Meritocracy in a Bureaucracy[*]

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Abstract

How do decision makers use information about workers' ability to make promotion decisions in a Weberian bureaucracy with no explicit incentives? I examine discretionary promotions of junior Pakistan Administrative Services (PAS) bureaucrats by their senior officials. I compile unique data on the abilities of junior officers, including both publicly available recruitment exam rank and information on job performance that is only privately available to senior officials. Results show that seniors use both public and private information meritocratically in making fast-track promotions. Despite having no explicit incentives, seniors are meritocratic when choosing and promoting juniors to other teams. This is consistent with implicit incentives aligning incentives.

JEL codes: D02, D04, D2, D23, D73, H1, H11, J45, M51, O1, O12, O53, P16

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A worker's ability is not perfectly known in most organizations and has to be inferred from various signals. Some of these signals are public and available to the whole organization, for example, rank in screening tests or educational certificates. On the other hand, other signals are only observable to a subset of people that work closely with these workers and, therefore, their private information. How decision-makers use these signals and how these two interact in promotion decisions remains an open question. The challenge for the researcher is directly observing the private information of decision-makers.

Furthermore, it is important to base the research on baseline measures of workers' ability to understand whether promotions were meritocratic. This is because an analysis that infers meritocracy of decisions from promoted workers' performance in the higher-ranked job will be incomplete. If a promoted worker does not perform well, is it because of biased promotion decisions; or a result of 'Peter Principle' i.e. doing well in the lower rank job may not predict doing well in the promoted task (Benson et al., 2019, Lazear, 2004); or just differential incentives for effort in the higher rank? Our understanding of discretion in organizations and the policy implications we draw would be very different in these three cases.

An added layer of complexity can come from basing this question in the context of a public sector bureaucracy. With proper incentives[1] and time in a competitive labor market (Farber and Gibbons, 1996; Altonji and Pierret, 2001; Schönberg, 2007; Lange, 2007; Aryal et al. (forthcoming)), one can expect that the decision-makers will make the best use of their information and learn about the ability of the workers. However, due to the nature of the production process and statutory rules, public sector organizations are neither competitive, nor disciplined by a profit motive, nor free to use explicit incentives like piece rate or team pay.[2] In such organizations it is unclear whether private information will ever be used in decision making and whether public signals will gain more importance or discipline the use of private signals.

In this paper I digitized a unique dataset for the first time that allowed me to investigate how decision-makers use both public and private information about the ability to make promotion decisions. I base this study in the context of a public sector bureaucracy, i.e. the Pakistan Administrative Services (PAS).[3] I find that promotion decisions are meritocratic, despite a lack of explicit incentives of decision-makers. The result challenges the conventional acceptance of rules within Weberian bureaucracies and shows that even such organizations can make use of local information through allowing discretion.

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[1] Though not studying discretion, some recent papers suggest that changing explicit incentives—such as moving from flat wages to piece rates (Bandiera et al., 2009), 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.

[2] Historically, such restrictions were a direct response to earlier patronage systems, where appointments, promotions, and dismissals were decided based on personal or political connections. The dominant intellectual argument has historically been to restrict discretion altogether (Dixit, 2002; Finan et al., 2017; Wilson, 1989; Evans and Rauch, 1999; Evans, 1995; Bekke et al., 1996). The foundations of such rule-based bureaucratic organizations were laid by Weber, 1922. The roots of modern-day bureaucracies go back to the British Northcote et al., 1854 report. See Bertrand et al., 2020 for a detailed discussion of why bureaucracies moved towards rules in the case of Indian Civil Services and Bai and Jia, 2016 for a discussion of the Chinese recruitment system for elite civil servants.

[3] PAS is an elite cadre of generalist bureaucrats, responsible for running key government departments. In general, such bureaucrats start off their careers as heads of revenue administration in tehsils, but after this initial phase they have diverse assignments that can range from being responsible for the roll-out of health and education programs, to the protection of property rights, to the implementation of various UN and World Bank projects. We know very little about the allocation of talent within such bureaucracies, and this paper also helps fill this gap in the literature as well.

I focus on the fast-track promotions of juniors as the main outcome of interest since such promotions are discretionary and not a matter of right. Fast-track promotions occur whenever seniors promote the junior to a job that has a higher rank (with all its perks and privileges) than their official rank. Job ranks are taken as given and determined historically through a long bureaucratic procedure involving many committees. Official ranks are based on rules that use the subjective performance evaluation of the bureaucrat by their immediate bosses, the number of years of experience in service, and mandatory training. Historically, fast-track promotions evolved as a more flexible institution to give decision-makers more discretion in a rigid Weberian bureaucracy like the PAS. While official promotions are rule-based and happen less frequently, this is not the case for fast-track promotions, which are much more frequent. Bureaucrats are fast-tracked within the same bureaucracy and are not seconded to other organizations when fast-tracked. The probability of a PAS to be fast-tracked is 25% in any given month.

The measure of ability that is private information of decision-makers is created from the junior's tax collection performance. Junior officials are responsible for revenue administration and collect taxes against an annual target in their first job.[4] I observe each junior's performance across months in the first job. I collapse this data to create a time-invariant average tax collected by a junior. I compare this average with the cohort's average and define top tax collectors as those whose average tax collection performance in the first job lies at the top of their cohort.[5] The main skill required to succeed in tax collection is team management, which is relevant for long-term job performance.

I test to see whether tax collection measure captures anything meaningful about the true underlying ability of the junior. First I conduct a direct test to see whether it is just the characteristics of the first job that mechanically results in someone being a top tax collector. I find that there is no correlation between the probability of being identified as a top tax collector and the size of the tax target or difficulty of the job measured through historical tax arrears in that job or the probability of that job being in a large city. This suggests that it is unlikely that the measure is just a proxy for characteristics of the job. Next, I test the correlation of tax performance with other performance measures. I find that top tax collectors are 10% more likely to be awarded 'very good' or 'outstanding' in their performance evaluation, and citizens are 33% more likely to report that attitude of the top-tax collecting junior's team improved under them. Despite this positive correlation, neither of these measures are a sufficient statistic for tax performance as the correlation between the measures is far from perfect. Tax performance, therefore, carries additional information about the ability of junior that is not captured in entirety by either of these measures.

The reason that this is the private information of the decision-makers is as follows: Senior officials meet regularly with their juniors to keep tabs on their performance. However, the institution is such that the rest of the organization can only see the district averages of collected taxes and not the individual performance of juniors. A junior's individual performance never makes it to their career files, promotion documents, and referrals, nor does it get publicly discussed anywhere else (see, for example, Husain, 2012; Cheema and Sayeed, 2006; Hanif et al., 2016; Tanwir and Chaudhry, 2016 for a discussion on the absence of objective performance measures in evaluation reports or promotion documents). Tax collection data was digitized for the first time using historical records of the Board of Revenue and is at

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[4]Tax target is based on farm size or farmer's income (whichever results in a higher tax due).

[5]The results are presented for the top 10% and top 50%.

a revenue circle-month level.[6]

I create a time-invariant public measure of the juniors' ability that ranks them based on their civil service recruitment exam performance. I have digitized this dataset from the Federal Public Service Commission (FPSC) for the first time. The skills required to do well in this exam are English language proficiency and critical thinking. Only the top exam ranking bureaucrats are viewed as high ability. Those who came in last or next to last in their cohort are perceived as having low ability. Following this organizational norm, I classify high- and low-ability bureaucrats as those ranked in the top and bottom 10% of their cohort in the recruitment exam, respectively.[7] Exam performance, though publicly observable and considered important as a measure of ability, is a noisy determinant of performance. It is statistically uncorrelated with either subjective performance evaluation or citizens' view of service delivery.

The decision-makers considered have worked with the cohorts of newly-recruited bureaucrats in the same department during the junior's first job when they are responsible for tax collection.[8] For each junior, the average number of seniors they work with in their first job is 13. The institution is such that these first seniors rise in the organization and have increased discretion over the fast-track promotions. Therefore, the discretion of seniors is quantified by calculating the average official grade of these first seniors. This gives me the explanatory variable of interest, which I call $\overline{Power}$. Data on $\overline{Power}$ and the outcome variable, fast-track promotions, are based on the bureaucrats' career charts which were digitized for the first time for this paper. An advantage of classifying seniors using this data, rather than network surveys which can suffer from measurement error and subjectivity bias (Jackson, 2013), is that I can objectively classify the set of seniors.

For the $\overline{Power}$ measure to be causal, both the initial match between the seniors and junior officials has to be random; and changes in the discretion of the senior have to be exogenous to the unobservables of juniors. If juniors with better unobservables are allowed to select the department for their first job, and if these correlate with the senior's discretion, then $\overline{Power}$ will be endogenous. I describe below the rules that allow me to construct a theoretical rule-based measure: the power of potential seniors $\overline{Power^p}$ as an instrument for $\overline{Power}$.

The instrument 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. 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.[9] This gives *for each cohort* a set of "potential" first seniors with whom they could have worked in their first job. The mean number of potential seniors is 30.

I combine this variation with a *theoretical* time variation in the rise of these potential seniors. The rules of the government stipulate that a bureaucrat will get one official promotion at five, twelve, seven-

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[6]Revenue circles are an even more disaggregated unit than tehsils. They are comprised of a few villages.

[7]The results are not locally sensitive to these cutoffs.

[8]After this first job, senior and junior bureaucrats move across many departments and the junior may or may not work with the same seniors from the first job. Data from the first job of juniors is only used to classify seniors and high tax performing juniors. Any fast-track promotions during the first job are excluded.

[9]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.

teen, and twenty-two years after entering the service.[10] For *each potential senior*, this rule helps build their theoretical promotion in the organization over a month-year. The instrumental variable, power of potential seniors $\overline{Power^p}$, combines both sources of variation and is defined as the average theoretical promotion power of potential seniors.

The empirical specification uses an interaction of public and private signals of ability with the power of potential seniors and includes both cohort and month-year fixed effects. Therefore, the design is a triple difference-in-difference with an instrumental variable for power. Comparing high and low ability juniors across cohorts and time allows me to net out the effect of other unobservables that may be correlated with junior's exam and tax performance and affect their careers. The main assumption remains the Exclusion Restriction for the IV, i.e. the power of potential seniors does not directly affect junior's promotion through for example, their unobserved ability. One example of a violation of the Exclusion Restriction can be if vacancies are created for specific star cohorts of juniors, who also enjoy better careers. This manipulation of vacancies can happen either directly or through the manipulation of when training ends for these juniors. I find that neither is true in this setting. First, a central agency follows the rules in selecting the month and year when the juniors end training and begin their first jobs. Second, I test whether the number of vacancies changes when training ends and the first job of the new cohort of juniors begins and find that they do not. Third, I also test whether any systematic characteristics of the district determine vacancy and tenure in these district departments and find that they do not. Last, a balance table shows no systematic differences across power of potential seniors in almost all baseline characteristics. This includes recruitment exam rank and tax collection performance, which suggests that potential seniors are not selected based on ability.[11] In all specifications I also use controls including an annual time trend of the first job, experience and experience squared of the junior, the official rank of the junior, a dummy variable for whether their job is in the field offices to account for any unobservables that might be correlated with the instrument and directly affect promotions.

The results show that fast-track promotions of juniors are meritocratic based on their tax collection performance. Across all definitions of tax collection performance, with a one rank above average increase in the power of potential seniors, the top tax collection performers have between a 12% and 20% higher probability of being fast-tracked than bottom tax collection performers. The total effects are large in magnitude and statistically and economically significant. Since tax collection rank is an important determinant of performance, these results suggest that local information was harnessed by allowing discretion to seniors, despite the absence of any explicit incentives.

Second, while tax collection performance matters, the recruitment exam ranking also appears to play a role. Across OLS, IV, and reduced-form estimations, the results show that with a one rank above average increase in the power of potential seniors, the juniors who scored in the bottom 10% of the recruitment exam rankings have between a 20% and 28% lower probability of being fast-tracked than those in the reference category. An *F*-test testing the similarity of the differential effect of power across the top tax collectors and bottom exam performers rejects the null across all specifications and definitions of tax collection performance (*p*-value=0). These results suggest path dependence, meaning that those

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[10]The Minimum Length of Service Rules, Establishment Division's O.M.No.1/9/80-R.2 dated 2-6-1983

[11]In fact, those with high tax performance and recruitment exam rank are less likely (though not statically significantly so) to have potential seniors with above-median power.

juniors who performed poorly in the recruitment exam cannot fully redeem themselves through high tax collection. This effect is reversed for the top 10% of exam performers. Although not statistically significant, the effects are positive for the top 10% of exam performers.

Next, I explore the reason for promotions to be meritocratic. Are fast-track promotions of high-ability juniors done to enhance the interests of the senior? To determine this, I investigate whether promotions are meritocratic within all teams (the seniors' and others). In the absence of explicit incentives, meritocratic promotions of juniors to other teams is consistent with seniors' reputational concerns of referring a high-ability junior to those teams. While meritocratic promotions in seniors' teams is consistent with their career incentives of setting up the best team for themselves.

The results suggest that the reputation from promoting a high-ability junior to another senior's team appears to be an important determinant of meritocracy. A one rank above average increase in the power of potential seniors results in a nearly 1.3 times higher log of the relative risk ratio for the top tax collection performers to start working in other teams and be fast-track promoted there (relative to the base category). This result is statistically significant, with a *p*-value of 0.01. The higher likelihood of promotions for the top tax collection performers comes at the expense of those juniors who scored poorly on the exam. The results show that a one rank above-average increase in the power of potential seniors results in a 4.8 times lower log of the relative risk ratio for the bottom 10% of exam performers to move across other teams and be fast-track promoted there (relative to the base category). The negative differential effect for those who scored in the bottom 10% of exam rankings is stronger in other teams than in the senior's own team. While the differential effect of power for top tax collection performers is positive within their own team, it is not statistically significant. This suggests that career incentives are not a dominant channel behind meritocracy. One interpretation of this reduced importance of career incentives is that these incentives fall as one reaches the top of ones career (Holmström, 1999; Dewatripont et al., 1999a,b).

These results suggest that: first, implicit incentives exist that make seniors use their private information in fast-track promotion decisions of juniors; second, these implicit incentives are weakly heterogeneous so that seniors care more about the reputational benefits of referring juniors to other teams more than the career incentives of setting up the best team for themselves; and, third, that negative public information on the ability of a junior is an important determinant in whether that junior gets promoted and moved across other teams, which is not the case in the senior's own team. I conclude the paper with a discussion of alternative interpretations of the key results.

Related Literature. This paper relates to and complements the literature on delegation in organizations. Mookherjee, 2006, Gibbons et al., 2013, and Bolton and Dewatripont, 2013 provide excellent surveys of the key theoretical papers and ideas involved in the delegation of decisions. Micro-evidence on the effects of discretion have had mixed results. Multiple studies have shown how discretion can result in biased allocations, nepotism or corruption in organizations (Niehaus and Sukhtankar, 2013; Sukhtankar, 2015; Hoffman et al., 2018; Fisman et al., 2018; Fisman et al., 2020; Xu, 2018; Colonnelli et al., 2018). On the other hand only a few show the positive effects of discretion, especially in the case of public sector organizations (Brollo et al., 2018; Li, 2017). In a first to show that a political system known for patronage can still select competent leaders Jia et al., 2015 show that connections to

members of the Politburo Standing Committee (PSC) increases the probability of promotion to political leadership in China, but only for those that have higher performance as measured through economic growth. They interpret the role of connections as fostering the loyalty of junior officials to senior ones. In a recent working paper studying 18th century British Royal Navy, Voth et al., 2020 complement the influential work of Jia et al., 2015 to show that those promoted through family connections to the Admiralty perform better. They interpret the role of family ties as providing private information about naval officers.

While these papers interpret the importance of connections as a means to foster loyalty or provide private information, without direct observation of the private information of decision-makers, the question of whether connections make better use of their private information remains an open one. This paper contributes to this literature by being the first to directly observe the private information of connection (senior) about performance on the job, information that never makes it to any formal file or promotion dossier of the junior;[12] and also investigating the reason behind meritocracy. Moreover, the study is based on a modern typical Weberian bureaucracy rather than a historical one based in an age of patronage. To see the meritocratic use of private information by connections in a system as rigid as a Weberian bureaucracy like the Pakistan Administrative Services has important policy implications for the use of rules in modern organizations.

The paper also contributes to the broader work on promotions and evaluations in the personnel and organizational economics literature (Benson et al. (2019); Frederiksen et al. (2020); Hoffman and Tadelis (2021)). More specifically, it contributes to the rapidly expanding literature on the organizational economics of the state (see Finan et al. (2017) for a review). Dal Bó et al., 2013 and Ashraf et al., 2020 study recruitment in the public sector, but there has been very little attention paid to the internal allocation of talent through promotions. This is despite the fact that there are certain points of entry in most bureaucracies, after which talent is largely allocated internally through promotions. The results in this paper suggest that the rules versus discretion debate is far from over and also adds to a small but growing body of evidence on the usefulness of autonomy in public sector organizations (Bandiera et al., 2009; Rasul and Rogger, 2018; Duflo et al., 2018; Bandiera et al., 2020). Finally, this paper also complements the literature that argues that in public sector bureaucracies, implicit incentives matter.[13] This paper adds to this literature by studying promotion decisions and arguing that seniors' reputational concerns regarding referrals or the career incentives of them setting up the best team for themselves can be drivers of meritocratic promotions.

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[12]Some studies of competitive labor markets studying employer learning in developed countries have used Armed Forces Qualification Test (AFQT) scores (Farber and Gibbons, 1996; Altonji and Pierret, 2001; Lange, 2007) or differential implementation of a compulsory schooling reform across municipalities (Aryal et al., ming) to generate proxies for private information on the ability of workers. To the best of my knowledge, there has never been a study based on direct observation of private information of the decision-makers about ability based on performance on the job.

[13]Implicit incentives have been argued to 1) motivate performance on the job by aligning mission preferences or career concerns (Besley and Ghatak, 2005; Dewatripont et al., 1999b; Khan, 2020 Bertrand et al., 2020); 2) impact the recruitment of talent within bureaucracies (Ashraf et al., 2020); and 3) impact the human capital investment of bureaucrats (Iyer and Mani, 2012).

1 Background

The Pakistan Administrative Services (PAS) is an elite group of federal civil servants that is very similar to the Indian Administrative Services (IAS). They are both successors to the Indian Civil Service (ICS). Though not a huge bureaucracy, PAS officials remain key players within the machinery of the government. The most senior civil service positions—the Secretary of Cabinet at the federal and provincial levels, the Chief Secretary of all the four provinces, and heads of most provincial and federal government departments—are generally occupied by PAS officers. PAS bureaucrats are involved in designing the health, education, and taxation policies of the government, as well as implementing various key projects for both the government and international financial institutions like the World Bank and United Nations. They also occupy key positions in public sector enterprises, autonomous bodies, and state-run companies. Therefore, the allocation of talent within this bureaucracy has important implications for the country's welfare as a whole.

PAS recruitment takes place through a competitive exam conducted by the Federal Public Service Commission (FPSC). PAS bureaucrats start their career at rank seventeen and can get promoted all the way to rank twenty-two. Appendix Figure E1 presents the timeline of the initial career of a new PAS recruit. After recruitment, PAS civil servants undergo eighteen months of academic training, which is followed by six months of on-the-job training.[14] Training is centrally administrated by the Civil Services Academy, as well as the Pakistan Administrative Services (PAS) Academy. The length of training and the dates of the start and end of training are determined centrally by these training institutions, under the guidance of the federal government. After twenty-four months of training, new recruits are allocated their first job. New PAS recruits are meant to start their initial career as the heads of the revenue administration in the tehsils of Punjab. Here, one of their main jobs is to oversee tax collection and manage teams of revenue officials. While on paper revenue administration is their main task, in reality the government allocates additional tasks to them from time to time. These can include providing assistance in wheat procurement in the spring of every year, monitoring the hoarding of fertilizers in certain months, relief efforts in case of floods, etc. (the implications of these extra jobs for the analysis in this paper are discussed in Appendix B). How the initial allocation of PAS bureaucrats to their first revenue administration jobs is carried out is implied by the Tenure/Transfer Policy of the government. Following this policy, new recruits can only be allocated jobs that are vacant or where the incumbent bureaucrat has been present at least one year. This is the policy that I exploit to get variation in the set of seniors.

There are two kinds of promotions in this setting, official promotions and fast-track promotions. Official promotions are based on rules regarding experience, mandatory training, and thresholds of performance based on a subjective performance evaluation of the bureaucrats by their immediate bosses. On the other hand, fast-track promotions are when higher-ranked jobs are allocated to junior civil servants ahead of their official promotions. Once granted, these official promotions become a matter of right and cannot be reversed. This is not the case with fast-track promotions, which are at the discretion of the seniors in the organization and can be reversed at any time. There is no cap on the number of fast-track promotions that a senior does. The only limit is in the number of high-ranking positions available.

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[14]This has historically ranged from eighteen weeks to thirty-seven weeks.

Seniors of any rank can formally (in writing) or informally (over the phone or in person) requisition the services of a junior bureaucrat for a higher post in their department or team. Such requests are made to the Services and General Administration Department, where bureaucrats from grade 17 to grade 22 deliberate and express their opinions on the requisition request. This is done using case files. The final confirmation comes from the Chief Secretary of the province (a grade 22 bureaucrat) or, in the case of fast-track promotions to grade 20 and above, by the Chief Minister of the province. Similarly, any senior can refer a junior to another senior who has never worked with that junior before. If the referral is considered favorable, the new senior will then requisition the services of the junior for their own team. This will move through the Services and General Administration Department in a similar manner. The higher a senior bureaucrat rises, the higher the likelihood that their referrals as well as requisition requests will be considered favorably. This institutional context allows me to use the rule-based promotions of seniors as a measure of their discretion.

2 Conceptual Framework

In this section, I present a conceptual framework to illustrate how the power of seniors can have an effect on the probability of a junior bureaucrat's promotion and how this can vary based on both the senior's public and private information on the junior's ability and the team to which promotions are made.

The framework illustrates how a bureaucracy with fixed wages, job security, and limited competition from the market can still have meritocratic discretionary promotion of junior bureaucrats by seniors through implicit incentives. Promotions that occur more often for high-ability juniors than for low-ability juniors are defined as meritocratic. The conceptual framework discusses how public and private information interacts in such decisions and makes precise the conditions under which we will observe meritocracy based on either kind of information. There is one main takeaway: meritocracy on the basis of public information is possible even in the absence of incentives, but this is not the case for private information. All proofs are shown in the appendix.

2.1 Setup

The organization faces a decision to promote a junior and would like to promote the highest ability junior. Ability ($a \in \mathbb{R}_+$) of a junior is observable to the junior, but unobservable to the organization. The organization, including senior, observes a public signal of the junior's true ability (a) i.e. $\widetilde{\theta}$, so that to them the distribution of $\widetilde{a} = a|\widetilde{\theta} \sim \mathcal{N}(\mu_{\widetilde{\theta}}, \frac{1}{\kappa_{\widetilde{\theta}}})$, where $\kappa_{\widetilde{\theta}} \in (o, \infty)$ is precision of $a|\widetilde{\theta}$. To fix ideas consider recruitment exam ranking as such a public signal of ability $\widetilde{\theta}$. Seniors privately observe an additional signal of the junior's ability, i.e. $\theta = a + \varepsilon$, where ε is independent of $a, \widetilde{\theta}$ and $\varepsilon \sim \mathcal{N}(0, \frac{1}{\kappa_{\theta}})$.[15] $\kappa_{\theta} \in (o, \infty)$ is the precision of private signal of the senior θ. If κ_{θ} approaches infinity, the senior perfectly observes the ability of the junior. To fix ideas, we can think of the junior's average tax collection performance in their first job as one such private signal of the senior. This is observed by the senior, but not by the organization. Ability that is conditional on the public signal and the senior's private signal is

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[15]This captures in a reduced form way the idea that the senior has worked with the junior and thus has more information on the junior's type than the organization does.

jointly normally distributed, and therefore the conditional distribution of ability $(\widetilde{a})$ given θ is as follows:

$$E(\widetilde{a}|\theta) = \pi_\theta \theta + (1 - \pi_\theta)\mu_{\widetilde{\theta}} \tag{1}$$

where $\pi_\theta = \frac{\kappa_\theta}{\kappa_{\widetilde{\theta}} + \kappa_\theta}$. The higher the precision of the senior's private signal, the more weight he will assign to θ over $\mu_{\widetilde{\theta}}$, and vice versa. The organization wants to make use of the senior's local information (θ) and thus delegates the decision of whether to promote the junior to the senior.[16] The senior's incentives are not perfectly aligned with the organization's. The senior has social preference towards the junior, which might bias their decision. This bias is captured in a reduced form way in the model by b.[17] The senior puts a weight $\alpha \in [0,1]$ on $E(\widetilde{a}|\theta)$, and puts a weight $(1 - \alpha)$ on their social preference (b) towards the junior. Since this is a bureaucracy with fixed wages and job security, we can think of α as a measure of the alignment of the senior's interest with the organization. This could be a result of simple altruism towards the organization or other incentives (see details below), all of which are some form of implicit incentives.

As is typical in large public sector organizations, the discretion enjoyed by the senior is not absolute. The senior has to exert effort γ into promoting the junior. We can think of γ as the senior's cost of filling out the paperwork and explaining their promotion decision. The greater the effort by the senior (γ), the higher the probability is that the junior will be promoted. With $1 - \gamma$, the junior is not promoted.[18] The senior faces a convex cost of promoting a junior, which is a decreasing function of seniority of the senior or their power in the organization (ρ)[19] and $\mu_{\widetilde{\theta}}$, i.e., it is easier to promote a junior if the junior is publicly viewed as high ability. We can also think of this part of the cost as a psychological cost of promoting an observationally low-ability junior. With exogenous probability $v_{own\ team}$, a position opens up in the senior's own team; while with probability $v_{other\ team}$, a position opens up in other teams. This results in the senior's maximization problem as follows:

$$max_{\gamma_m} \quad v_m \left\{ \gamma_m \left[\alpha_m E(\widetilde{a}|\theta) + (1 - \alpha_m) b \right] - \frac{\gamma_m^2}{2\rho\mu_{\widetilde{\theta}}} \right\} \tag{2}$$

where $m = \{senior's\ own\ team,\ other\ team\}$. α_{own} can be thought of as the senior's career incentives, i.e. promoting a high-ability and better performing junior in their own team means that they are viewed as a high performer and a good manager, resulting in an increased chance of their own "fast-track" promotion.[20] α_{other}, on the other hand, reflects reputational gain by promoting a junior of high ability to

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[16] I abstract away from the conditions under which delegation is worthwhile for the organization and simply restrict attention to the senior's decision problem conditional on having the right to decide promotions for juniors.

[17] Sociologists have long argued that interactions at workplace shape worker behavior (Mayo, 1933; Roy, 1952; Roethlisberger and Dickson, 1939). See Ashraf and Bandiera, 2018 for a review within Economics of social preferences between actors within organizations. These could be between peers (horizontal) or between managers or subordinates (vertical). This bias could be based on reciprocal relations (intrinsic or instrumental) between the senior and junior or on collusion (Sobel, 2005; Tirole, 1986). It could capture friendship between senior and junior bureaucrats, or simple altruism, or the loyalty of seniors towards juniors they have private information on (Rotemberg, 1994; Tabellini, 2008).

[18] To fix ideas , this is the pool of bureaucrats that have been recruited by the civil services but are waiting to be allocated a job. This is a common practice in the Pakistani civil service, where the officers in the pool are referred to as officers on special duty (OSD).

[19] ρ captures the standard idea in organizations that seniors or higher management have more discretion over decisions and are listened to more.

[20] These career incentives could equally be the result of competition between teams of seniors for promotion, so that with high competition, a senior's weight on $E(\widetilde{a}|\theta)$ in their own team is higher, or, conversely, their weight on $E(\widetilde{a}|\theta)$ in other teams

another team.[21] α_{own} might be greater than, less than, or equal to α_{other}. The senior's effort in promoting a junior is therefore:

$$\gamma_m^* = \rho \; \mu_{\widetilde{\theta}} \left[\alpha_m \, E(\widetilde{a}|\theta) + (1 - \alpha_m) \, b \right] \tag{3}$$

The power of the senior (ρ) affects their promotion effort as follows:

$$\frac{\partial \gamma_m}{\partial \rho} = \; \mu_{\widetilde{\theta}} \left[\alpha_m \, E(\widetilde{a}|\theta) + (1 - \alpha_m) \, b \right] \tag{4}$$

Implication 1: *With an increase in power (ρ), if $\alpha_m = 0$ so that senior's interests are not aligned with the organization, but $b > 0$, promotions will still be meritocratic based on publicly observed ability. This is irrespective of the team to which the promotion decision is made.*

Publicly observed ability of the junior reduces the cost of effort in promotion decisions. Even if senior is equally biased for any type of junior and doesn't care about $E(\widetilde{a}|\theta)$ at all, it is less costly to promote a junior with better observables. Therefore, with increases in power we would see meritocracy based on publicly observed ability. But in such cases, promotions will be equally meritocratic in the senior's own team as in other teams.

Implication 2: *With an increase in power of the senior (ρ), promotions will be meritocratic based on the private information of the senior if, and only if, $\alpha_m \neq 0$, i.e., the incentives of the senior and the organization are not completely misaligned.*

If $\alpha_m = 0$, then the senior gets no benefit from basing their decision on $E(\widetilde{a}|\theta)$. This is true irrespective of the team for which promotions are decided. This is an if and only if statement and has stronger implications. It implies that in a bureaucracy with fixed wages, job security, and no competition from outside, if we observe that a senior's promotion decision is based on their private information, that can only be due to implicit incentives. This is an "existence" result. Observing a senior's promotion decision based on their private information implies the existence of implicit incentives in a public sector bureaucracy. Furthermore, promotions will be meritocratic in senior's team if and only if $\alpha_{own} > 0$ i.e. there are career incentives of setting up the best team for themselves. And promotions will be meritocratic in other team if and only if $\alpha_{other} > 0$ i.e. there are reputational gains by promoting a junior of high ability to another team.

3 Data: Key variables and descriptive statistics

3.1 Sample selection

The paper relies on four main datasets that were newly digitized for the study: (1) career charts data from the S&GAD that contain details of the careers and background of both the Pakistan Administrative Ser-

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is lower.

[21]For simplicity, I abstract away from a senior's reputation of having high-ability juniors in their own team. We can think of the senior's career concerns of promoting high-ability juniors in their own team as an amalgam of such reputational benefits, as well as implicit promotion incentives.

vices (PAS) and provincial services bureaucrats; (2) the recruitment exam rankings of PAS bureaucrats from the Federal Public Service Commission (FPSC); (3) historical tax collection in revenue circles across Punjab from the Board of Revenue; and (4) incumbency boards of Assistant Commissioners across Punjab (data details are described in Appendix A). There are no unique bureaucrat level identifiers in either the career charts data or the recruitment exam ranks or historical tax collection records from the Board of Revenue. The exam rank data was matched with the career chart data on name and year of recruitment exam,[22] while tax collection data was matched on tehsil-month. Combining these data resulted in a bureaucrat-month panel dataset.

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, since some of the tax collection records were destroyed due to flooding in one of the basement record rooms of the Board of Revenue, tax collection information is only available for 234 PAS bureaucrats.[23] Third, to identify a causal effect I have to restrict attention to each junior's first job as Assistant Commissioner and rely on the job allocation rules of the government. 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 64.5 months (5.4 years), resulting in a total of 6,387 observations. All the main tables present results with this subset of juniors first, before including exam rank in the estimation. From these 99 juniors only 87 juniors also have information on their exam rank. These 87 juniors are observed over 64 months (5.3 years) for a total of 5,553 junior-month observations. They are from 30 cohorts that entered the civil services between 1985 and 2013.[24] Other than these 87 juniors, the career charts 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 level observations. Seniors are from this larger set of bureaucrats. The universe of PAS bureaucrats between 1975-2013 is 829. Therefore, the sample used in the study is almost 12% of the universe.

Although the number of juniors is 87, observed across 30 cohorts, we observe them over many months, which reduces the sample size needed to detect an effect (McKenzie, 2012). Moreover, it appears that the effect on the main results is large (between 36 and 50 percent of the mean of fast-track promotions), which further explains the statistical significance of the results. Despite that, the small amount of cross-sectional data might still raise two broad issues. A first potential concern is what type of statistical inference is appropriate given the sample size. The second potential concern is whether the sample is too small to be representative. I discuss each concern in turn and the steps I take to address them.

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[22]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. I used newspaper archives, interviewed various bureaucrats, and used various online forums (like http://www.cssforum.com.pk) to confirm cohort details and double-check any missing information.

[23]The tax collection data is at a revenue circle-month level. A few villages together make up a revenue circle. A few revenue circles put together form a tehsil. Each junior is in charge of a tehsil-level office. We observe 558 unique revenue circles from 1983-2013, resulting in 30,405 observations. To observe the tax collection related ability of PAS juniors, I collapsed these revenue circle-month observations at a tehsil-month level and then combined the tax collection and career charts data at a tehsil-month level. This results in observing the tax collection performance of 644 bureaucrats. 406 of them are provincial services bureaucrats, while 234 are PAS.

[24]I define a cohort of juniors as a group that started their on-the-job training together.

Statistical inference. The first concern 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. In the main analysis I use cohort-clustered bootstrap-t procedures as suggested by Cameron et al., 2008 for small clusters and report p-values from 1100 replications of the wild cluster bootstrap-t procedure. This procedure provides asymptotic refinement and leads to improved inference with cluster-robust standard errors, particularly when there are few clusters.[25] Since then, their method has been discussed in the literature and been used by studies that have had to work with a small number of clusters (cf., Angrist and Pischke, 2009; Bloom et al., 2013; Angrist et al., 2013).

Representativeness of the sample. The second potential issue is the representativeness of the sample. For this, I compare the juniors in the study sample with the with the broader PAS civil services in a comparable time to the juniors, i.e., between 1985 and 2013 (368 officers). Table 1 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.

3.2 Ability of juniors

3.2.1 Publicly observable measure of ability of juniors: Recruitment exam ranking

The first measure of ability I classify is the ranking of juniors based on their civil service recruitment exam. This rank is published in national newspapers. For completeness, I collected internal exam rank documents from the Federal Public Service Commission (FPSC; details in Appendix A). This data has been digitized for the first time for this study. The cutoffs I use to classify high- and low-ability juniors are guided by the organizational perception of the juniors's ability. In general, only the bureaucrats with the highest rank on the exam are viewed by the organization as having high ability. In common parlance, these bureaucrats are called *"toppers"* and it is common knowledge who these star exam performers are within the organization. On the other hand, low-ability bureaucrats are individuals who came in last or next to last in their cohort. While there is no common term used to refer to bureaucrats in the left tail, it is common knowledge who these are as well. Then there is a large fuzzy middle, which isn't as pronounced a marker of ability as the tails. Given these institutional traditions, I classify high- and low-ability juniors using dummy variables that equal one whenever a junior is in the top 10% or bottom 10% of their cohort in the recruitment exam, respectively.

3.2.2 Privately observable measure of ability of juniors: Tax collection

The second measure of ability I classify is a time-invariant ranking of junior officials within their cohort in tax collection. This ranking is based on their tax collection in the first job, as that is when seniors view their performance. The source of this data is historical tax collection records of the BOR (see

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[25]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.

Appendix A for details). A junior's first job is when they work as the head of the revenue administration in a tehsil.[26] Each junior collects taxes against annual targets using their team of revenue officials.[27] The records have information at a revenue circle level. I use the revenue circle level data and then aggregate it by taking an average of the tax collected as a percentage of the annual target. I combine this data with the career charts data at the tehsil-month-level. This allows us to observe a time-invariant, average performance of each junior in their first job. A junior is considered high ability if their average performance in the first job lies in the top end of their cohort and remains zero otherwise. Since there aren't many institutional details to guide a choice of whether a junior is high or low ability based on tax collection performance, in the main paper I present results using a definition of high ability as those that are in the top 10% and 50% of tax collectors.

The skill required to do well in tax collection is team management. Since almost all of an official's future career entails managing teams, a junior's ability to do so reveals important information about their talent as a civil servant. It is a practice that tax collection records are verified and stamped by the District Accounts Office, certifying that the collected tax has been deposited in the treasury (see Appendix Figure D5).

How is this private information of seniors? Tax collection performance is only observed by seniors in the district and not the organization as a whole. So, how is a metric like tax collection performance considered the private information of senior officials? In regular district-level meetings, tax collection performance is discussed with seniors. Therefore, seniors are fully aware of the performance of their juniors. Seniors report the aggregate district-level performance to the BOR, with each junior's individual performance included. This correspondence from each district is received by clerks at the BOR. Clerks note the aggregate tax collection performance of each district and share it with the organization, while the original letters with the tax collection performance of juniors are put in gunny sacks and dumped in the record room in the basement of the BOR building (see Figure 1).[28] This information never makes it to the career files of the juniors and never gets discussed anywhere else.[29]

The fact that tax collection performance by a junior remains private information is then further corroborated by government reports and research articles on the issue. In its report on Reforming the Government of Pakistan (Husain, 2012, p.189, para 74), the National Commission for Government Reforms argues that objective measures are missing from both performance evaluation and promotions. The commission proposes that "[a]n objective quantifiable Performance Management System (PMS) should be introduced in place of the existing system" for promotions in civil services. Multiple studies also report that objective performance measures are not reported in evaluation reports or form the basis for promotion in this bureaucracy (Cheema and Sayeed, 2006; Hanif et al., 2016; Tanwir and Chaudhry, 2016).

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[26]See Appendix B for a discussion of a junior's tasks as a head of revenue administration.

[27]The tax collection target is meant to be based on the farm size or the farmer's income (whichever results in a higher tax collection due).

[28]Details can be seen in the appendix Figure D3 and online at: https://www.shanamanrana.com/research-in-the-field-a-snapshot.

[29]Why there is no demand for this individual performance information is an interesting question in itself. A number of potential reasons can explain it, including lack of state capacity, apathy, or a desire to only hold the head of the district responsible and allow them to deal with their team alone. It is possible that all these explanations coexist.

Figure 1: This figure shows the Board of Revenue's (BOR) record room. Archival research from these record rooms allowed for the data digitization of the tax collection performance of juniors. This performance is only observed by seniors in the revenue administration and not the organization overall.

Do the tax collection and exam-based ability measures convey anything useful?

I test to see whether the tax collection measure captures anything meaningful about the true underlying ability of the junior. I proceed in two ways. First, I test to see whether being a top tax collector is just a function of the characteristics of the first job. Table 2 shows these results. I find 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. Being identified as a top tax collector is also uncorrelated with the probability of that job being in a large city.[30]

Next, I present descriptive evidence on what these measures of ability mean for job performance. Table 3 presents results. I consider three different outcomes: whether a junior is evaluated as "very good" or an "outstanding" worker throughout their career; whether citizens felt that the attitude of the revenue departmental employees improved when the junior was in charge; and whether the timeliness of service provided by the revenue department improved when the junior was in charge.

The source for this subjective evaluation 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. In the case of the tax collection sample, I observe subjective evaluations for eight out of thirty cohorts, while in the case of the exam rank sample, I observe it for twenty-five out of forty cohorts.

The source for the citizen perception survey is a study conducted by Oasis Insights (Private) Limited in 2014 that was commissioned by the World Bank. This study carried out a ten to fifteen minute telephone survey, aimed at understanding citizens'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

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[30]Large cities are defined as those that are designated as city-district by the government i.e. Faisalabad, Gujranwala, Lahore, Multan, Rawalpindi.

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 five cohorts. Given the small number of clusters, following Cameron et al., 2008, I also report clustered wild bootstrap p-values in all specification.

Month-year fixed effects are included in all specifications. In Columns (1) and (4), I include cohort fixed effects, while in the case of citizen perceptions in Columns (2), (3) and (5), (6), I include district fixed effects. Therefore, I am comparing the perceptions of citizens within the same district, across a high-ability and low-ability junior.

The results in Columns (1)-(3) show that a junior's rank in tax collection is an important determinant of performance on the job. It is strongly positively correlated with all three performance outcomes, however, the effect on timeliness of service provided is less precise with a bootstrapped p-value of 0.25. Despite this positive correlation, neither of these measures are a sufficient statistic for tax collection performance as the correlation between the measures is far from perfect. Tax collection performance, therefore, carries additional information about the ability of the junior that is not captured in entirety by either of these measures.

In the case of exam rank, we see that the top 10% of exam performers are more likely to be evaluated as a very good or outstanding officer than the mid 80% of performers. The magnitude of the positive effect is similar to the case of high tax collection performers; however, the effect is not statistically significant, and the p-value is 0.29. On the other hand, juniors in the bottom 10% of exam performance are 16% less likely to be evaluated as very good or outstanding, although the effect is not statistically significant (the p-value is 0.20). In the case of citizen perception about the high-exam-performing junior's team, the effects are in fact negative, small in magnitude, and quite imprecise. Compared to the top tax collection performers, top exam rank doesn't seem to convey as much information about a person's ability. The case is similar when we consider the bottom 10% of exam performers.

Together, these results provide support for the use of tax collection rankings as an ability measure, while exam ranking appears to be a noisy measure of ability.[31]

3.3 Power of seniors ($\overline{Power}$)

It is important for the study to consider how discretion is exercised by people who have local information on junior officials. Therefore, I consider senior officials to be those that have worked with junior officials. As discussed, the seniors of interest are first seniors. This set of seniors remains fixed throughout the juniors's careers. The source for the variable is career records from the S&GAD (see Appendix A for details). An advantage of using career records is that I can objectively classify the set of seniors, and the data is not reliant on network surveys, which might suffer from measurement error and subjectivity bias. (Jackson, 2013). To classify the discretion of seniors, I rely on institutional details. The organization is

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[31]While interpreting results based on citizen perceptions, there is one important caveat that needs to be kept in mind: doing well on the exam is based on English language skills and critical thinking, not team management. If we had data on a performance measure that was based on an employee's work files and their application of the laws and rules, we might see different results.

such that the higher the senior is in the rankings, the more discretion or power they enjoy. Therefore, in each time period, the power of seniors is defined as the average official rank of seniors.

$$Power\ of\ seniors\ (\overline{Power}) = \frac{\sum_{s=1}^{S} Official\ rank\ of\ seniors_s}{S}$$

where official rank is the rank of the senior based on their official promotions and S is the number of seniors from the first job that are still in Punjab in that time period. I use cohort-month-level average of the power of first seniors across all specifications.[32] Official promotions move bureaucrats from rank seventeen to twenty-two. I normalize them from 0-5, with 0 being the junior-most rank and 5 being the senior-most rank. The seniors are not very far removed from the juniors, as the mean power of first seniors in the exam rank sample is 1.03, while it is 0.87 in the tax collector sample. Appendix Figure E2 shows the variation in the power of first seniors across cohorts in the exam rank sample.

3.4 Fast-track promotions of juniors

Fast-track promotions are quantified as a dummy variable that equals one whenever the junior is promoted to a higher rank job than their official rank. Career records allow us to observe the official rank of the officer, while notifications by the Services and General Administration Department (S&GAD) allow us to observe the rank of the job.[33] These notifications were personally acquired from the S&GAD. The job rank was manually assigned after going through the notifications.

Appendix Figures E4 and E5 plot the actual and official careers of a sample of cohorts from the 1970s, 1980s, 1990s, and 2000s. These figures show that these promotions are an important and very frequent part of the careers of PAS civil servants. This is not the case for official promotions that only move civil servants up the career ladder once every few years. Moreover, once a civil servant is officially promoted, they cannot be demoted. However, this is not the case for fast-track promotions. These promotions are at the discretion of the senior civil servants and the chief executive of the province. Appendix Figure E3 shows the variation in fast-track promotion across different cohorts.

3.5 Teams

In this study, seniors are those that work in the same department as the junior in their first job. After this allocation of seniors, the focus of the study is on the long-term career of these juniors and seniors and whether and how much they work in the same department or team in the long term. Working in a team of first seniors is classified as a dummy variable that equals one whenever the junior works in the same department as any of his or her seniors (from the first job) in their long-term careers. The source of this variable is the career record of bureaucrats from the Services & General Administration Department (S&GAD) (see Appendix A for details). Figure 3 shows that fast-track promotions are meritocratic based on the tax collection performance of juniors. This is true in both the senior's own department and team, as well as on other teams.

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[32]This is to keep results comparable across all estimations (see subsection 4.1 below).

[33]The rank of the job is determined by the government at the time that a job is created. For instance, an Assistant Commissioner job is a grade or rank 17 position, and that has been the case since the job was created. In almost all cases the rank of the job is not changed once it is created.

4   Estimation Strategy

The estimation is:

$$Fast-track_{ict} = \gamma \overline{Power}_{ct} + \sum_{\alpha \in \{\overline{Tax}, ExamTop, ExamBot\}} \pi_\alpha \, Ability_{\alpha i} + \theta_\alpha \overline{Power}_{ct} \times Ability_{\alpha i} + \kappa_c + \kappa_t + \mu X_{ict} + \varepsilon_{ict}$$

(5)

where the outcome fast-track$_{ict}$ is a dummy variable that takes value one whenever the actual rank of the junior bureaucrat i, of cohort c, in month-year t, is higher than their official rank. Official ranks are based on rules, while fast-track promotion is at the discretion of seniors.[34]

$\overline{Power}_{ct}$ is the mean official rank of seniors of a cohort c, in month-year t. Since seniors with a mean official rank of zero is very rare, to keep the results meaningful, I center $\overline{Power}_{ct}$ by subtracting a person-specific mean. Therefore, π_α is the effect in any given time on fast-track promotion for α type juniors where the senior only has average power. θ_α is the coefficient of interest. If $\theta > 0$ for a high performing junior then there is meritocracy in promotions.

$Ability_{\alpha i}$ is a dummy that takes value one if a junior is type $\alpha \in \{\overline{Tax}, ExamTop, ExamBot\}$ where $\overline{Tax}$ are juniors in top 10% or 50% of their cohort in tax collection in their first job; $ExamTop$ and $ExamBot$ are juniors that are in the top 10% and bottom 10% of their cohort in the recruitment exam, respectively. $\overline{Tax}$ is a measure of the senior's private information, while $ExamTop$ and $ExamBot$ are measures of public information.

Data from the first job of juniors is only used to classify seniors and high tax performing juniors. Any fast-track promotions during the first job are excluded.

I control for time invariant, cohort specific, unobserved heterogeneity using cohort fixed effects κ_c, thus using only within cohort variation. These effects control for possible factors such as the total number of first seniors, time-invariant characteristics of the first job, etc. Time-varying characteristics that are similar for all cohorts are captured by κ_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 κ_t. 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, the annual experience and experience squared of the junior, 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 are allocated (Abadie et al., 2017).

4.1   Identifying variation: Promotion power of potential seniors

There are two big steps involved in a causal interpretation of the effects using Equation 5. First, we need seniors to be exogenously allocated to the juniors. Second, we need the discretion or rise of the senior in the organization to be exogenous and uncorrelated with the unobservables of juniors. This is arguably not the case, even conditional on fixed effects and controls. Fisman et al. (2020) show that particularly when studying the effect of workplace ties, there is positive selection bias. Homophily, or the tendency

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[34]Rules for official promotion use the subjective performance evaluation of the bureaucrat by their immediate bosses, the number of years of experience in service, and mandatory training.

of individuals to associate with others that are similar to themselves, has been widely documented in the literature (McPherson et al. (2001); Currarini et al. (2009)). If juniors with better unobserved ability are also the ones with better career and higher $\overline{Power}$ of their seniors, then the OLS results will not be causal. Furthermore, the rise of the senior can also be correlated with unobservables of the juniors if star juniors allow the seniors to get a good performance evaluation. Therefore, it is important to use identifying variation, which not only exogenously allocates seniors to juniors, but also ensures that the rise of the senior is orthogonal to the unobservables of the junior. Below I describe the rules that allow me to construct a theoretical rule-based measure: the power of potential seniors $\overline{Power^p}$ as an instrument for $\overline{Power}$.

The instrument 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. 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.[35] This gives *for each cohort* a set of "potential" first seniors they could have worked with in their first job.[36] 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. The mean number of potential seniors is 30. The left-hand panel of Figure 2 shows the average number of potential and actual seniors per junior across forty cohorts from 1975-2013. The mean number of actual seniors in the first job is thirteen. Therefore, for each actual senior, a junior has approximately two potential seniors.

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.[37] For *each potential senior*, this rule helps build their theoretical promotion in the organization. According to this rule, the career of a civil servant is like a step function, as shown in the right-hand side of Figure 2.

The instrumental variable, power of potential seniors $\overline{Power^p}$, combines both sources of variation and is defined as the average theoretical promotion power of potential seniors.

There is variation in $\overline{Power^p}$ across cohorts 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 "vacancies" will be different and so might the set of potential seniors (even within the same districts that had vacancies last year). There is variation over time because potential seniors consist 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 grade in the coming month. This will result in the average theoretical grade of the potential seniors changing. Other potential seniors could have just had one hypothetical promotion and will not

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[35] 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.

[36] In order to have information on open positions, I digitized for the first time pictures of the incumbency boards of each tehsil office across Punjab (refer to Appendix Figure D6 for a picture of one incumbency board). Bureaucrats take pride in adding their name to the board, and thus the data is consistent and of good quality. For each position, these boards state the name of the person that held the job along with their tenure. This helps create a daily panel of vacancies and the tenure of each position. I combined this with the dates when training ended for each cohort. This information is observed from the career chart data.

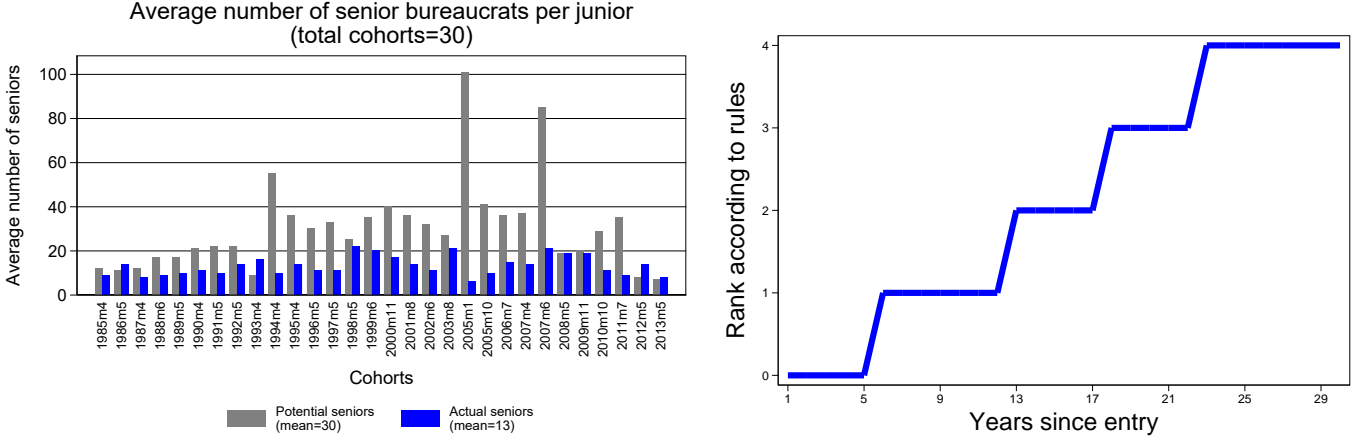[37] The Minimum Length of Service Rules, Establishment Division's O.M.No.1/9/80-R.2 dated 2-6-1983

Figure 2: Left: The figure shows the average number of senior bureaucrats per junior bureaucrats. Right: The rank of seniors according to the Minimum Length of Service Rules.

have a promotion in the next few years.

Power of potential seniors: By combining the exogenous timing of the first job, the initial allocation, and the Minimum Length of Service Rules, I classify a cohort-month-level variable: the power of potential seniors. In a given month, this variable is defined as the average, rule-based rank of potential seniors that the cohorts of juniors could have worked with in the first month of their first job.

$$Power \ of \ potential \ seniors \ (\overline{Power}^p) = \frac{\sum_{\tilde{s}=1}^{\tilde{S}} Rule-based \ rank \ of \ potential \ seniors_{\tilde{s}}}{\tilde{S}}$$

where the rule-based rank of potential seniors is based on the Minimum Length of Service Rules as shown in Figure 2. $\tilde{S}$ is the number of potential seniors that are still in Punjab during that time period. While the power of seniors is ranked from 0-5, the power of potential seniors is measured between 0-4. This is because these are the ranks to which the Minimum Length of Service Rules apply. Appendix Figure E6 shows the power of potential seniors across cohorts, while Appendix Figure E7 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. Appendix Figure E8 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.

Reduced form estimation. Using the power of potential seniors, the reduced form estimation is as follows:

$$Fast-track_{ict} = \chi \overline{Power}_{ct}^p + \sum_{\alpha \in \{\overline{Tax},ExamTop,ExamBot\}} \theta_\alpha \ Ability_{\alpha i} + \lambda_\alpha \overline{Power}_{ct}^p \times Ability_{\alpha i} + \gamma_c + \gamma_t + \rho X_{ict} + \nu_{ict}$$

$$(6)$$

where all the variables are the same as in Equation 5, except for the power of potential seniors

($\overline{Power}_{ct}^p$), which is the average rule-based rank of potential seniors that cohorts of juniors could have worked with in their first job. $Ability_{\alpha i}$ is a dummy that takes a value of one if a junior is type $\alpha \in \{\overline{Tax}, ExamTop, ExamBot\}$ where $\overline{Tax}$ are juniors in the top 10% or 50% of their cohort in tax collection in their first job; $ExamTop$ and $ExamBot$ are juniors that are in the top 10% and bottom 10% of their cohort in the recruitment exam, respectively. $\overline{Tax}$ is a measure of the senior's private information, while $ExamTop$ and $ExamBot$ are measures of public information. Similar to the OLS estimation, I center $\overline{Power}_{ct}^p$ by subtracting a person-specific mean. Therefore, θ_α is the effect of average power of the potential senior, while λ_α captures the effect of an above-average increase in the power for any type α of junior. The error term is clustered at the cohort level.

The coefficient of interest is λ_α, which tells us the heterogeneous effect of the discretion or power of potential seniors for any type α of the junior. If $\lambda > 0$ for high-ability juniors, then we can say that discretionary promotions are meritocratic.

Discussion on assumptions. In this sub-section, I discuss the identifying assumptions needed for the effects in equation 6 to be considered causal. Comparing high and low ability juniors across cohorts and time allows me to net out the effect of other unobservables that may be correlated with junior's exam and tax performance and affect their careers. The main assumption then remains the Exclusion Restriction for the IV i.e. the power of potential seniors does not directly affect junior's fast-track promotion through for example, their unobserved ability.

One example of a violation of the Exclusion Restriction can be if vacancies are created for specific star 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 directly or through the manipulation of when training ends for these juniors. I find that neither is true in this setting. First, a central agency, rather than the juniors, selects the month and year 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 by central agency for the whole cohort as per rules. Second, I test whether the quantity of vacancies change around the date of end of training and the beginning of first job of the new cohort of juniors and find that is not the case (see Table 5). Third, I also test whether any systematic characteristics of the district determine vacancy and tenure in these district departments, and it turns out that is not the case (see Table 6 for details).

Last, I present results from a balance table. Table 4 shows the average characteristics of juniors at baseline by above- and below-median power of potential seniors. The table shows that there are no systematic differences across power of seniors in almost all other baseline characteristics, except gender and languages spoken. Most importantly, there are no systematic differences in recruitment exam rank and tax collection performance across power of seniors, which suggests that potential seniors are not selected based on ability.[38]

Differences of the research design from previous peer effect studies. The research design takes into account recent developments in the empirical peer effects literature and departs from previous peer effects studies in two main ways. First, I only study outcomes of junior PAS bureaucrats and I do not

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[38]In fact, those with high tax performance and recruitment exam rank are less likely (though not statically significantly so) to have potential seniors with above-median power.

study fast-track promotion of seniors. This bifurcation of the subjects and their network helps overcome mechanical correlations in outcomes of the two, an issue that has been identified by Angrist, 2014.

Another problem recently identified in the empirical peer effects literature is what is called "exclusion bias," first identified by Guryan et al., 2009 and later investigated by Caeyers and Fafchamps, 2016. According to Caeyers and Fafchamps, 2016, p. 2-3, *"[Exclusion bias] arises from the fact that the assignment of peers is done without replacement: i cannot be his own peer. When including selection pool fixed effects, the exclusion of i from the pool of i's peers creates a small sample negative relationship between i's characteristics and that of his peers: if i is above average, the average of those remaining in the pool is lower than i; conversely, if i is below average, the average of those remaining in the pool is higher than i. Hence i's characteristics are negatively correlated with the expected value of the remaining peers in the pool. This is true irrespective of whether peers self-select each other or peers are randomly assigned."* This study overcomes exclusion bias, since by design juniors and seniors are drawn from different pool of bureaucrats. Therefore, there should not be any negative *mechanical* correlation between a junior's characteristics and those of their senior.

4.2 Results: Do seniors use *public* or *private* information on the merit of juniors to promote meritocratically?

Table 7 presents the OLS and IV results, while Table 8 presents the reduced form and first stage results respectively, using $\overline{Power^p}$ as an instrument for $\overline{Power}$. The definition of $\overline{Tax}$ used in each case is specified at the top of each column. In Table 7, the first four columns define top tax collectors as those that are top 10% of their cohort in tax collection, while the last four columns use the top 50% of tax collectors as a definition of $\overline{Tax}$. In Table 8, Columns (1) and (2) and (5) and (6) report results using the top 10% of tax collectors, while columns (3) and (4) and (7) and (8) define $\overline{Tax}$ as the top 50%.

The first-stage results show that using $\overline{Power^p}$ as an instrument for $\overline{Power}$ the Angrist-Pischke F-stat is 64.[39] Interacting the instrument with ability, the F-stat remains well above 100 in almost all cases. This provides some evidence that the power of potential seniors is relevant in predicting the power of actual seniors.

First, let us consider the effect of power based on tax collection performance ranking alone. The reference category is bottom tax collection performers in each case. The key takeaway across OLS and IV estimations is that the ranking of juniors as tax collection performers matters for their fast-track promotions. In Table 7, across all definitions of $\overline{Tax}$, the results show that with a one rank above average increase in the power of potential seniors, the top tax collection performers have between a 12% and 20% higher probability of being fast-tracked than bottom tax collection performers. The total effects are large in magnitude and statistically and economically significant (between 18 to 58 percent of the mean effect).

These results suggest that local information was harnessed by allowing seniors discretion in the promotion decision of juniors. We observe meritocracy on tax collection performance, despite the fact that there is no explicit incentive for the seniors and that the tax collection performance of juniors is their private information. This heterogeneity by the tax collection performance of juniors suggests that

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[39]For a single regressor AP F-statistic and Kleibergen-Paap Wald, the F-tests are the same.

seniors' implicit incentives might be at work in this case.

I next include the juniors' exam performance and test whether there is any heterogeneity of the effect of power based on both the recruitment exam and tax performance. The reference category in these specifications is the bottom tax collection performers who rank in the mid-80% in the recruitment exam.

The key takeaway across OLS and IV estimations in Table 7, Columns (2), (4), (6), (8) is that private information continues to play a role in a senior's discretionary decisions. In the OLS and IV estimations, while the differential effect of power for the top tax collectors are all in the same direction, the estimations reported using the top 50% of tax collectors have more statistical power and are statistically significant. The reduced form estimates in Table 8 are more precise and statistically significant across any definition of tax. Overall, the results suggest that private information plays an important role in a senior's discretionary decisions.

While tax collection performance matters, the recruitment exam ranking also appears to play a role. Across the OLS, IV, and reduced form estimations in Table 7 and Table 8, the results show that with a one rank above average increase in the power of potential seniors, the juniors that rank in the bottom 10% of the recruitment exam have between a 20% and 28% lower probability of being fast-tracked than the reference category. An *F*-test (reported at the bottom of each table) testing the similarity of the differential effect of power across the top tax collectors and bottom exam performers rejects the null across all specifications and definitions of $\overline{Tax}$ (*p*-value=0). This effect is reversed for the top 10% of exam performers. However, it is not statistically significant in the OLS and IV estimations.

Together these results suggest that both public and private information plays a role in discretionary decisions of a senior. Those high tax performing juniors that are also top exam performers have a higher level of fast-track promotions than others. On the other hand, poor performance in the recruitment exam continues to be a predictor of careers despite tax performance to the contrary. There appears to be path dependence, meaning that those juniors who performed poorly in the recruitment exam and have a poor public reputation cannot fully redeem themselves through high tax collection. One interpretation that is consistent with this result is that it is hard for decision-makers to go against public information, despite having private information to the contrary. The cost involved in justifying a fast-track promotion decision for a junior who is known to be a lemon might outweigh the benefits of a high-performing junior. Next, I explore the mechanism behind these results and test whether promotions are meritocratic in all types of teams.

5 Results: Mechanism behind meritocracy

5.1 Who gets fast-tracked across different teams?

The results in the previous section showed that, despite a lack of explicit incentives, seniors' promotion decisions were meritocratic, and private information played an important role. In this section, I explore why that is the case. After the first job with the senior, senior and junior bureaucrats move across many departments and the junior may or may not work with the same seniors from the first job and may or may not be fast-tracked in those roles. I this section I test whether promotions are meritocratic in different

types of teams.

I use a multinomial logit framework to estimate these effects. Since the outcome variable is an interaction of dummy variables—fast-track promotion and whether a junior starts work in the seniors' team—the reference category will not be well-defined unless we use a multinomial logit estimation. Without a multinomial logit specification, the reference category can be anything from juniors that are fast-track promoted in other teams, to juniors that work in the senior's team but are not fast-track promoted or juniors who are neither fast-tracked nor in the senior's team. Using a multinomial logit regression allows us to study these outcomes together with a well-defined reference category. It also allows a test for the similarity of effects within the seniors' team and other teams. Therefore, the estimation of interest is as follows:

$$ln\frac{P(w_{ict}=j)}{P(w_{ict}=J)} = \kappa_j \overline{Power}_{ct} + \sum_{\alpha \in \{\overline{Tax}, ExamTop, ExamBot\}} \theta_{\alpha j} Ability_{\alpha i} + \mu_{\alpha j} \overline{Power}_{ct} \times Ability_{\alpha i} + \beta_{cj} + \beta_{tj} + \lambda_j X_{ict}$$

(7)

where

- j=1 if junior i, in cohort c and month-year t is not fast-track promoted (base category)

- j=2 if junior i, in cohort c and month-year t moves across other teams and & gets fast-track promoted in the new team

- j=3 if junior i, in cohort c and month-year t starts working in a senior's team & gets fast-track promoted in that team

$\overline{Power}_{ct}$ is the mean official rank of seniors of a cohort c, in month-year t. I use the power of potential seniors ($\overline{Power}_{ct}^p$) as an instrument for $\overline{Power}_{ct}$. Following the methods suggested in Petrin and Train, 2010 and Imbens and Wooldridge, 2007, I use a control function approach to implement the multinomial logit. Since I use a two-step control function approach to account for the first-stage estimation, bootstrap is implemented. I use a score bootstrap, as suggested by Kline and Santos, 2012 for nonlinear models, and implement it through Roodman et al., 2019's program in Stata.[40] The coefficients reported are log relative risk ratios that are relative to the base category.

$Ability_{\alpha i}$ is a dummy that takes a value of one if a junior is type $\alpha \in \{\overline{Tax}, ExamTop, ExamBot\}$ where $\overline{Tax}$ are juniors in the top 50% of their cohort in tax collection in their first job;[41] $ExamTop$ and $ExamBot$ are juniors that are in the top 10% and bottom 10% of their cohort in the recruitment exam, respectively.

As before, I control for time invariant, cohort specific, unobserved heterogeneity using cohort fixed effects β_c. Time-varying characteristics, which are similar for all cohorts, are captured by β_t. X_{ict} includes controls such as the annual time trend of the first job, a dummy variable for female bureaucrats,

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[40]See Roodman et al., 2019 for details.

[41]For ease of exposition, when I consider ability that is private information held by a senior, I restrict attention to juniors who are in the top 50% of tax collectors. Figure 3 shows that there does not appear to be any nonmonotonicity in the probability of being fast-tracked in a seniors (others) teams based on whether we define a top tax collector as a top 10% tax collector or a top 50% one. Moreover, the results from subsection 4.2 show that the effects are in the same direction across the tax collection distribution.

the total number of languages spoken, the annual experience and experience squared of the junior, the official rank of the junior, and a dummy variable for whether the job is in the field offices. Error terms are clustered at the cohort level.

If $\mu_j > 0$ for high ability juniors when $j=2$, then that is consistent with the reputation gained from promoting a high-ability junior to another senior's team as the reason behind meritocracy. On the other hand, if $\mu_j > 0$ for high ability juniors when $j=3$, then that is consistent with the career incentives of seniors in setting up the best team for themselves.

5.1.1 Results: The role of *public* or *private* information

Tables 9 and 10 report the results. The first four columns of Table 9 report results for a simple multinomial logit, without accounting for any potential endogeneity of $\overline{Power}$. Table 9, Columns (5)-(8) report multinomial IV results using a control function approach. Table 9, Columns (1)-(2), (5)-(6) and Table 10, Columns (1)-(2) report results using an interaction of the power of the senior with top tax collection performance. Table 9, Columns (3)-(4) and (7)-(8) and Table 10, Columns (3)-(4) include both tax and exam performance. The reference category is not fast-track promoted. In Table 9, Columns (1), (3), (5) and (7) and Table 10, Columns (1) and (3), the outcome variables are juniors who were fast-track promoted and moved across other teams. In Table 9, Column (2), (4), (6) and (8) and Table 10, Column (2) and (4) the outcome variable are juniors who were fast-track promoted and moved into senior's team.

The results suggest that the reputational boost a senior gains from promoting a high-ability junior to another team appears to be an important determinant of meritocracy. Results using a control function approach in Table 9, Column (7) show that a one rank above average increase in the power of potential seniors results in a nearly 1.3 times higher log of relative risk ratio for the top tax collection performers to start working in other teams and be fast-track promoted there (relative to the base category). This result is statistically significant, with a score bootstrapped p-value of 0.01. This higher likelihood of promotions for the top tax collection performers comes at the expense of low exam performing juniors. The results in Table 9, Column (7) show that a one rank above average increase in the power of potential seniors results in a 4.8 times lower log of relative risk ratio for the bottom 10% of exam performers to move across other teams and be fast-track promoted there (relative to the base category). An *F*-test at the bottom of the table testing the similarity of this differential effect with top tax collection and bottom exam performing juniors rejects the null. The negative differential effect for the bottom 10% of exam performers is stronger in other teams than in the senior's own team.

Results also suggest that the career incentives of setting up the best team for themselves is not a main factor behind meritocracy. Table 9, Column (8) show that in a seniors' team, a one rank above average increase in the power of potential seniors results in a nearly one time higher log of relative risk ratio for the top tax collection performers to start working in their senior's team and be fast-track promoted there (relative to the base category). While the differential effect of power for top tax collection performers is positive, it is not statistically significant. There are two ways we can interpret a muted effect of career incentives to set up the best team for themselves. One lies in the incentive structure of public sector bureaucracies. There are very few or no explicit incentives to spur seniors into setting up the best team for themselves: wages are fixed, there is job security, and there is a lack of profit motive or competition from outside. In such situations, implicit incentives take on even more importance. However, as one rises

in the organization, such career incentives decrease (Holmström, 1999; Dewatripont et al., 1999a,b), and that is the variation that I exploit to identify the effect of a seniors discretion on the promotion of juniors. This type of increased discretion with a rise in the organization is not just specific to this bureaucracy in Pakistan.

An *F*-test at the bottom of the table testing the coefficient on $\overline{Power} \times \overline{Tax}$ in other teams versus a senior's own team fails to reject the null. Therefore, statistically it is not possible to differentiate the importance of the two channels for meritocratic decisions.

Together, these results suggest that: first, implicit incentives exist that make seniors use their private information when deciding on the fast-track promotion of juniors; second, these implicit incentives are weakly heterogeneous so that seniors care about the reputational benefits of referring juniors to other teams more than the career incentives of setting up the best team for themselves; and, third, negative public information on the ability of a junior is an important determinant of whether juniors are promoted and moved across other teams, which is not the case in the senior's own team.

5.2 Alternative interpretations

While my main interpretation of the results is that seniors exercise discretion using their private information meritocratically, there are several alternative explanations as well. This subsection considers several of these alternative explanations.

One alternative interpretation of the results is that $\overline{Power}$ captures sophistication or just the experience of the senior and not their discretion. This implies that as the seniors become more experienced, they can differentiate and therefore, value high ability juniors. And this is reflected in the greater weight placed on their private information. While plausible, the variation exploited by the IV suggests that this interpretation might not hold in this setting. The IV exploits the Minimum Length of Service Rules that allow the senior's rank to rise every five, twelve, seventeen, and twenty-two years after entering the service. It appears unlikely that the senior only becomes capable of assessing talent at these distinct points in their career. If experience has an effect it is potentially a continuous one. In addition, the lack of a strong effect in the seniors' team suggests that it is not just experience of the senior that resulted in meritocratic promotions. Last, I include month-year fixed effects and experience and experience squared of juniors in all specifications to control for any time trends correlated with experience of the seniors.

The results in this paper would have been similar if in this bureaucracy nepotism worked unconventionally, i.e. seniors were biased towards high ability juniors. This could be for instance, due to the senior's social preferences towards such juniors or if high ability juniors were better advocates for themselves, especially with powerful seniors. While meritocracy in this case would be due to other reasons, the policy implications we draw would be even stronger. In this case bureaucracies would be better off doing away with rules altogether and allowing complete discretion. Although I cannot completely rule out this channel, a 'meritocratic nepotism' towards the high ability does not appear to be the norm in this context. According to the Corruption Perceptions 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. More importantly, the lack of a strong effect in the seniors' team suggests that nepotism towards the high ability was not the case.

A related interpretation is that since there is corruption in this setting, the results we observe stem

from the incentives of the seniors for corruption rather than a value for the ability of the junior. This can be the case if the highest tax collectors are also the most corrupt and corruption is valued by powerful seniors. This does not appear to be the case in this setting. Under top tax collectors, citizens are more likely to report that the attitude and timeliness of service improved. This suggests that it is unlikely that the interest of the senior in promoting a high-ability junior is based on their propensity for corruption.

Conclusion

> "Strong institutions...are essential to effective development. Well executed policies that are slightly misguided are much more effective than absolutely correct but poorly executed ones." (Larry Summers in Besley and Zagha (2005) p.7)

State institutions and the bureaucrats that execute policy are increasingly seen as a key determinant of economic development (Besley and Persson (2009); Besley and Persson (2010)). By studying the promotions of civil servants that design and implement policy for 110 million people, this paper contributes to the rapidly expanding literature on organizational economics of the state. The two main contributions of the study are: first, it sheds light on the role of public and private information of the decision-maker in discretionary decisions; and second, it shows that implicit incentives of the person exercising discretion can be an important determinant of meritocratic decisions. This study speaks to the debates on rules versus discretion in bureaucracies. By showing that discretionary allocations by seniors are meritocratic, it challenges the centuries-old wisdom on bureaucracies. Having said that, what the unique setting of the paper allows us to learn can be generalized to encompass more than just public-sector bureaucracies. There is decentralized information that is relevant for personnel management decisions in most organizations, both public and private. Allowing promotions and choice of teams to be left up to seniors' discretion can also help even private organizations use local information and select the best performers for promotion.

The results in the paper also show how meritocracy and the feeling that *"it is not what you know but who you know"* can coexist. While high-merit juniors under powerful seniors get fast-tracked, those whose seniors are not as powerful do not. A simple policy like a job rotation of juniors can go a long way towards ensuring that seniors promote meritocratically from within the larger pool of juniors.

This study opens up further questions surrounding efficiency of discretionary allocations.[42] This is not straightforward to answer. First, it needs further investigation of the senior-junior pair working in a team. Is there positive assortative matching on traits? What happens to the performance of the team that loses a high-merit junior to a senior with more power? What about direct learning spillovers from seniors? And what about the resultant career incentives that discretion of the seniors can generate?

Further work would also need to investigate whether junior workers who are promoted through the discretion of seniors perform better after being promoted. Various interpretations of the Peter Principle suggest that workers who are good at one job are not necessarily good at the job into which they are promoted (Lazear (2004) and Benson et al. (2019)). However, given the amount of time that seniors and juniors spend together, it is quite possible that seniors can observe the more permanent and job relevant

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[42]Aman-Rana et al., 2020 begins to address this question.

component of junior workers' ability. Allowing seniors to exercise discretion in promotions could help organizations promote on the basis of seniors' information, potentially avoiding the pitfalls of the Peter Principle. These ideas require further investigation.

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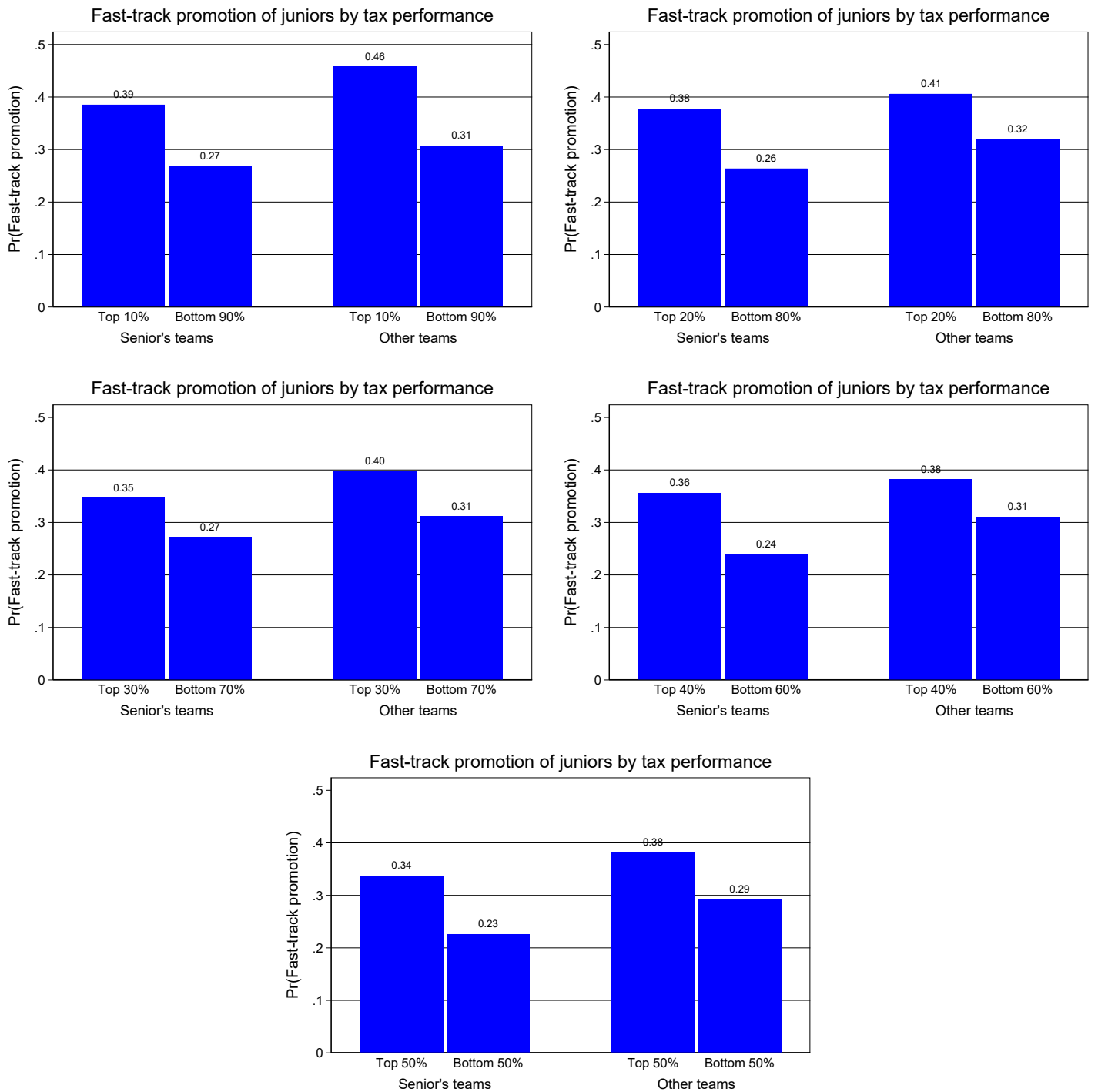
Figures

Figure 3: Fast-track promotions of various tax performing juniors across teams

Tables

Table 1: Study sample representativeness

	(1) Study Sample (1985-2013)	(2) Full PAS Sample (1985-2013)	(3) Difference (1)-(2)
Fast-track promotions	0.25	0.28	-0.03
	(0.23)	(0.24)	(0.03)
Recruitment exam rank	8.25	9.14	-0.89
	(5.24)	(5.80)	(0.70)
Size of overall cohort	173.13	167.11	6.02
	(46.22)	(44.69)	(5.38)
Age (years)	30.13	30.01	0.11
	(3.52)	(3.77)	(0.44)
Gender (female = 1)	0.25	0.15	0.10**
	(0.44)	(0.36)	(0.04)
Home is in capital city	0.32	0.35	-0.03
	(0.47)	(0.48)	(0.06)
Home is in big city	0.46	0.49	-0.04
	(0.50)	(0.50)	(0.06)
Number of languages spoken	3.40	3.46	-0.05
	(1.15)	(1.20)	(0.14)
Religion (Islam = 1)	1.00	0.99	0.01
	(0.00)	(0.07)	(0.01)
Observations	87	368	455

*$p<0.1$, **$p<0.05$, ***$p<0.01$. Standard errors in parentheses. F-stat of a joint significance test is 1.15 (p-value=0.3247)

Table 2: **Correlation between characteristics of the first job and the probability of being a top tax performer**

Dependent variable:	Top 50% tax collector			
	(1)	(2)	(3)	(4)
First job tax target (million PKR)	-0.00			-0.00
	(0.47)			(0.42)
First job inherited tax arrears (million PKR)		-0.00		-0.00
		(0.44)		(0.50)
First job in large city			-0.04	-0.10
			(0.74)	(0.47)
Controls	No	No	No	No
Cohort & month-yr fixed effect	Yes	Yes	Yes	Yes
Obs	1054	623	1512	622
Cohorts	30	29	30	29

* p<0.1, ** p<0.05, *** p<0.01. Cameron et al., 2008 wild bootstrap p-values, clustered at cohort level, in parenthesis.
Notes: The unit of observation is a civil servant-month. All specifications are restricted to the time in the first job. Top 50% tax collector is a dummy that turns on 1 whenever the junior is in the top 50% of their cohort in tax performance, in the first job. First job tax target is measured in million PKR and is the target allocated to a tehsil for agricultural income tax collection. First job inherited tax arrears is measured in million PKR and is the amount of agricultural income tax that has historically not been collected in a tehsil. First job in large city is a dummy that turns on 1 if the junior 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. Cohort and month-year fixed effects are included in all specifications.

Table 3: **Do the tax and exam based ability measures convey anything useful?**

	Dependent variable:					
	Very good subjective performance evaluation	Attitude of staff with citizens improved	Timeliness of service improved	Very good subjective performance evaluation	Attitude of staff with citizens improved	Timeliness of service improved
	OLS	OLS	OLS	OLS	OLS	OLS
	(1)	(2)	(3)	(4)	(5)	(6)
$\overline{Tax} = Top10\%$	0.10***	0.33***	0.22			
	(0.05)	(0.07)	(0.14)			
	[0.00]	[0.00]	[0.25]			
Exam Top10%				0.12	-0.04	-0.05
				(0.08)	(0.10)	(0.10)
				[0.29]	[0.81]	[0.69]
Exam Bot10%				-0.16	0.02	-0.04
				(0.10)	(0.02)	(0.03)
				[0.20]	[0.44]	[0.44]
controls	No	No	No	No	No	No
district FE	No	Yes	Yes	No	Yes	Yes
month-year FE	Yes	Yes	Yes	Yes	Yes	Yes
cohort FE	Yes	No	No	Yes	No	No
mean of outcome	0.92	0.64	0.64	0.80	0.64	0.64
person x mon	911	103	103	6015	189	189
cohorts	8	4	4	25	5	5

* $p<0.1$, ** $p<0.05$, *** $p<0.01$.

Clustered standard errors in parentheses.

Cameron et al., 2008 wild bootstrap p-values, clustered at cohort level, in brackets.

Notes: The unit of observation is a civil servant-month. $\overline{Tax}$=Top 10% is a dummy that turns on 1 whenever the junior is in the top 10% of their cohort in tax performance, in the first job. Exam top (bottom) 10% is a dummy that turns on one for those civil servants that were the top (bottom) 10% of their cohort in the recruitment exam.

Table 4: Balance table: Average characteristics of juniors at baseline

| | $\overline{Power}^p$ | | |
	Below median	Above median	Difference
Fast-track promotions	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)
Recruitment exam rank	9.02	7.47	-1.56
	(5.68)	(4.68)	(1.12)
Tax performance	11.93	9.79	-2.14
	(9.97)	(14.73)	(2.69)
Size of overall cohort	166.61	179.79	13.18
	(51.95)	(38.99)	(9.87)
Age (years)	29.89	30.37	0.49
	(4.35)	(2.43)	(0.76)
Gender (female = 1)	0.07	0.44	0.37***
	(0.25)	(0.50)	(0.09)
Home is in capital city	0.32	0.32	0.01
	(0.47)	(0.47)	(0.11)
Home is in big city	0.44	0.47	0.04
	(0.50)	(0.51)	(0.11)
Number of languages spoken	3.64	3.16	-0.47*
	(0.97)	(1.27)	(0.24)
Religion (Islam = 1)	1.00	1.00	0.00
	(0.00)	(0.00)	(0.00)
Observations	44	43	87

*p<0.1, **p<0.05, ***p<0.01. Standard errors in parentheses.

Table 5: Correlation between end of training and vacancies

| | Dependent variable: Vacancies | | | |
| | All districts | | Large districts | |
	(1)	(2)	(3)	(4)
Training end	-0.001	-0.000	-0.001	-0.000
	(0.001)	(0.001)	(0.002)	(0.002)
Year FE	Yes	Yes	Yes	Yes
Tehsil FE	No	Yes	No	Yes
Observations	1173784	1173784	387492	387492

* p<0.1, ** p<0.05, *** p<0.01. Standard errors are clustered at the tehsil level.
Notes: The unit of observation is a tehsil-month. Training end (dummy) turns on 1 a month before the end of on-the-job training of newly recruited civil servants. It stays zero otherwise. Vacancy is a dummy that turns on 1 whenever the position is vacant in a tehsil. It remains zero otherwise. Large districts include Rawalpindi, Lahore, Multan, Gujranwala, Faisalabad, Sargodha, Bahawalpur and Sialkot.

Table 6: Correlation between district characteristics, vacancies and tenure

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

* $p<0.1$, ** $p<0.05$, *** $p<0.01$. Standard errors are clustered at the district level.

Notes: The unit of observation is a district-year from 2005-2009. AC vacancy is defined as a percentage of time in a year that AC position remained vacant in a given district. AC tenure is days spent at an AC job on average. Districts with large cities include Rawalpindi, Lahore, Multan, Gujranwala, Faisalabad, Sargodha, Bahawalpur and Sialkot. The provincial capital is Lahore. Data on all variables except terrorism is from the Pakistan Bureau of Statistics. Terrorist attacks data is from the Global Terrorism Data-set. Fiscal yr FE and district FE are included in column (2) and (4).

Table 7: **Do seniors use public or private info meritocratically?**

Dependent variable:	**Fast-track Promotion**							
Definition of $\overline{Tax}$=	Top 10%				Top 50%			
	OLS	OLS	IV	IV	OLS	OLS	IV	IV
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$\overline{Power}$ (θ)	-0.03	0.02	-0.01	0.16	-0.06	-0.05	-0.05	0.03
	[0.71]	[0.85]	[0.95]	[0.59]	[0.56]	[0.71]	[0.79]	[0.92]
$\overline{Power} \times \overline{Tax}$ (π)	0.16*	0.16	0.20*	0.16	0.12*	0.16***	0.13*	0.18***
	[0.08]	[0.31]	[0.07]	[0.32]	[0.09]	[0.00]	[0.07]	[0.00]
$\overline{Power} \times$ Exam Top 10% (α)		0.08		0.25		0.11		0.30
		[0.69]		[0.13]		[0.61]		[0.18]
$\overline{Power} \times$ Exam Bot 10% (β)		-0.23**		-0.23***		-0.25**		-0.28***
		[0.01]		[0.00]		[0.04]		[0.00]
$\overline{Tax}$	0.05	0.07	0.05	0.09	0.05	0.05	0.05	0.06
	[0.47]	[0.39]	[0.47]	[0.28]	[0.29]	[0.30]	[0.32]	[0.30]
Exam Top10%		-0.08**		-0.10**		-0.06		-0.08
		[0.02]		[0.01]		[0.21]		[0.18]
Exam Bot10%		-0.15		-0.16		-0.14		-0.14
		[0.21]		[0.21]		[0.28]		[0.31]
Ho: $\alpha=\pi$ (p-value)		0.68		0.67		0.82		0.54
Ho: $\beta=\pi$ (p-value)		0.00		0.00		0.00		0.00
Mean of outcome	0.33	0.34	0.33	0.34	0.33	0.34	0.33	0.34
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cohort & month-yr fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Person x mon	6316	5482	6316	5482	6316	5482	6316	5482
Cohorts	30	30	30	30	30	30	30	30

* $p<0.1$, ** $p<0.05$, *** $p<0.01$. Cameron et al., 2008 wild bootstrap p-values, clustered at cohort level, in parenthesis.
Notes: The unit of observation is a civil servant-month. Fast-track promotions is defined as a dummy that turns on one whenever the actual rank of the junior bureaucrat is higher than his or her official rank. Promotion power of seniors ($\overline{Power}$) is the monthly average official promotions of the first set of seniors. The definition of $\overline{Tax}$ used in each case is described above the columns and is a dummy that turns on 1 whenever the junior is in the top 10% or 50% of their cohort in tax performance, in the first job. Exam top (bottom) 10% is a dummy that turns on one for those civil servants that were the top (bottom) 10% of their cohort in the recruitment exam. Controls include cohort & month-year FE, female dummy, total number of languages spoken, experience, experience squared, official rank of the junior, a dummy for field position, time trend of the first job. All specifications exclude first job.

Table 8: **Do seniors use public or private info meritocratically?**

Dependent variable:	Fast-track Promotion				Promotion power of seniors ($\overline{Power}$)			
Definition of $\overline{Tax}$=	Top 10%		Top 50%		Top 10%		Top 50%	
	Reduced form (1)	Reduced form (2)	Reduced form (3)	Reduced form (4)	First stage (5)	First stage (6)	First stage (7)	First stage (8)
$\overline{Power}^p$ (θ)	-0.02 [0.90]	0.11 [0.62]	-0.05 [0.74]	0.02 [0.94]	0.69*** [0.00]	0.74*** [0.00]	0.69*** [0.00]	0.73*** [0.00]
$\overline{Power}^p \times \overline{Tax}$ (π)	0.19*** [0.00]	0.18*** [0.00]	0.11* [0.08]	0.15*** [0.00]	0.09 [0.16]	0.12 [0.31]	0.04 [0.29]	0.04 [0.24]
$\overline{Power}^p \times$ Exam Top 10% (α)		0.19* [0.05]		0.24* [0.08]		-0.02 [0.80]		0.03 [0.54]
$\overline{Power}^p \times$ Exam Bot 10% (β)		-0.20** [0.02]		-0.26*** [0.00]		-0.23 [0.50]		-0.25 [0.52]
$\overline{Tax}$	0.05 [0.47]	0.08 [0.36]	0.05 [0.34]	0.05 [0.35]	-0.03** [0.03]	-0.04** [0.03]	-0.03 [0.12]	-0.04 [0.13]
Exam Top10%		-0.08** [0.02]		-0.06 [0.26]				
Exam Bot10%		-0.16 [0.21]		-0.14 [0.30]				
Ho: $\alpha=\pi$ (p-value)		0.96		0.51				
Ho: $\beta=\pi$ (p-value)		0.00		0.00				
Mean of outcome	0.33	0.35	0.33	0.35				
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cohort & month-yr fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Person x mon	6387	5553	6387	5553	6316	5482	6316	5482
Cohorts	30	30	30	30	30	30	30	30

* p<0.1, ** p<0.05, *** p<0.01. Cameron et al., 2008 wild bootstrap p-values, clustered at cohort level, in parenthesis.
Notes: The unit of observation is a civil servant-month. Fast-track promotions is defined as a dummy that turns on one whenever the actual rank of the junior bureaucrat is higher than his or her official rank. Promotion power of potential seniors ($\overline{Power}^p$) is the monthly average rule-based rank of the first set of potential seniors that junior PAS bureaucrats could have worked with in the first job. The definition of $\overline{Tax}$ used in each case is described above the columns and is a dummy that turns on 1 whenever the junior is in the top 10% or 50% of their cohort in tax performance, in the first job. Exam top (bottom) 10% is a dummy that turns on one for those civil servants that were the top (bottom) 10% of their cohort in the recruitment exam. Levels of exam top 10%, bottom 10% and $\overline{Tax}$ are included. Controls include cohort & month-year FE, female dummy, total number of languages spoken, experience, experience squared, official rank of the junior, a dummy for field position, time trend of the first job. All specifications exclude first job.

Table 9: **Multinomial logit: Why are discretionary promotions meritocratic?**

Dependent Variables:	Reference category: Not fast-track promoted							
					IV-control function		IV-control function	
	Promoted & moved across other teams	Promoted & moved into seniors teams	Promoted & moved across other teams	Promoted & moved into seniors teams	Promoted & moved across other teams	Promoted & moved into seniors teams	Promoted & moved across other teams	Promoted & moved into seniors teams
$\overline{Power}$ (θ)	-0.46 [0.46]	1.78** [0.03]	-0.29 [0.69]	2.96** [0.03]	-0.27 [0.87]	-0.34 [0.86]	0.35 [0.88]	0.77 [0.75]
$\overline{Power} \times \overline{Tax}$ (π)	0.71 [0.12]	0.77 [0.47]	0.94* [0.06]	1.32 [0.30]	0.82 [0.12]	1.04 [0.25]	1.29** [0.01]	1.06 [0.44]
$\overline{Power} \times$ Exam Top 10% (α)			0.54 [0.62]	-0.06 [0.94]			1.37 [0.37]	2.01 [0.15]
$\overline{Power} \times$ Exam Bot 10% (β)			-3.82** [0.03]	1.64 [0.22]			-4.77** [0.02]	-1.05 [0.65]
$\overline{Tax}$	0.26 [0.40]	0.09 [0.79]	0.32 [0.37]	0.06 [0.86]	0.26 [0.48]	-0.03 [0.94]	0.31 [0.47]	-0.05 [0.89]
Exam Top10%			-0.74 [0.10]	-0.31 [0.50]			-0.84 [0.15]	-0.48 [0.42]
Exam Bot10%			-1.17 [0.24]	-3.12*** [0.00]			-1.15 [0.24]	-3.59*** [0.00]
α=β (p-value)			0.03	0.24			0.00	0.19
α=π (p-value)			0.72	0.47			0.96	0.68
β=π (p-value)			0.00	0.83			0.00	0.39
Other teams (π)=Seniors team (π) (p-value)	0.96		0.76		0.81		0.87	
Other teams (α)=Seniors team (α) (p-value)			0.46				0.57	
Other teams (β)=Seniors team (β) (p-value)			0.18				0.00	
Controls	Yes		Yes		Yes		Yes	
Fixed effects	Yes		Yes		Yes		Yes	
Person x month-year	6275		5441		6275		5441	
Cohorts	30		30		30		30	

* p<0.1, ** p<0.05, *** p<0.01.
Kline and Santos, 2012 score bootstrap p-values in parentheses.

Notes: The unit of observation is a civil servant-month. Fast-track promotions is defined as a dummy that turns on one whenever the actual rank of the junior bureaucrat is higher than his or her official rank. Promotion power of seniors ($\overline{Power}$) is the monthly average official promotions of the first set of seniors. $\overline{Tax}$ is a dummy that turns on 1 whenever the junior is in the top 50% of their cohort in tax performance, in the first job. Exam top (bottom) 10% is a dummy that turns on one for those civil servants that were the top (bottom) 10% of their cohort in the recruitment exam. Levels of exam top 10%, bottom 10% and $\overline{Tax}$ are included. Controls include cohort & month-year FE, female dummy, total number of languages spoken, experience, experience squared, official rank of the junior, a dummy for field position and a time trend of the first job. All specifications exclude first job.

Table 10: **Reduced Form Multinomial Logit: Why are discretionary promotions merito-cratic?**

	Reference category: Not fast-track promoted			
Dependent Variables:	Promoted & moved across other teams	Promoted & moved into seniors teams	Promoted & moved across other teams	Promoted & moved into seniors teams
	(1)	(2)	(3)	(4)
$\overline{Power^p}$ (θ)	-0.28	0.03	0.17	0.36
	[0.80]	[0.98]	[0.92]	[0.86]
$\overline{Power^p} \times \overline{Tax}$ (π)	0.70	0.59	1.05***	0.44
	[0.11]	[0.47]	[0.00]	[0.70]
$\overline{Power^p}$ × Exam Top 10% (α)			1.15	1.34
			[0.34]	[0.23]
$\overline{Power^p}$ × Exam Bot 10% (β)			-3.80*	0.78
			[0.05]	[0.46]
$\overline{Tax}$	0.24	-0.11	0.27	-0.20
	[0.49]	[0.80]	[0.50]	[0.61]
Exam Top10%			-0.75	-0.04
			[0.15]	[0.92]
Exam Bot10%			-1.11	-2.95***
			[0.27]	[0.00]
$\alpha=\beta$ (p-value)			0.01	0.66
$\alpha=\pi$ (p-value)			0.91	0.68
$\beta=\pi$ (p-value)			0.01	0.82
Other teams (π)=Seniors team (π) (p-value)	0.90		0.63	
Other teams (α)=Seniors team (α) (p-value)			0.82	
Other teams (β)=Seniors team (β) (p-value)			0.02	
Controls	Yes		Yes	
Fixed effects	Yes		Yes	
Person x month-year	6300		5466	
Cohorts	30		30	

* p<0.1, ** p<0.05, *** p<0.01.

Kline and Santos, 2012 score bootstrap p-values in parentheses.

Notes: The unit of observation is a civil servant-month. Fast-track promotions is defined as a dummy that turns on one whenever the actual rank of the junior bureaucrat is higher than his or her official rank. Promotion power of seniors ($\overline{Power}$) is the monthly average official promotions of the first set of seniors. Promotion power of potential seniors ($\overline{Power^p}$) is the monthly average rule-based rank of the first set of potential seniors that junior PAS bureaucrats could have worked with in the first job. $\overline{Tax}$ is a dummy that turns on 1 whenever the junior is in the top 50% of their cohort in tax performance, in the first job. Exam top (bottom) 10% is a dummy that turns on one for those civil servants that were the top (bottom) 10% of their cohort in the recruitment exam. Levels of exam top 10%, bottom 10% and $\overline{Tax}$ are included. Controls include cohort & month-year FE, female dummy, total number of languages spoken, experience, experience squared, official rank of the junior, a dummy for field position and a time trend of the first job. All specifications exclude first job.

Appendix

Proofs: Conceptual Framework

Implication 1

Proof. If $\alpha_m = 0$ then

$$\frac{\partial \gamma_m}{\partial \rho} = \mu_{\widetilde{\theta}} b \tag{8}$$

and therefore,

$$\frac{\partial^2 \gamma_m}{\partial \rho \partial \mu_{\widetilde{\theta}}} = b \tag{9}$$

which is positive as long as $b > 0$. When incentives are not aligned at all and $\alpha_m = 0$, promotions will be equally meritocratic, based on publicly observed ability, in the senior's own team and other teams.

□

Implication 2

Proof. From the senior's optimization problem we get:

$$\gamma_m^* = \rho \, \mu_{\widetilde{\theta}} \left[\alpha_m \, E(\widetilde{a}|\theta) + (1 - \alpha_m) \, b \right] \tag{10}$$

Substituting $E(\widetilde{a}|\theta) = \pi_\theta \theta + (1 - \pi_\theta)\mu_{\widetilde{\theta}}$ in the above expression for γ_m, and taking a derivative with respect to power (ρ) and senior's private information (θ) we get:

$$\frac{\partial^2 \gamma_m}{\partial \rho \partial \theta} = \mu_{\widetilde{\theta}} \alpha_m \pi_\theta \tag{11}$$

If $\alpha_m = 0$ in equation 11, then $\frac{\partial^2 \gamma_m}{\partial \rho \partial \theta} = 0$ and private information of the senior has no effect on the choice of promotions.

□

Appendix Tables

Table A1: **What are the determinants of tax targets?**

	Tax Target (million PKR)	
	OLS	OLS
	(1)	(2)
Past tax collection (%)	0.08	0.57
	(0.11)	(0.62)
Election year (dummy)	-5.12	-1.50
	(6.47)	(7.44)
Real wage (PKR)	-0.01	-0.02
	(0.08)	(0.10)
Total population estimates (million)	-0.98	-7.13
	(1.04)	(10.58)
Rural employment (%)	0.47***	0.54**
	(0.16)	(0.25)
Agriculture production (million tonnes)	0.56***	1.41
	(0.07)	(2.29)
Irrigated area (hectares)	0.02**	0.10
	(0.01)	(0.08)
controls	No	No
district FE	No	Yes
fiscal year FE	Yes	Yes
mean of outcome	8.01	8.01
district x year	83	83
districts	30	30

* p<0.1, ** p<0.05, *** p<0.01

Clustered standard errors in parentheses.

Notes: The unit of observation is a district-fiscal year. Tax target is the annual target (in Pak rupees) for juniors. Past tax collection is last fiscal year's average tax collected as a percentage of last fiscal year's target in a district. Election year is a dummy that turns on one in election years. Except for past tax collection, the rest of the independent variables are from data digitized for various years from the Pakistan Bureau of Statistics.

6 Appendix - For Online Publication

Appendix A: Data Sources

FPSC internal documents on exam rank

For this study, exam rank data has been digitized for the first time from the internal records of the Federal Public Service Commission (FPSC). The data has information on the year of the recruitment exam, the overall merit position across different "occupational groups," that take the recruitment exam together in any year, merit position within the PAS cohort, roll number, and name (see Appendix Figure D2 for a snapshot of how these ranks are released in the press).[43] The exam rank data was matched with the career chart data on name and year of recruitment exam. Following this, I was able to match the career charts and exam rankings of 207 juniors that have information on their first job as well.[44]

Historical records of BOR on tax collection

I conducted archival research in the Board of Revenue's record room to dig out data on tax collection by bureaucrats and their teams in various tehsils of Punjab. I acquired and digitized this data for the first time for this study. The tax considered is the Agricultural Income Tax (AIT)/ Land Revenue levied on rural areas and collected at each village and revenue circle level by a team of revenue officers, i.e. *patwari, naib-tehsildar* and *tehsildar*, headed by juniors.

Data is available on the month, year, revenue circle, tehsil, district, name of revenue official responsible, their designation, annual tax collection target, remission, suspension, irrecoverable, net target, cumulative recovery of taxes, tax collection during the month, total tax collection in the month, balance, and percentage of tax collection against net target. Collection details are available for both the ongoing fiscal year, as well as arrears from past years. I only use the current year's tax performance, as there is little or no incentive to collect taxes against arrears and current tax collection is more reflective of the junior's performance. Since the annual tax collection target, rather than the net target, is a function of objective measures like number of farms and irrigated areas, I keep this as the relevant measure against which I measure the performance of juniors. The original tax data is at the revenue circle level.[45] The data is an unbalanced, monthly panel of revenue circles from 1983 to 2013. To create a measure of the tax performance of each junior officer from the revenue circle-month observations, I created tehsil-month averages of annual tax collection target as well as tax collected during the month. This tehsil-month panel was then combined with the career charts data on the job, tehsil, district and month-year from the career records of juniors.

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[43]One recruitment exam is used to select bureaucrats in twelve groups of government bureaucracies together. These are called occupational groups, of which PAS is one.

[44]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 or other 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. I used archives of newspapers, interviewed various bureaucrats, and used various online forums (like http://www.cssforum.com.pk) to confirm cohort details and double-check any missing information.

[45]A revenue circle is a collection of a few villages and are a smaller unit than union councils.

Career records

In this paper, outcomes are only studied for the junior PAS bureaucrats; however, other civil service groups are also included when classifying the seniors of these junior bureaucrats. These other civil service groups include the Provincial Civil Services (PCS), the Provincial Secretariat Services (PSS), the Provincial Management Services (PMS), and the Ministerial Services. To observe their careers, in addition to those of the juniors, their career records were also digitized (see Appendix Figure D1 for a copy of the career chart). The source of the career records is the Services and General Administration Department (S&GAD). Career records include information on the name, date of birth, religion, bureaucracy group, home district, qualifications, training, visits abroad, date and rank of official promotion, and the entire service record, including date and designation of job held, department or team, district, and subjective evaluation by immediate superiors for each official.[46] Fast-track promotion, the power of seniors ($\overline{Power}$), and teams of seniors-juniors are all classified using this data.

Incumbency boards

This study relies on initial job allocation rules for causal identification. This rule states that newly-recruited PAS juniors can only be allocated their first job in a revenue department in a district where there is a vacancy or where the incumbent has worked for at least a year. For this, we need to observe the vacancy positions and tenure of all the heads of revenue administration in tehsils across Punjab. This is what the incumbency boards allow us to observe. Each incumbency board in a tehsil has the name of the bureaucrat and the dates when he or she held the job. From here, a daily panel of vacancy and tenure of positions across Punjab was created. This data was combined with the career charts data on the end date of on-the-job training of PAS new recruits to define the set of potential seniors. Through phone requests to all the heads of tehsil revenue administration, I was able to get images of almost all of the incumbency boards of these offices across Punjab. Using these images, the data was manually entered and digitized for the first time. Appendix Figure D6 shows an example of an incumbency board. Incumbency boards are a tradition from colonial times. They are a status symbol for the civil servant, and every new civil servant takes pride in ensuring their name is up on the board with the dates of their tenure. Therefore, the data is reliable.

Appendix B: Tax performance rank and junior's multiple tasks

When juniors act as the head of revenue administration, they are not just in charge of tax collection. While on paper their official duties pertain to revenue administration, from time to time they are assigned extra work by the government. For instance, in the spring of every year, they play an important role in helping the government procure wheat from farmers. Apart from that, they are tasked with stabilizing the prices of essential commodities, or put in charge of a seasonal anti-hoarding drive, the setting up of cheap "ramzan" bazaars, or coordinating with the police. Like their tax collection performance, the skills required to perform well in almost all of these other tasks is also team management of the revenue

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[46]A sample of dates of promotions in the career charts were double-checked from seniority lists issued by the Establishment Division, and available online at http://establishment.gov.pk/

officials and clerks that work for juniors.

What all this means is that within a cohort, tasks that are either differentially allocated based on tax collection ability or that reverse the intra-cohort rank of juniors based on tax collection performance, can be a problem for the study. The first problem is less of a concern since generally what tasks have to be carried out, regardless of time period, are determined at the highest tiers of political administration and allocated across the province to all juniors in one go. Regarding the second issue, the main underlying assumption behind using tax as an ability measure, is that any extra task assigned must preserve the intra-cohort ranking of juniors in tax collection performance. One way that can happen is if the ability on tax collection and other tasks is positively correlated. Table 3 provides evidence in support of this assumption.

Appendix C: Data

Figure D1: Career record of bureaucrats from Services and General Administration Department (S & GAD)

Islamabad the 10th 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 JAVAID	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	MARHABA NEMAT	PUNJAB	PAS
12	2521	SAMMAN ABBAS	PUNJAB	PAS
13	11014	MALIK MUHAMMAD DANISH	PUNJAB	FSP
14	12632	QUDSIA NAZ	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 AHSAN	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 JAVAID	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

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Figure D2: Recruitment exam ranking of PAS bureaucrats published in newspapers

Figure D3: Historical tax performance records in Board of Revenue's (BOR) record room

Figure D4: The BOR tax collection pro forma

Figure D5: The BOR tax collection pro forma verified by District Accounts Officer

Figure D6: An example of an incumbency board: Assistant Commissioner Multan.

Appendix D: Figures

District departments

	1
	2
	3
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	5
	6
	7
	8
⋮	⋮
	36

month = 0   *month* = 18   *month* = 24

Recruitment & academy training

On-the-job training

Junior's start of job as head of revenue admin in tehsil (AC)

Rule: assign to
1. vacancy; or
2. where incumbent spent ≥1 yr
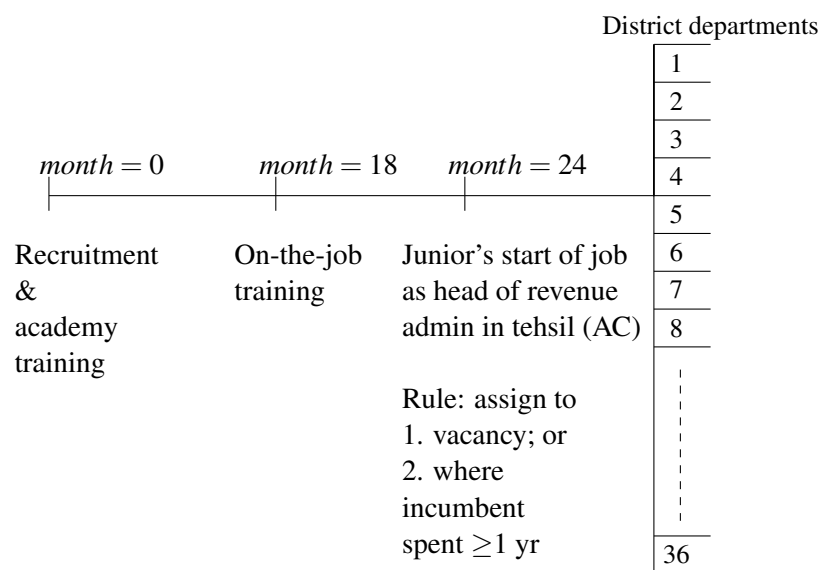
Figure E1: Timeline of the initial career of PAS newly recruited juniors
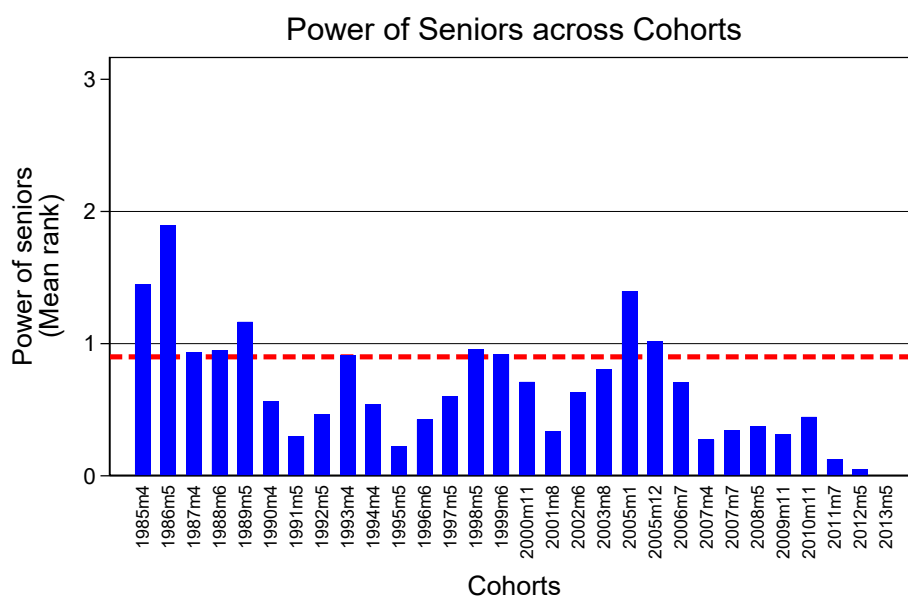
Figure E2: Variation in promotion power of seniors across cohorts. Red dotted line is the mean power of seniors.
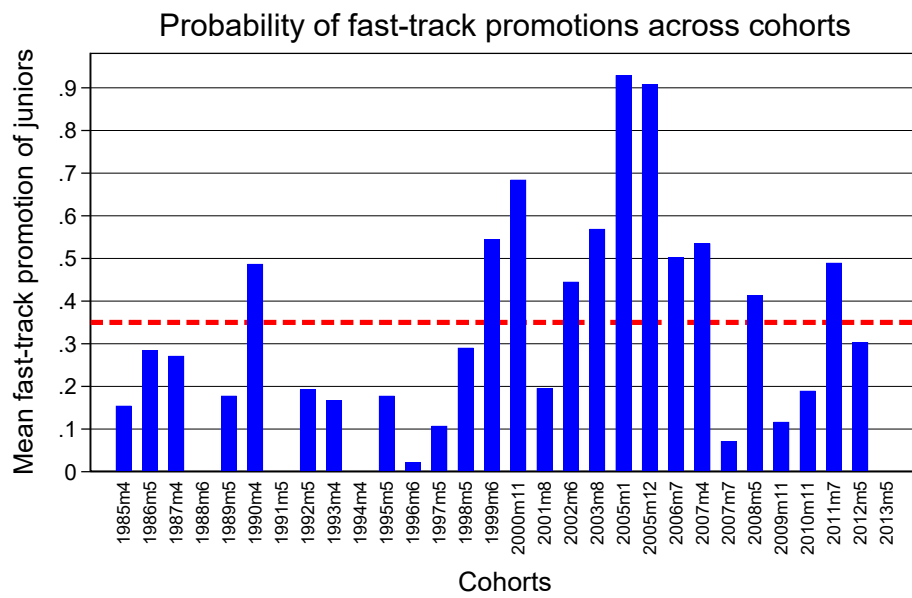
Figure E3: Variation in fast-track promotion of juniors across cohorts. Red dotted line is the mean of fast-track promotions.
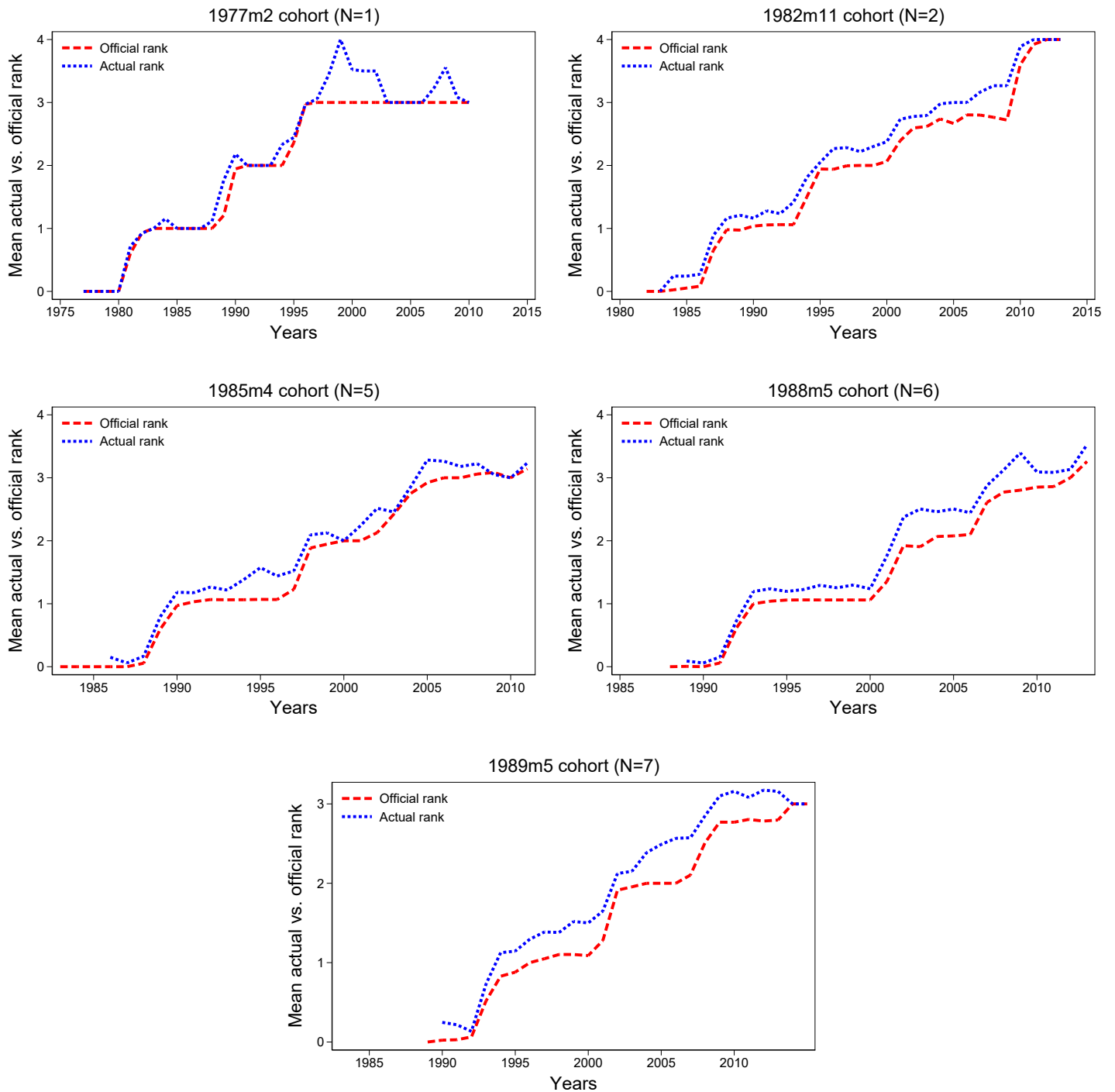
Figure E4: Actual vs. official rank: The blue line is the actual rank of a cohort while the red line is their official rank. Official rank is based on official promotions. Actual rank can differ from official seniority at the discretion of senior civil servants and chief executive of the province.
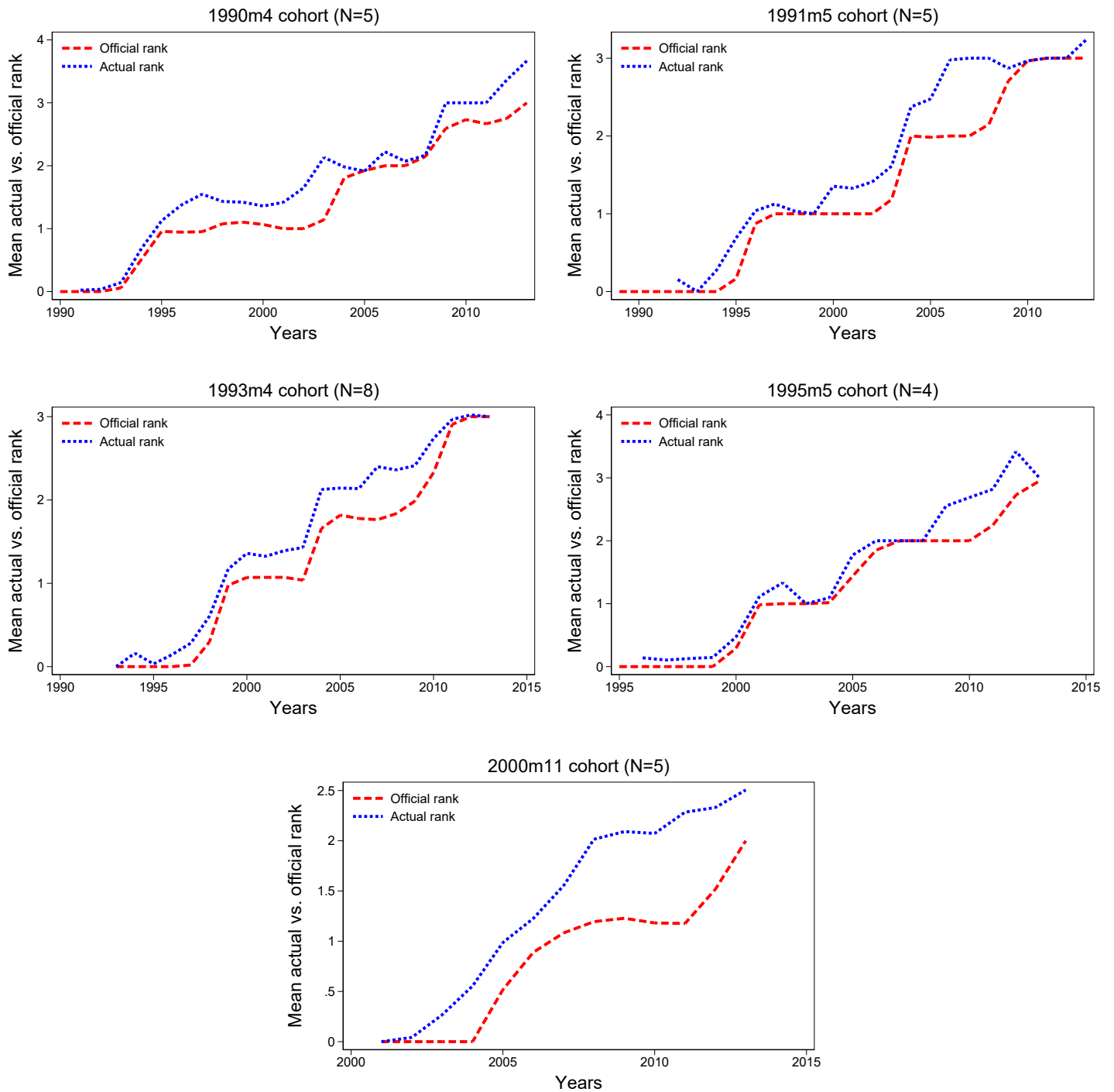
Figure E5: Actual vs. official rank: The blue line is the actual rank of a cohort while the red line is their official rank. Official rank is based on official promotions. Actual rank can differ from official seniority at the discretion of senior civil servants and chief executive of the province.
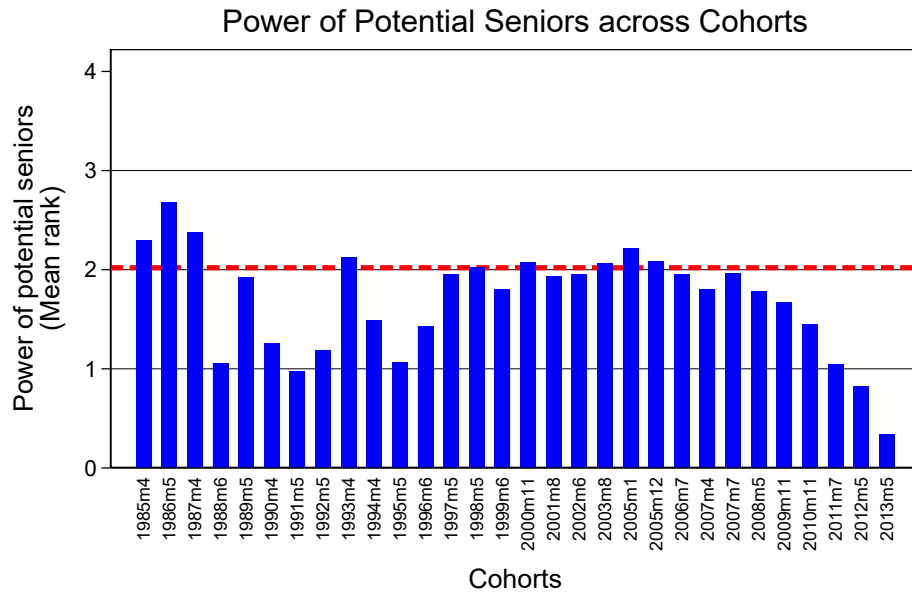
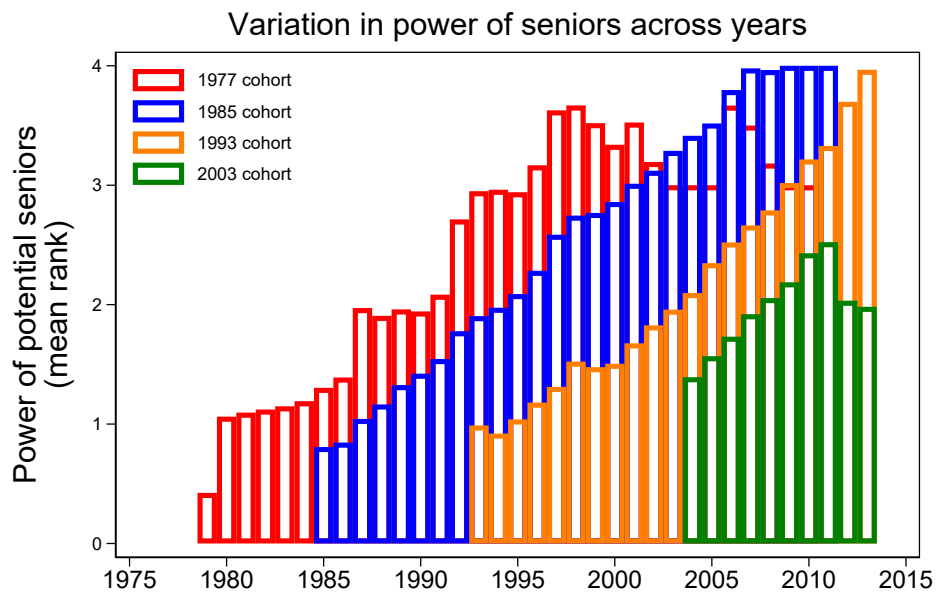Figure E6: Variation in promotion power of potential seniors across cohorts

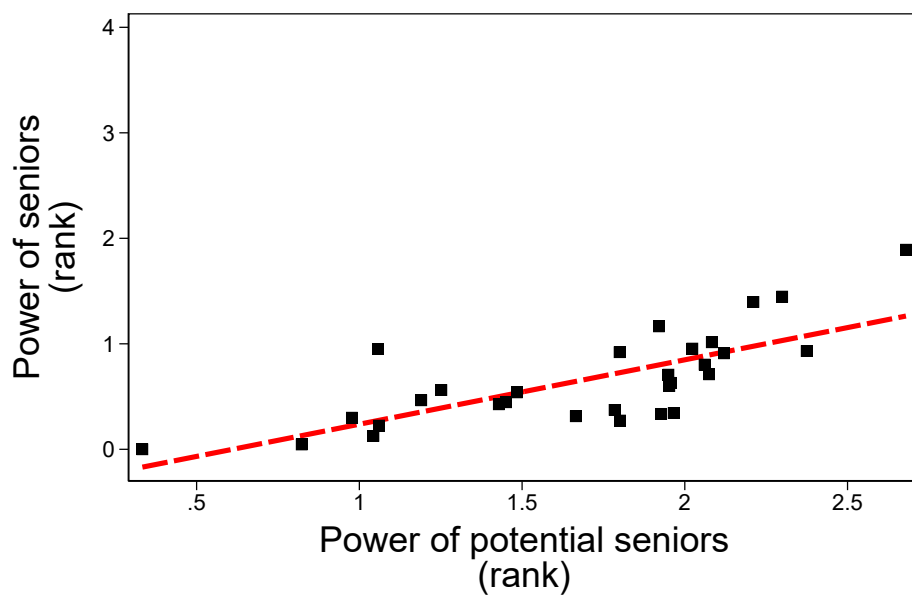Figure E7: Time variation in promotion power of potential seniors

Figure E8: Cross sectional correlation between promotion power of potential and actual seniors