rank

| Dependent Variables:                            | Fast-track promotions         |                                |
|-------------------------------------------------|-------------------------------|--------------------------------|
|                                                 | (1)                           | (2)                            |
| Power of potential seniors                      | 0.0199<br>(0.148)<br>[0.91]   | -0.0677<br>(0.160)<br>[0.71]   |
| Exam                                            | -0.0763<br>(0.0816)<br>[0.42] | -0.0933<br>(0.0786)<br>[0.34]  |
| Power of potential seniors $\times$ Exam        | -0.0458<br>(0.0801)<br>[0.61] | -0.0122<br>(0.0762)<br>[0.89]  |
| Tax                                             |                               | 0.0799<br>(0.0692)<br>[0.34]   |
| Power of potential seniors $\times$ Tax         |                               | 0.144**<br>(0.0576)<br>[0.00]  |
| Social ties                                     |                               | -0.100<br>(0.0744)<br>[0.32]   |
| Power of potential seniors $\times$ Social ties |                               | -0.00256<br>(0.0865)<br>[0.98] |
| Controls                                        | Yes                           | Yes                            |
| Cohort FE                                       | Yes                           | Yes                            |
| Month year FE                                   | Yes                           | Yes                            |
| Observations                                    | 5482                          | 5482                           |
| Clusters                                        | 30                            | 30                             |
| Dep var mean                                    | 0.34                          | 0.34                           |

*Notes:* This table displays the results from a reduced form of the IV regression. The instrument *Power of potential seniors* is the average rule-based rank of potential seniors from the first job. For ease of interpretation, the instrument was demeaned by subtracting the average value of each variable for each junior bureaucrat. *Exam* is a dummy variable that takes a value of one if the junior is in the top 50% of their cohort in the civil service recruitment exam. *Tax* is a dummy variables that takes a value of one if the junior is in the top 50% of their cohort in tax collection in their first job. *Social ties* is a dummy variable that takes the value of one if the junior bureaucrat has above median number of social ties with their seniors from the first job. *Fast – track promotions* is a dummy variable that takes a value of one whenever the junior bureaucrat is fast-tracked and remains zero otherwise. Controls include the annual time trend of the first job, a dummy variable for female bureaucrats, the total number of languages spoken by juniors, the experience, experience squared and the official rank of the junior, and a dummy variable for whether the job is in the field offices. All specifications exclude the first job of junior bureaucrats. Standard errors, clustered at the cohort level, are in parenthesis. Wild clustered bootstrap *p*-values with 10,000 replications are shown in square brackets. Significance levels are denoted as: \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

Table B.8: Departments result: OLS and IV effects on being in the seniors' departments

| Dependent Variables:                  | Whether in any of the first seniors' departments |                              |                               |                               |                               |                               |
|---------------------------------------|--------------------------------------------------|------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
|                                       | (1)<br>(OLS)                                     | (2)<br>(OLS)                 | (3)<br>(IV)                   | (4)<br>(IV)                   | (5)<br>(OLS)                  | (6)<br>(IV)                   |
| Power of seniors                      | 0.0946<br>(0.112)<br>[0.48]                      | 0.0341<br>(0.0783)<br>[0.70] | 0.0224<br>(0.112)<br>[0.86]   | -0.0347<br>(0.126)<br>[0.81]  | 0.0437<br>(0.0973)<br>[0.69]  | -0.0385<br>(0.116)<br>[0.77]  |
| Tax                                   | -0.0380<br>(0.0649)<br>[0.64]                    |                              | -0.0432<br>(0.0608)<br>[0.54] |                               | -0.0437<br>(0.0647)<br>[0.63] | -0.0478<br>(0.0594)<br>[0.49] |
| Power of seniors $\times$ Tax         | -0.00424<br>(0.0839)<br>[0.96]                   |                              | 0.0199<br>(0.0772)<br>[0.84]  |                               | -0.0323<br>(0.0726)<br>[0.70] | -0.0290<br>(0.0678)<br>[0.72] |
| Social ties                           |                                                  | 0.0300<br>(0.0487)<br>[0.58] |                               | 0.0284<br>(0.0466)<br>[0.59]  | 0.0396<br>(0.0442)<br>[0.39]  | 0.0390<br>(0.0423)<br>[0.39]  |
| Power of seniors $\times$ Social ties |                                                  | 0.117*<br>(0.0601)<br>[0.16] |                               | 0.156**<br>(0.0778)<br>[0.20] | 0.121*<br>(0.0623)<br>[0.15]  | 0.163**<br>(0.0830)<br>[0.15] |
| Controls                              | Yes                                              | Yes                          | Yes                           | Yes                           | Yes                           | Yes                           |
| Cohort FE                             | Yes                                              | Yes                          | Yes                           | Yes                           | Yes                           | Yes                           |
| Month year FE                         | Yes                                              | Yes                          | Yes                           | Yes                           | Yes                           | Yes                           |
| Observations                          | 5409                                             | 5409                         | 5409                          | 5409                          | 5409                          | 5409                          |
| Clusters                              | 30                                               | 30                           | 30                            | 30                            | 30                            | 30                            |
| Dep var mean                          | 0.21                                             | 0.21                         | 0.21                          | 0.21                          | 0.21                          | 0.21                          |

*Notes:* This table displays the results from running an OLS and an IV regression using the instrument: *Power of potential seniors* which is the average rule-based rank of potential seniors from the first job. *Power of seniors* is the mean official rank of seniors from the first month of the first job of the junior bureaucrat. For ease of interpretation, both variables were demeaned by subtracting the average value of each variable for each junior bureaucrat. *Tax* is a dummy variables that takes a value of one if the junior is in the top 50% of their cohort in tax collection in their first job. *Social ties* is a dummy variable that takes the value of one if the junior bureaucrat has above median number of social ties with their seniors from the first job. *Whether in any of the first seniors' departments* is a dummy variable that takes the value of one whenever a junior bureaucrat works in the department where any of the seniors from their first job is working. All specifications exclude the first job of junior bureaucrats. Controls include the annual time trend of the first job, a dummy variable for female bureaucrats, the total number of languages spoken by juniors, the experience, experience squared and the official rank of the junior, and a dummy variable for whether the job is in the field offices. Standard errors, clustered at the cohort level, are in parenthesis. Wild clustered bootstrap *p*-values with 10,000 replications are shown in square brackets. Significance levels are denoted as: \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

Table B.9: Departments result: Reduced form effects on being in any of the seniors' departments

| Dependent Variables:                            | Whether in any of the<br>first seniors' departments |                               |                               |
|-------------------------------------------------|-----------------------------------------------------|-------------------------------|-------------------------------|
|                                                 | (1)                                                 | (2)                           | (3)                           |
| Power of potential seniors                      | 0.0138<br>(0.0851)<br>[0.88]                        | -0.0291<br>(0.0919)<br>[0.78] | -0.0303<br>(0.0859)<br>[0.74] |
| Tax                                             | -0.0446<br>(0.0659)<br>[0.57]                       |                               | -0.0498<br>(0.0651)<br>[0.56] |
| Power of potential seniors $\times$ Tax         | 0.0165<br>(0.0645)<br>[0.83]                        |                               | -0.0218<br>(0.0578)<br>[0.75] |
| Social ties                                     |                                                     | 0.0280<br>(0.0505)<br>[0.62]  | 0.0398<br>(0.0445)<br>[0.37]  |
| Power of potential seniors $\times$ Social ties |                                                     | 0.128**<br>(0.0623)<br>[0.07] | 0.131*<br>(0.0667)<br>[0.10]  |
| Controls                                        | Yes                                                 | Yes                           | Yes                           |
| Cohort FE                                       | Yes                                                 | Yes                           | Yes                           |
| Month year FE                                   | Yes                                                 | Yes                           | Yes                           |
| Observations                                    | 5409                                                | 5409                          | 5409                          |
| Clusters                                        | 30                                                  | 30                            | 30                            |
| Dep var mean                                    | 0.21                                                | 0.21                          | 0.21                          |

*Notes:* This table displays the results from a reduced form of the IV regression. The instrument *Power of potential seniors* is the average rule-based rank of potential seniors from the first job. For ease of interpretation, the instrument was demeaned by subtracting the average value of each variable for each junior bureaucrat. *Tax* is a dummy variables that takes a value of one if the junior is in the top 50% of their cohort in tax collection in their first job. *Social ties* is a dummy variable that takes the value of one if the junior bureaucrat has above median number of social ties with their seniors from the first job. *Whether in any of the first seniors' departments* is a dummy variable that takes the value of one whenever a junior bureaucrat works in the department where any of the seniors from their first job is working. All specifications exclude the first job of junior bureaucrats. Controls include the annual time trend of the first job, a dummy variable for female bureaucrats, the total number of languages spoken by juniors, the experience, experience squared and the official rank of the junior, and a dummy variable for whether the job is in the field offices. Standard errors, clustered at the cohort level, are in parenthesis. Wild clustered bootstrap *p*-values with 10,000 replications are shown in square brackets. Significance levels are denoted as: \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

## Part C

# Data Sources

Figure C.1: Career charts of bureaucrats



No. \_\_\_\_\_  
Name \_\_\_\_\_  
Date of birth \_\_\_\_\_  
Post \_\_\_\_\_  
Date of present appointment \_\_\_\_\_

Legend:  
Field (shaded box)  
Secretariat (white box)  
Corporation (hatched box)  
Soft (shaded box)  
Hard (white box)  
Foreign (hatched box)

**SERVICE**

| Year | Year of service | Post held | Class/Grade | Department | Station | Reporting Officer | Controlling Officer | Remarks for Promotion |
|------|-----------------|-----------|-------------|------------|---------|-------------------|---------------------|-----------------------|
| 1915 | 1.5.17          | E.A.C.    | 10-1.15.17  | S & G.A.D  | KASUR   | ANG.              | GOOD                | PREMATURE             |
| 1926 | 2.10.17         | "         | 10-1.15.17  | "          | "       | ANG.              | GOOD                | PREMATURE             |
| 1927 | 3.10.17         | "         | 10-1.15.17  | "          | "       | GOOD              | V.GOOD              | FIT                   |
| 1928 | 4.10.17         | "         | 10-1.15.17  | "          | "       | GOOD              | GOOD                | FIT                   |
| 1929 | 5.10.17         | "         | 10-1.15.17  | "          | "       | GOOD              | GOOD                | FIT                   |
| 1930 | 6.10.17         | "         | 10-1.15.17  | "          | "       | GOOD              | GOOD                | FIT                   |
| 1931 | 7.10.17         | "         | 10-1.15.17  | "          | "       | GOOD              | GOOD                | FIT                   |
| 1932 | 8.10.17         | "         | 10-1.15.17  | "          | "       | GOOD              | GOOD                | FIT                   |
| 1933 | 9.10.17         | "         | 10-1.15.17  | "          | "       | GOOD              | GOOD                | FIT                   |
| 1934 | 10.10.17        | "         | 10-1.15.17  | "          | "       | GOOD              | GOOD                | FIT                   |
| 1935 | 11.10.17        | "         | 10-1.15.17  | "          | "       | GOOD              | GOOD                | FIT                   |
| 1936 | 12.10.17        | "         | 10-1.15.17  | "          | "       | GOOD              | GOOD                | FIT                   |
| 1937 | 1.11.17         | "         | 10-1.15.17  | "          | "       | GOOD              | GOOD                | FIT                   |
| 1938 | 2.11.17         | "         | 10-1.15.17  | "          | "       | GOOD              | GOOD                | FIT                   |
| 1939 | 3.11.17         | "         | 10-1.15.17  | "          | "       | GOOD              | GOOD                | FIT                   |
| 1940 | 4.11.17         | "         | 10-1.15.17  | "          | "       | GOOD              | GOOD                | FIT                   |
| 1941 | 5.11.17         | "         | 10-1.15.17  | "          | "       | GOOD              | GOOD                | FIT                   |
| 1942 | 6.11.17         | "         | 10-1.15.17  | "          | "       | GOOD              | GOOD                | FIT                   |
| 1943 | 7.11.17         | "         | 10-1.15.17  | "          | "       | GOOD              | GOOD                | FIT                   |
| 1944 | 8.11.17         | "         | 10-1.15.17  | "          | "       | GOOD              | GOOD                | FIT                   |
| 1945 | 9.11.17         | "         | 10-1.15.17  | "          | "       | GOOD              | GOOD                | FIT                   |
| 1946 | 10.11.17        | "         | 10-1.15.17  | "          | "       | GOOD              | GOOD                | FIT                   |
| 1947 | 11.11.17        | "         | 10-1.15.17  | "          | "       | GOOD              | GOOD                | FIT                   |
| 1948 | 12.11.17        | "         | 10-1.15.17  | "          | "       | GOOD              | GOOD                | FIT                   |
| 1949 | 1.12.17         | "         | 10-1.15.17  | "          | "       | GOOD              | GOOD                | FIT                   |
| 1950 | 2.12.17         | "         | 10-1.15.17  | "          | "       | GOOD              | GOOD                | FIT                   |
| 1951 | 3.12.17         | "         | 10-1.15.17  | "          | "       | GOOD              | GOOD                | FIT                   |
| 1952 | 4.12.17         | "         | 10-1.15.17  | "          | "       | GOOD              | GOOD                | FIT                   |
| 1953 | 5.12.17         | "         | 10-1.15.17  | "          | "       | GOOD              | GOOD                | FIT                   |
| 1954 | 6.12.17         | "         | 10-1.15.17  | "          | "       | GOOD              | GOOD                | FIT                   |
| 1955 | 7.12.17         | "         | 10-1.15.17  | "          | "       | GOOD              | GOOD                | FIT                   |
| 1956 | 8.12.17         | "         | 10-1.15.17  | "          | "       | GOOD              | GOOD                | FIT                   |
| 1957 | 9.12.17         | "         | 10-1.15.17  | "          | "       | GOOD              | GOOD                | FIT                   |
| 1958 | 10.12.17        | "         | 10-1.15.17  | "          | "       | GOOD              | GOOD                | FIT                   |
| 1959 | 11.12.17        | "         | 10-1.15.17  | "          | "       | GOOD              | GOOD                | FIT                   |

\*Entries with lead-pencil.

**INDIVIDUAL CAREER PLANNING CHART**

1. No. \_\_\_\_\_ 2. Occupational Group Service **EX. PCS (EB)**  
3. Name \_\_\_\_\_ 4. Seniority Position **14.5**  
5. Date of joining Govt. service \_\_\_\_\_ 6. Religion **ISLAM** 7. Date of birth \_\_\_\_\_  
8. Appointment with grade **E.A.C. (17)** 9. Marital status **MARRIED** 10. Date of superannuation \_\_\_\_\_  
11. District **PUNJAB** 12. Service particulars of spouse: Federal ☐ Provincial ☐ Private ☐  
13. Home District **BAHAWALPUR** Organization where employed \_\_\_\_\_  
14. Medical category \_\_\_\_\_ \*Location \_\_\_\_\_ \*Post held \_\_\_\_\_  
Nationality \_\_\_\_\_ \*Size of family \_\_\_\_\_  
15. Qualifications: Academic: **B.A. (POLITICAL SCIENCE)** Professional: **LLB.** Languages known: **ENGLISH, URDU, & PUNJABI**  
16. Training received: Name of institution attended \_\_\_\_\_ Country \_\_\_\_\_ Duration: From \_\_\_\_\_ To \_\_\_\_\_ Particulars of the course: **REVENUE**  
17. Countries visited: Country \_\_\_\_\_ Duration: From \_\_\_\_\_ To \_\_\_\_\_ Purpose: \_\_\_\_\_  
18. Merit position in: P.P.S.C. Competitive Examination \_\_\_\_\_ Year \_\_\_\_\_ Position \_\_\_\_\_  
P.P.O. Examination \_\_\_\_\_  
Any other Examination \_\_\_\_\_  
19. Date of entry/transfer: Grade: 16 17 18 19 20 21 22 23  
Temporary \_\_\_\_\_  
Substantive: **6.1.1975, 18-4-86**

\*Entries with lead-pencil

Notes: This data was sourced from Services and General Administration Department (S & GAD) and digitized.

Figure C.2: Recruitment exam ranking of bureaucrats

**FEDERAL PUBLIC SERVICE COMMISSION**  
Aga Khan Road, F-5/1  
Islamabad the 10<sup>th</sup> May, 2017.

**PRESS NOTE**

Subject: - **FINAL RESULT OF COMPETITIVE EXAMINATION (CSS), 2016 FOR RECRUITMENT TO POSTS IN BS-17 UNDER FEDERAL GOVERNMENT.**

No.F.2/4/2017-CE. The roll numbers and names of 199 candidates who have finally qualified the CSS Competitive Examination 2016, are given below in order of merit. Out of them 193 have been recommended by the FPSC for appointment to posts in BS-17 under the Federal Government in the Groups/Services mentioned against each:-

| Merit No. | Roll No. | Name                         | Domicile    | Group/Service allocated |
|-----------|----------|------------------------------|-------------|-------------------------|
| 1         | 19052    | MALEEHA IESAR                | PUNJAB      | PAS                     |
| 2         | 12639    | QURAT UL AIN ZAFAR           | PUNJAB      | PAS                     |
| 3         | 2329     | MARIYA JAV AID               | PUNJAB      | PAS                     |
| 4         | 1560     | MUHAMMAD EJAZ SARWAR         | PUNJAB      | PAS                     |
| 5         | 14428    | ZOHA SHAKIR                  | PUNJAB      | PAS                     |
| 6         | 13321    | SAYEDA TEHNIYAT BUKHARI      | PUNJAB      | PAS                     |
| 7         | 10316    | HAMOOD UR REHMAN             | PUNJAB      | PAS                     |
| 8         | 13932    | TAYYAB HAYAT                 | PUNJAB      | PAS                     |
| 9         | 15699    | AHMED SHAH                   | K.P.K.      | PSP                     |
| 10        | 14782    | AMEER TAIMOOR                | PUNJAB      | PAS                     |
| 11        | 11051    | MARIHABA NIEMAT              | PUNJAB      | PAS                     |
| 12        | 2521     | SAMMAN ABBAS                 | PUNJAB      | PAS                     |
| 13        | 11014    | MAJIK MUHAMMAD DANISH        | PUNJAB      | FSP                     |
| 14        | 12632    | QUDSIYAZ                     | PUNJAB      | PAS                     |
| 15        | 13416    | SHAHMEER KHALID              | PUNJAB      | PSP                     |
| 16        | 6409     | UBAID UR RAHMAN DOGAR        | PUNJAB      | PAS                     |
| 17        | 14055    | UMMAR AWAIS                  | PUNJAB      | PAS                     |
| 18        | 4235     | DANYAL HASNAIN               | PUNJAB      | FSP                     |
| 19        | 1625     | MUHAMMAD SHAHAB ASLAM        | PUNJAB      | PAS                     |
| 20        | 12288    | MUHAMMED ARSLAN SALEEM       | PUNJAB      | PAS                     |
| 21        | 3962     | ANISHA HISHAM                | SINDH URBAN | PAS                     |
| 22        | 8815     | ABIDA FAREED                 | PUNJAB      | PAS                     |
| 23        | 5189     | MUHAMMAD HASSAAN AHISAN      | PUNJAB      | PAS                     |
| 24        | 3704     | ABDUL QADEER                 | PUNJAB      | PAS                     |
| 25        | 3251     | NAWAB SAMEER HUSSAIN LAGHARI | SINDH URBAN | PAS                     |
| 26        | 12766    | RANA HUSSAIN TAHIR           | PUNJAB      | PSP                     |
| 27        | 12738    | RAMEESHA JAV AID             | PUNJAB      | PAS                     |
| 28        | 5770     | SAAD ARSHAD                  | PUNJAB      | PSP                     |
| 29        | 11957    | MUHAMMAD SAAD BUTT           | PUNJAB      | FSP                     |
| 30        | 6613     | ZEB UN NISA NASIR            | PUNJAB      | PAS                     |
| 31        | 9390     | AQEELA NIAZ NAQVI            | PUNJAB      | PSP                     |
| 32        | 4193     | BEENISH FATIMA               | PUNJAB      | PSP                     |
| 33        | 9724     | BILAL AHMAD                  | PUNJAB      | PSP                     |
| 34        | 2693     | ABDUL SAMAD NIZAMANI         | SINDH RURAL | PAS                     |
| 35        | 5005     | MOMIN AZIZ QURESHI           | PUNJAB      | FSP                     |
| 36        | 11400    | MUHAMMAD AHMAD ZAHEER        | PUNJAB      | PCS                     |
| 37        | 4495     | HASAN ABBAS                  | PUNJAB      | FSP                     |
| 38        | 656      | MUHAMMAD ALI ASIF            | PUNJAB      | PCS                     |

Page 1 of 5

*Notes:* This is an example of the recruitment exam rankings of bureaucrats that are published in newspapers. This ranking is publicly known throughout the organization.

Figure C.3: Example of a tax collection proforma

AGRICULTURAL INCOME TAX DISTRICT MUZAFFARGARH,  
FOR THE MONTH OF September 2007.

PREVIOUS A-I-T,

| S. No. | Name of Tehsil | Demand   | Suspension | Net Demand Recoverable | Previous Recovery | Current Recovery | Total Recovery | Balance  | Percentage Month | Total |
|--------|----------------|----------|------------|------------------------|-------------------|------------------|----------------|----------|------------------|-------|
| 1-     | M. Garh        | 17102682 | —          | 17102682               | 76650             | 9300             | 85950          | 17016732 | —                | 1%    |
| 2-     | Kot Addu       | 28353571 | —          | 28353571               | 87793             | 38100            | 125893         | 28227678 | —                | —     |
| 3-     | Alipur         | 2079273  | —          | 2079273                | 34150             | 44706            | 78856          | 2000417  | 2%               | 4%    |
| 4-     | Jatoi          | 18396542 | —          | 18396542               | 50010             | 9500             | 59510          | 18337032 | —                | —     |
|        | Total A        | 65932068 | —          | 65932068               | 248603            | 101606           | 350209         | 65581859 | —                | 1%    |

CURRENT A-I-T,

|    |             |   |   |   |   |   |   |   |   |   |
|----|-------------|---|---|---|---|---|---|---|---|---|
| 1- | M. Garh     | — | — | — | — | — | — | — | — | — |
| 2- | Kot Addu    | — | — | — | — | — | — | — | — | — |
| 3- | Alipur      | — | — | — | — | — | — | — | — | — |
| 4- | Jatoi       | — | — | — | — | — | — | — | — | — |
|    | Total B     | — | — | — | — | — | — | — | — | — |
|    | G.Total A+B | — | — | — | — | — | — | — | — | — |

Notes: This figure displays the tax collection proforma that were part of the tax files sourced from the Board of Revenue (BOR).

Figure C.4: Example of a verified tax collection proforma

(نمبر 1)

STATEMENT SHOWING THE RECOVERY POSITION OF AGRICULTURAL INCOME TAX  
UNDER HEAD 011630001173 FOR THE MONTH OF December 2007 District D.G.K

| Head of Account No.<br>011630001173 | Demand      | Remission | Suspension | Net Demand | Previous<br>Recovery | Recovery<br>during<br>month | Total<br>recovery | Balance   |
|-------------------------------------|-------------|-----------|------------|------------|----------------------|-----------------------------|-------------------|-----------|
| A.I.T. (Previous)                   | = 96,64,766 | —         | —          | 63,68,392  | 32,96,374            | 24,82,954                   | 1,14,322          | 25,97,276 |
| A.I.T. (Current)                    | —           | —         | —          | —          | —                    | —                           | —                 | —         |
| Total                               | = 96,64,766 | —         | —          | 63,68,392  | 32,96,374            | 24,82,954                   | 1,14,322          | 25,97,276 |

verified for Rs. = 114322/- (One lac, fourteen thousand =  
= three hundred & twenty two only)

District Officer (Revenue)  
Dera Ghazi Khan

Notes: This figure displays the tax collection proforma verified by the District Accounts Officer with their stamp and signature. This verification ensures that the taxes were not merely recorded but were actually deposited in the treasury. This data is part of the tax files sourced from the Board of Revenue (BOR).

Figure C.5: An example of an incumbency board

| ASSISTANT COMMISSIONER    |           |           |
|---------------------------|-----------|-----------|
| CITY SUB DIVISION         |           |           |
| NAME                      | FROM      | TO        |
| CH. SHAFAT AHMAD          | 11.3.89   | 10.1.90   |
| CH. HABIB HUSSAIN KHAN    | 10.1.90   | 14.7.90   |
| JAVID HANIF KHAN          | 14.7.90   | 20.6.92   |
| FARUKH AHMAD KHAN         | 20.6.92   | 11.8.93   |
| KANWAR AZMAT ALI          | 11.8.93   | 7.5.94    |
| FARUK AHMAD KHAN          | 7.5.94    | 7.4.95    |
| DR. RIAZ AHMAD MEMAN DMG  | 7.4.95    | 15.2.97   |
| QAZI ISHFAQ AHMAD QURESHI | 15.2.97   | 31.5.97   |
| MALIK ALTAZ HUSSAIN       | 31.5.97   | 12.11.97  |
| MUHAMMAD ASLAM QASMI      | 12.11.97  | 19.5.99   |
| G. AKBAR KHAN KHICHI      | 19.5.99   | 3.2.2000  |
| ZAHID AKHTAR ZAMAN DMG    | 3.2.2000  | 5.5.2001  |
| NASRULLAH LEGHARI         | 5.5.2001  | 16.6.2001 |
| ABDUL WAHAB SOOMRO DMG    | 16.6.2001 | 14.8.2001 |
| DY DISTRICT OFFICER (REV) |           |           |
| CITY MULTAN               |           |           |
| ABDUL WAHAB SOOMRO DMG    | 15.8.2001 | 25.12.01  |
| NASRULLAH LEGHARI         | 25.12.01  | 18.10.03  |
| MANZOOR AHMAD KHAN        | 18.10.03  | 15.4.04   |
| NASRULLAH LEGHARI         | 15.4.04   | 18.1.05   |
| YAWAR HUSSAIN DMG         | 24.1.05   | 24.12.05  |
| TANWIR IQBAL TABASSUM     | 17.1.06   | 15.2.07   |
| RAJA SHAH ZAMAN KHORO...  | 14.2.07   | 1.6.08    |
| TANWIR IQBAL TABASSUM     | 26.6.08   | 11.11.08  |
| NOSHEEN JAMSHAD DMG       | 25.11.08  | 15.8.10   |
| KAUSAR KHAN DMG           | 16.8.10   | 20.4.11   |

| ASSISTANT COMMISSIONER  |          |          |
|-------------------------|----------|----------|
| CITY SUB DIVISION       |          |          |
| MULTAN                  |          |          |
| NAME                    | FROM     | TO       |
| KAUSAR KHAN DMG         | 21.4.11  | 12.5.12  |
| ASIM SALEEM PMS         | 12.5.12  | 11.4.13  |
| MISS SADIA MEHR DMG/PMS | 11.4.13  | 28.11.13 |
| ASHFAQ-UR-REHMAN KHAN   | 29.11.13 | 27.11.14 |
| MALIK ATTA-UL-HAQ PMS   | 27.11.14 |          |

Notes: This figure displays an example of an incumbency board sourced from the tax collector's office in Multan. This data allows us to observe the positions open at the time of any junior cohort's first job. Combined with the career charts data, it enables us to identify the senior officials available to the new cohort of junior bureaucrats during their first job.

## Part D

# Appendix for Online Publication

## 1 Details on string matching the careers, tax and exam rank data

There are no unique bureaucrat level identifiers in data on the bureaucrats' careers, their recruitment exam rank or their performance in tax collection. I, therefore, carried out a detailed string matching exercise to create the bureaucrat-month panel data that forms the basis of the study.

The exam rank data was matched with the bureaucrats' careers data on the bureaucrat's name and their cohort defined as the year of their recruitment exam.<sup>30</sup> This data was then further verified through interviews with bureaucrats, newspaper archives and information on other online forums (like <http://www.cssforum.com.pk>). This helped confirm the cohort that a bureaucrat belonged to.

To classify a junior as a top tax performer, the tax collection records had to be merged with the junior bureaucrats' careers. The tax records are at the revenue circle-month level and does not contain details of the junior bureaucrats that are the focus of this study.<sup>31</sup> I, therefore, aggregated the revenue circle-month level tax data to the subdistrict-month level, since this is the administrative level at which the junior bureaucrats worked. The string names of different sub-districts were then manually cleaned and each sub-district was allocated unique codes. A similar exercise was conducted for the career charts data. These two datasets were then merged on these sub-district codes and months.<sup>32</sup>

## 2 Sample used in the main analysis

There are three constraints on the sample used in the main analysis in the study. First, recruitment exam rank is only available for PAS bureaucrats. Second, some of the tax collection records were destroyed due to flooding in one of the basement record rooms of the Board of Revenue (see Figure 2.I) and therefore tax collection information is only

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<sup>30</sup>In some cases, it was not possible to match bureaucrats across the two datasets if the way the name was written differed across the two records, e.g. "Muhammad Mehmood" versus "M. Mahmud," and there was no cohort information to verify in the career charts data; or if the person retook the recruitment exam multiple times so that the career charts data had one cohort and the FPSC data had another.

<sup>31</sup>The dataset comprises 558 distinct revenue circles spanning the years from 1983 to 2013, amounting to a total of 30,405 observations.

<sup>32</sup>When tax data is collapsed at the subdistrict-month year level and combined with the career charts data it results in observing the tax collection performance of 644 bureaucrats. 406 of them are provincial services bureaucrats, while 234 are PAS. For details of the sample used in the study see below.

available for 234 PAS bureaucrats. Third, to identify a causal effect I have to rely on the job allocation rules of the government for a junior's first job and therefore I need information on this job. This further restricts the set of juniors I am analyzing to 99 juniors for whom *tax collection performance information is available for their first job*. These 99 juniors are observed for 63.8 months (5.3 years), resulting in a total of 6,316 observations. From these 99 juniors only 87 juniors also have information on their exam rank. These 87 juniors are observed over 63 months (5.25 years) for a total of 5,482 junior-month observations. They are from 30 cohorts that were recruited to the civil services between 1983 and 2013.<sup>33</sup> The sample used in the study is almost 14% of the universe of PAS bureaucrats.<sup>34</sup> Since ability measures of the senior are not imperative for the analysis, seniors were drawn from the wider career records. This data has information on 698 PAS and 1,197 provincial services bureaucrats observed over 154 months (12.8 years) and 134 months (11.2 years) respectively, resulting in 270,081 bureaucrat-month year level observations.

Figure 2.I: Tax collection files



*Notes:* This figure shows one of the Board of Revenue's (BOR) record room that was flooded. This resulted in a subset of files being illegible.

Although the number of juniors is 87, observed across 30 cohorts, I observe them over many months, which reduces the sample size needed to detect an effect (McKenzie, 2012).

<sup>33</sup>Since seniors are defined on the first job, I define a cohort of juniors as a group that started their on-the-job training together.

<sup>34</sup>The universe of PAS bureaucrats between 1983-2013 is 628.

Moreover, the effect size is large and that further explains the statistical significance of the results. Below I describe the representativeness of the sample and steps taken to ensure that the inference is valid despite the small amount of cross-sectional data.

**Representativeness of the sample.** To check whether the sample is representative I compare the juniors in the study sample with the broader PAS bureaucracy in a comparable time to the juniors, i.e., between 1983 and 2013 (368 officers). Table 2.I shows that these 87 juniors are a random subset of the larger PAS bureaucracy and are broadly representative of them. Most importantly, there are no systematic differences in either the fast-track promotions or recruitment exam ranking across the larger samples, suggesting that the study cohorts are not a more able or more talented group than the wider sample. An F-test of joint significance of all the variables has a  $p$ -value of 0.3247.

**Statistical inference.** Another issue is over using statistical tests that rely on asymptotic arguments in the cross-sectional dimension to justify the normal approximation. By clustering at the cohort level, the standard errors produced might be much smaller, suggesting finite-sample bias due to clustering.

Throughout the analysis I report  $p$ -values from 10,000 replications of the *Wild* cluster bootstrap-t procedure, clustered at the cohort level. This procedure has been suggested by Cameron et al., 2008 for small clusters. It provides asymptotic refinement and leads to improved inference with cluster-robust standard errors, particularly when there are few clusters.<sup>35</sup> Since then, their method has been used by studies that have had to work with a small number of clusters (Angrist and Pischke, 2009; Bloom et al., 2013; Angrist et al., 2013). Reassuringly, the  $p$ -values confirm that the conclusions drawn from the main results remain valid, notwithstanding the limited number of cohorts.

**Leverage of junior bureaucrats and stability of main results.** Another concern based on the limited number of junior bureaucrats can be that the paper's core results are driven by a small number of junior bureaucrats. This is particularly the case when using instrumental variables regressions with non-iid errors. Young (2022) describes how non-iid errors increase the probability of "spuriously large test statistics when the instruments are irrelevant, particularly in highly leveraged regressions" (p.2). To address this concern and to show that a few officers are not driving the results I re-estimate the core IV specification by removing the entire career of one officer at a time and recording their  $p$ -values on  $power \times tax$  and  $power \times social\ ties$ , respectively. Since by removing an officer we also lose observations and hence the power to detect the effects, in Figure 2.II and Figure 2.III I report these  $p$ -values as well as the number of observations. In both figures, the  $p$ -values are less stable when removing an officer removes a large chunk of the observations, however, as the number of observations increase we can see that the effect is statistically significant ( $p$ -values < 0.05) in the case of  $power \times tax$ , while it is always greater than 0.1 in the case of

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<sup>35</sup>Cameron et al., 2008 show, using Monte Carlo simulations as well as real data, that their procedure works quite well even when the number of clusters is as few as six.

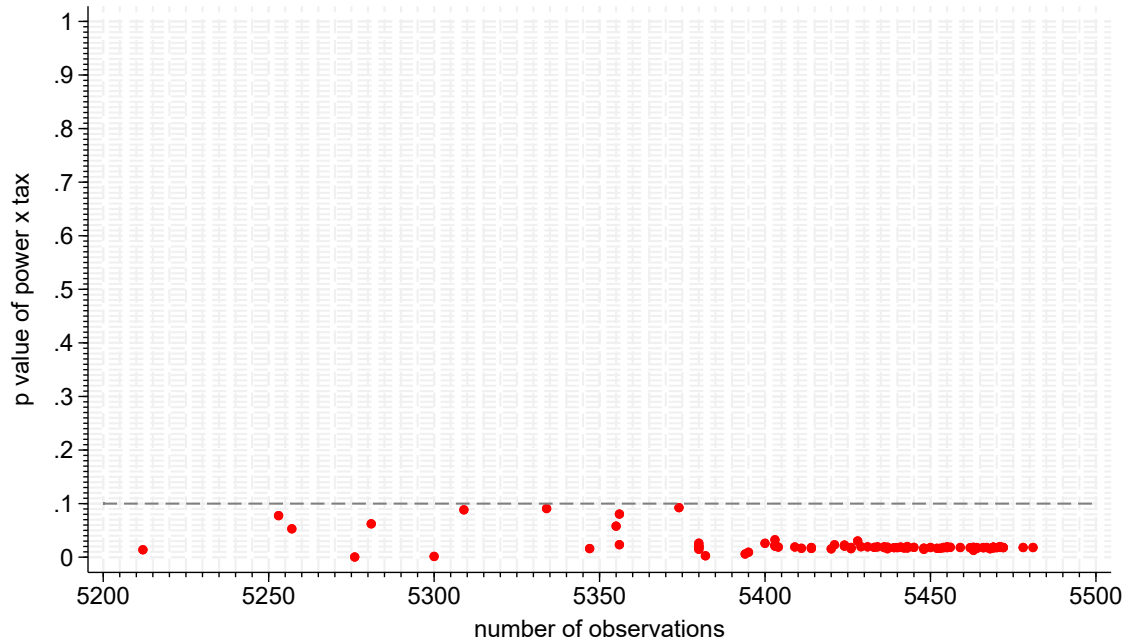
Table 2.I: Representativeness of the PAS sample

|                            | (1)<br>Study Sample<br>(1983-2013) | (2)<br>Full PAS Sample<br>(1983-2013) | (3)<br>Difference<br>(1)-(2) |
|----------------------------|------------------------------------|---------------------------------------|------------------------------|
| Fast-track promotions      | 0.25<br>(0.23)                     | 0.28<br>(0.24)                        | -0.03<br>(0.03)              |
| Recruitment exam rank      | 8.25<br>(5.24)                     | 9.14<br>(5.80)                        | -0.89<br>(0.70)              |
| Size of overall cohort     | 173.13<br>(46.22)                  | 167.11<br>(44.69)                     | 6.02<br>(5.38)               |
| Age (years)                | 30.13<br>(3.52)                    | 30.01<br>(3.77)                       | 0.11<br>(0.44)               |
| Gender (female = 1)        | 0.25<br>(0.44)                     | 0.15<br>(0.36)                        | 0.10**<br>(0.04)             |
| Home is in capital city    | 0.32<br>(0.47)                     | 0.35<br>(0.48)                        | -0.03<br>(0.06)              |
| Home is in big city        | 0.46<br>(0.50)                     | 0.49<br>(0.50)                        | -0.04<br>(0.06)              |
| Number of languages spoken | 3.40<br>(1.15)                     | 3.46<br>(1.20)                        | -0.05<br>(0.14)              |
| Religion (Islam = 1)       | 1.00<br>(0.00)                     | 0.99<br>(0.07)                        | 0.01<br>(0.01)               |
| Observations               | 87                                 | 368                                   | 455                          |

*Notes:* This table displays the average values of variables across two sets of bureaucrats: those included in the study sample and those in the larger PAS sample. The last column reports the difference in averages between the two groups. *Fast – track promotions* is a dummy variable that takes a value of one whenever the junior bureaucrat is fast-tracked and remains zero otherwise. *Recruitment exam rank* is the rank of the junior bureaucrat in the civil service competitive recruitment exams. *Size of overall cohort* is the number of other bureaucrats recruited alongside the junior bureaucrats. *Languages spoken* are the total number of languages spoken by the bureaucrats. *Home is in capital city* (*Home is in big city*) is a dummy variable that take the value of one if a bureaucrat's home is in a capital city (big city). Exam rank and size of cohort are from FPSC's records, and all other data from the career charts of bureaucrats. Standard errors in parentheses. F-stat of a joint significance test is 1.15 ( $p$ -value=0.3247). Significance levels are denoted as: \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

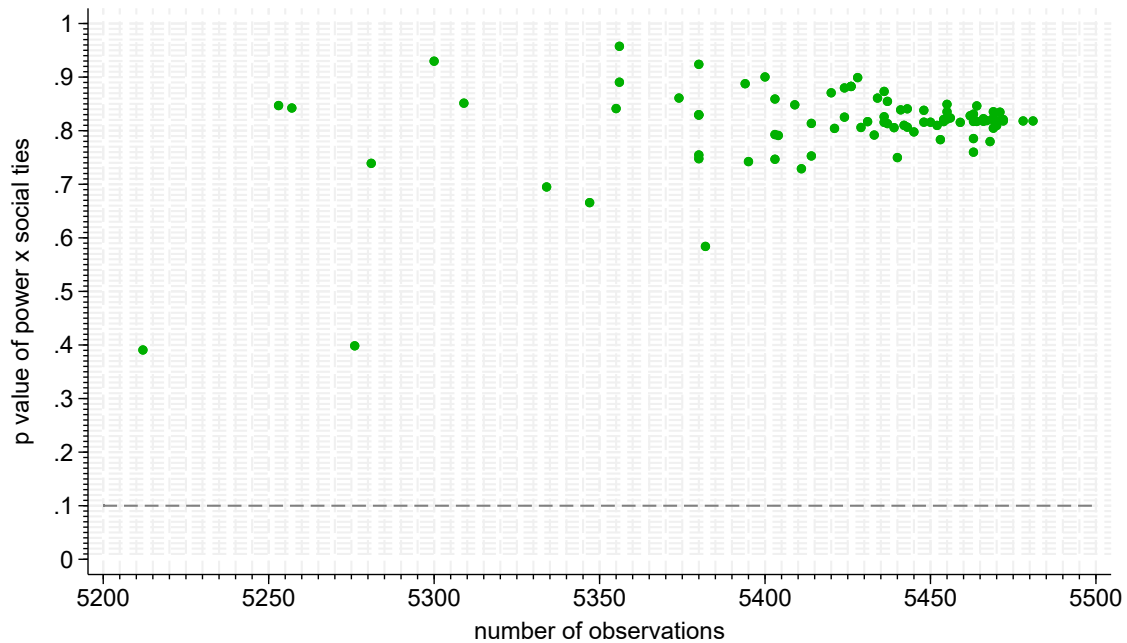
social ties. This lends support to the fact that the results are stable and not driven by just a few officers.

Figure 2.II: Robustness checks: [Young \(2022\)](#)'s critique and examining leverage in IV regressions



*Notes:* This figure, created following [Young \(2022\)](#), examines the leverage of bureaucrats in the IV regressions and the stability of the main results concerning the power of seniors and tax-based ability. It shows the  $p$ -values for the coefficients of  $power\ of\ seniors \times tax$  and the number of observations from the IV estimation described in [subsection 2.2](#), after sequentially dropping the entire career of one junior bureaucrat at a time. The horizontal gray dashed line marks significance at the 10% level.

Figure 2.III: Robustness checks: [Young \(2022\)](#)'s critique and examining leverage in IV regressions



*Notes:* This figure, created following [Young \(2022\)](#), examines the leverage of bureaucrats in the IV regressions and the stability of the main results concerning the power of seniors and tax-based ability. It shows the  $p$ -values for the coefficients of *power of seniors*  $\times$  *social ties* and the number of observations from the IV estimation described in [subsection 2.2](#), after sequentially dropping the entire career of one junior bureaucrat at a time. The horizontal gray dashed line marks significance at the 10% level.

### **3 Data sources for investigating correlations of social ties and ability with other measures of service delivery**

The source for the subjective evaluation data is the career records of juniors. Juniors are classified as average, good, very good, and outstanding. I classify subjective evaluation as a dummy variable that equals one whenever a junior is classified as very good or an outstanding worker. Data on this measure is limited, as career records don't always record performance evaluation. I observe subjective evaluations for nine out of thirty cohorts.

The data on the citizen perception survey is compiled by Oasis Insights (Private) Limited in 2014. This study was commissioned by the World Bank and carried out a ten to fifteen minute telephone survey, aimed at understanding citizen's perceptions of services delivered by the state, as well as the efficacy of the Citizen Feedback Model (CFM) as an accountability mechanism (Masud, 2015; Beschel et al., 2018). The sampling frame was anyone that had used at least one of eleven different services between September 2012 and February 2014. Out of these eleven services, there was one that is relevant for juniors in this study: the issuance of "*fard*" or land titles. These land titles are delivered by the lowest tier of the junior's team. For this particular service, 900 citizens were surveyed. Data on the performance of each junior's team is available for a maximum of four cohorts.