Meritocracy in a Bureaucracy*

Shan Aman-Rana†

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Abstract

Bureaucracies often design rules and constrain discretion to avoid nepotism. Yet such rules may not be necessary in cases where the interests of the decision-maker and the bureaucracy are aligned. I examine discretionary promotions of junior Pakistan Administrative Services (PAS) bureaucrats, in a setting where corruption and nepotism are viewed as the norm. I compile unique data on the abilities of junior officers, including both publicly available recruitment exam rank and information on job performance that is private to senior officials. Results show that seniors use both public and private information meritocratically in making these fast-track promotions. Despite no explicit incentives, seniors are equally meritocratic when choosing and promoting juniors for other teams as for their own 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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†Department of Economics, University of Virginia. Email:sa8ey@virginia.edu

Delegating decision making allows for better use of local information of the decision maker, however, it also creates opportunities for agents to influence and bias outcomes in their favor (Cyert and March, 1963; Holmström, 1977; Holmström, 1982; Tirole, 1986; Milgrom and Roberts, 1988). One way to reduce bias is through changing explicit incentives,[1] a solution that has eluded public sector bureaucracies. In fact, both by the nature of the production process as well as by statutory rules, public sector organizations are constrained in the use of explicit incentives like piece rate or team pay.[2] In their case historically, the dominant intellectual argument has been for restricting discretion altogether (Dixit, 2002; Finan et al., 2017; Wilson, 1989; Evans and Rauch, 1999; Evans, 1995; Bekke et al., 1996). The result is that most bureaucracies today follow rule-based decision making, albeit not without its own costs.[3] Restricting discretion in public sector bureaucracies is especially popular in the case of developing countries, since evidence suggests that the more dishonest select into public service and corruption is often quite high (Olken and Pande, 2012; Hanna and Wang, 2017; Finan et al., 2017). The big question then is: despite lack of explicit incentives, can there still be unbiased or meritocratic discretionary decisions in a public sector bureaucracy? If it can be shown that with fixed wages, job security, and a lack of profit motive or competition from the outside market, there is meritocracy of decisions, then this challenges the historical acceptance of rules in bureaucracies.

In this paper I link the long-term careers of newly-recruited junior bureaucrats to increases in the discretion or power of senior bureaucrats and ask: are discretionary promotions of juniors by their seniors meritocratic? Promotions are meritocratic if high ability juniors are promoted at a higher rate than low merit juniors. I digitized a unique dataset for the first time that allowed me to investigate how decision makers use both public and private information on ability of juniors to make promotion decisions. To the best of my knowledge any investigation of discretionary decision making in the literature has been a reduced form one, without direct observation of private information of the decision maker i.e. information on ability of junior that the senior observes, the researcher observes, but not the organization; or an investigation of how public and private information interact. This paper also investigates whether promotions are more or less unbiased across teams for which promotion decisions are made. The aim is to test whether implicit incentives of reputation concerns of seniors on referrals of juniors to others or their career incentives of setting up the best team for themselves play any role in ensuring meritocracy in a setting without explicit incentives.

I base this study on the Pakistan Administrative Services (PAS) bureaucracy. PAS is an elite cadre

[1] Though not studying discretion, some recent papers suggest that changing explicit incentives like 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. These ideas are certainly useful when productivity or output of workers is common knowledge, the production processes are simple (fruit picking, flower packing), there is profit motive and competition from the market, or the firm is not constrained in the design of explicit incentives. This is not the case in a typical Weberian bureaucracy.

[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 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] Kelman, 1990, 2005 argue that excessive regulatory burden may make procurement cumbersome and increase the average price that the public body pays. Bandiera et al., 2009 show that passive waste accounts for 83 percent of total estimated waste in a public sector bureaucracy. This passive waste is potentially the result of excessive rules and regulations. Bertrand et al., 2020 show how fixed seniority based promotion rules in the Indian Administrative Services lead to a lowering of performance.

of generalist bureaucrats, responsible for running key government departments. In general, they start off their careers as heads of revenue administration in a tehsil[4], but after this initial phase they have wide-ranging assignments 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 allocation of talent within such bureaucracies and this paper also helps fills this gap in the literature as well.

I focus on fast-track promotions of juniors as the main outcome of interest. With fast-track promotions, junior bureaucrats are allocated higher-ranked jobs than their grade. This is the outcome of interest since these are discretionary and not a matter of right. There is another kind of promotion in the setting i.e. official promotions. These are based on rules that use subjective performance evaluation of the bureaucrat by their immediate bosses, number of years of experience in service and mandatory training.

Seniors are defined as those that have worked with the cohorts of newly-recruited junior bureaucrats in the same department, district in junior's first job. For each junior, the average number of actual seniors in their first job are 13. The institution is such that these first seniors rise in the organization and get increased discretion over fast-track promotions of juniors. Therefore, discretion of seniors is quantified by calculating an average official grade of these first seniors. This gives me the explanatory variable of interest, I call $\overline{Power}$. Data on $\overline{Power}$ and the outcome variable, fast-track promotions, are both based on career charts of the bureaucrats. These were digitized for the first time for this paper. For $\overline{Power}$ measure to be causal, both the initial match between the seniors and junior officials has to be random[5]; and changes in discretion of the senior has to be exogenous to the unobservables of juniors. If juniors with better unobservables are allowed to select the department, district of their first job, and if these also correlate with the senior's rise in the organization, then neither the senior nor their discretion will be randomly allocated to juniors. Below I describe the rules that allow me to construct a a theoretical rule-based measure: power of potential seniors $\overline{Power^p}$ as an instrument for $\overline{Power}$.

The instrument has two sources of variation: a cross-sectional variation in seniors, and a time variation in the discretion of these seniors. For the cross-sectional variation in seniors, I exploit the job allocation rules of the government. Rules dictate that newly-recruited juniors can be assigned first jobs, as head of revenue administration, when the position is vacant or when the incumbent has spent at least one year on the job.[6] This gives, *for each cohort*, a set of 'potential' first seniors they could have worked with in their first job. The mean number of potential seniors is 30.

This cross-cohort variation in potential seniors in the first job is combined with a *theoretical* time variation in the rise of these potential seniors. Minimum Length of Service Rules of the government stipulate that a bureaucrat will get one official promotion at five, twelve, seventeen, and twenty-two years after entering the service.[7] For *each potential senior* this rule helps build their theoretical promotion in the organization over month-year. The instrumental variable: power of potential seniors $\overline{Power^p}$

[4]Pakistan is administratively divided into provinces, districts, and tehsils.

[5]Fisman et al., 2020 underscores the importance of controlling for positive selection bias and the endogeneity of workplace assignments, particularly when studying the effect of workplace ties.

[6]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.

[7]Establishment Division's O.M.No.1/9/80-R.2 dated 2-6-1983

combines both sources of variation and is defined as the average theoretical promotion of potential seniors.

The Exclusion Restriction could be violated if the theoretical and rule-based rise of potential seniors directly affects fast-track promotions of juniors through their unobservables. This can be if openings are created specifically for certain star cohorts of juniors either directly or through manipulation of when training ends for these juniors. I find that neither is true in this setting. First, a central agency, follows rules in selecting the month and year when the juniors end training and begin their first jobs. Second, I test whether the quantity of vacancies change around the date of end of training and beginning of first job of the new cohort of juniors and that is not the case. 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. Fourth, a balance table shows that there are no statistically significant differences at baseline between juniors that inherit potential seniors with below median power to those with potential seniors of above median power.

To test whether seniors promote meritocratically we need measures of ability of juniors. I create a public measure of ability of the junior that ranks them based on their performance in the civil service recruitment exam. This dataset is digitized for the first time from the Federal Public Service Commission (FPSC). The skills required to do well in this exam are proficiency in English (since all government business is done in English) and critical thinking. In general, only the very top exam ranking bureaucrats are viewed as high ability, while those who came in last or next to last in their cohort are perceived as low ability. Following this organizational norm, I classify high- and low-ability bureaucrats as those that are ranked in the top and bottom 10% of their cohort in the recruitment exam, respectively.[8] Exam performance, though publicly observable and considered important as a measure of ability across the organization, is a noisy determinant of performance. It is not statistically correlated with either subjective performance evaluation, or citizens' view of service delivery.

The measure of ability of juniors that is private information of first seniors, is created from tax collection performance of juniors in their first job. In their first job, junior officials are responsible for revenue administration and mainly collect taxes against an annual target set by the central Board of Revenue. This is based on farm size. I create an average tax performance for each junior from their monthly tax performance in their first job. I classify high ability juniors as those whose average tax collection performance lies in the top of their cohort.[9] The main skill required to succeed in tax collection is team management, which is relevant for long-term job performance as well. 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 ability of junior that is not captured in entirety by either of these measures.

The reason this is private information of the senior 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

[8]The results are not locally sensitive to these cut-offs.

[9]The results are presented for the top 10% to the top 50%.

juniors. A junior's individual performance never makes it to their career files, promotion documents, referrals or gets 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 a revenue circle-month level.[10] This data was combined with career charts data and recruitment exam ranks of the bureaucrats.

There are constraints on the sample used in the main analysis in the study. First, some of the tax record was destroyed due to flooding in one of the basement record rooms of Board of Revenue, therefore, tax information is only available for 234 PAS bureaucrats.[11] Second, to identify a causal effect I have to restrict attention to junior's first job and rely on job allocation rules of the government. This further restricts the set of juniors on which the main analysis rests to 87 juniors *on whom tax performance information is available for their first job*. 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. 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 year observations. Seniors are from this larger set of bureaucrats.

The small number of cross-sectional data on juniors on whom the main analysis rests might raise two broad issues. First is statistical inference and second is representativeness of the sample. To address the first, following the literature (cf. Angrist and Pischke, 2009; Bloom et al., 2013; Angrist et al., 2013), 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. To check for representativeness of the sample, I compare the study sample with the larger PAS bureaucracy and find that there are no systematic differences in these two. Most importantly, neither the fast-track promotions nor recruitment exam ranking are statistically different across the two samples, suggesting that the 87 juniors are representative of the larger PAS bureaucracy.

Results show that fast-track promotions of juniors are meritocratic based on their tax performance. Across all definitions of $\overline{Tax}$, with a one rank above average increase in the power of potential seniors, the top tax performers have between 10% to 19% higher probability of being fast-tracked than bottom tax performers. The effects are large in magnitude and statistically and economically significant (between 18 to 48 percent of the mean effect). Since tax collection rank is an important determinant of performance, these results suggest that local information was harnessed by allowing discretion to seniors. In the absence of fast-track promotions by seniors, this information would not have been used. We observe meritocracy on tax performance despite the fact that there is no explicit incentive for the seniors and tax performance of juniors is their private information. Second, both public and private information play an important role in discretionary decisions of the senior. Across all definitions of $\overline{Tax}$, results show that with a one rank above average increase in the power of potential seniors, the bottom 10% recruitment exam ranking juniors have between 20% to 34% lower probability of being fast-tracked than

[10] Revenue circles is an even more dis-aggregated unit than tehsils. It comprises of a few villages.

[11] The universe of PAS bureaucrats between 1975-2013 is 829.

the reference category. The effects are large in magnitude and are both statistically and economically significant (between 30 to 75 percent of the mean effect). Results suggest that there is path dependence so that those juniors that performed poorly in the recruitment exam, cannot fully redeem themselves through high tax collection. This effect reverses for the top 10% exam performers. For top 10% exam performers, the effects are positive, and both statistically and economically significant.

Next I investigate the reason for promotions to be meritocratic. To do so, I investigate whether these promotions are more or less meritocratic within the senior's own team versus other teams. Since within this bureaucracy there are no explicit incentives, if we observe that promotions are more meritocratic in other teams than the team of seniors then this is consistent with reputation concerns of referring a high ability junior to other teams being more important than the career incentives of setting up the best team for themselves, and vice versa. Raw averages from the data suggests that fast-track promotions are meritocratic based on tax performance of juniors in both the seniors' and other teams. Regression results from a multinomial logit estimation show that 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 performers to move teams and be fasttrack promoted in other teams (relative to the base category). This differential effect is both economically and statistically significant. Results further show that while the effect on moves into and promotions in senior's own team is positive, it is not statistically significant. However, an F-test testing the effect of power of seniors on moves and promotions in other teams versus senior's own team fails to reject the null.

Interestingly, the effects for those juniors that are bottom 10% in exam performance are negative and much stronger when it comes to promotions and moves across other teams, than promotions and moves into the senior's own teams. An F-test testing similarity of the effect of power of seniors for bottom 10% exam performers in other teams versus seniors own team rejects the null. Results show that a one rank above average increase in the power of potential seniors results in a nearly 4 time lower log of relative risk ratio for the bottom 10% exam performers to move across and be fast-tracked in other teams (relative to the base category). This is consistent with the idea of path dependency. Poor performance resulting in poor reputation at the start of the career is very hard to fully overcome through higher performance on the job.

Taken together these results suggest that: first, implicit incentives exist that make seniors use their private information in fast-track promotion decisions of juniors; second, seniors care about their reputation on referrals of juniors to other teams almost as much as the career incentives of setting up the best team for himself; and, third, negative public information on ability of junior at the start of their careers remains an important determinant of promotions of juniors in the long-run.

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 in delegation of decisions. A few macro empirical papers on private sector firms, discuss how external circumstances and firm characteristics influence the choice of decentralization and how decentralized firms fare better under macro shocks (Aghion et al., 2014; Aghion et al., ming; Acemoglu et al., 2007). Micro evidence on the effects of discretion have had mixed results. Some studies have highlighted how discretion allows the use of local information of the decision maker (Brollo et al., 2018; Duflo et al., 2018; Li, 2017; Jia et al., 2015; Fisman et al., 2017; Bandiera et al., 2020).

Others have shown how discretion can result in worse outcomes for the organization or corruption (Xu, 2018; Colonnelli et al., 2018; Hoffman et al., 2018; Fisman et al., 2018; Niehaus and Sukhtankar, 2013; Sukhtankar, 2015; Fisman et al., 2020). This paper presents micro-evidence on the exercise of discretion within a public sector organization and contributes to this literature in three ways. First, to the best of my knowledge, this paper is the first that directly measures and tests how decision makers make use of their private information in decisions and investigate how public and private information interact in discretionary decisions at the micro level. Second, this is the first study to highlight the importance of implicit incentives in discretionary decisions in organizations, with policy implications for resource constrained organizations in developing countries. Third, the delegation literature till now looks at outcomes while keeping incentives fixed. This paper shows how the same decision maker under different implicit incentives (own team versus other teams) can make more or less meritocratic discretionary decisions. This sheds light on why we can see disparate results in the previous literature and can help us interpret those results through the lens of self-interest of the decision-maker. The sharper and more aligned the implicit or explicit incentives, the more meritocratic the decision making.

The paper also contributes to the rapidly expanding literature on the organizational economics of the state. There is a growing realization within economics that state capacity is important for economic development (Besley and Persson, 2009, 2010) and that there is a need to open up the black box of the internal organization of public sector bureaucracies (Finan et al., 2017). 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 in most bureaucracies, there are certain points of entry, after which talent is largely allocated internally through promotions. This paper builds on the literature by studying the discretionary promotions of juniors by senior bureaucrats, using a unique dataset on public and private information of the decision maker and showing the importance of implicit incentives in meritocracy of decisions in a bureaucracy. The results in this paper suggests 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). Last, this paper also complements the literature that argues that in public-sector bureaucracies implicit incentives: motivates performance on the job by aligning mission preferences or career concerns (Besley and Ghatak, 2005;Dewatripont et al., 1999; Bertrand et al., 2020); impacts selection of talent within bureaucracies (Ashraf et al., 2020); impacts human capital investment of bureaucrats (Iyer and Mani, 2012). This paper adds to this literature by studying promotions decisions and arguing that reputation concerns on referrals or career incentives of setting up the best team for themselves can be a driver of meritocratic promotions.

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). Like the IAS, it is a successor 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 govern-

ment 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 welfare of the country 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.[12] 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 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. PAS new recruits are meant to start their initial career as head 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 assistant in wheat procurement in spring of every year, monitoring the hoarding of fertilizers in certain months, relief efforts in case of floods, etc. (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 spent 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 of 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, 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. The context is such that the higher a senior bureaucrat rises, the higher the likelihood that he or she will have discretion over the fast-track promotions of juniors. However, no one senior has complete discretion. Other senior civil servants in the Services and General Administration Department (S&GAD) and the Chief Minister's Secretariat are involved in these decisions, with the final authority resting with the chief minister of the province.

2 Conceptual Framework

The framework illustrates how a bureaucracy with fixed wages, job security, limited competition from the market, can still have meritocratic discretionary promotion of junior bureaucrats by seniors through

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

implicit incentives. In what follows, promotions that are at a higher rate for a high ability junior than a low ability junior are defined as meritocratic. The conceptual framework discusses how public and private information interact in decisions and makes precise the conditions under which we will observe meritocracy based on either. The key takeaways are two. First, meritocracy on the basis of public information is possible even in the absence of incentives. This is not the case for the use of private information. Second, if senior's own career incentives of getting a high ability junior in his team is higher (lower) than reputation gain from promoting a high ability junior in other teams, then with increase in power of the senior, promotions will be more (less) meritocratic in the senior's own team than in other teams. All proofs are in appendix.

2.1 Setup

The organization faces a promotion decision of the 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 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 $\varepsilon \sim \mathcal{N}(0, \frac{1}{\kappa_\theta})$.[13] $\kappa_\theta \in (o, \infty)$ 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 first job as one such private signal of the senior. This is observed by the senior, but not by the organization. Ability conditional on the public signal and the senior's private signal are 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 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 so delegates the decision of promotion of the junior to the senior.[14] The senior's incentives are not perfectly aligned with the organization. The senior has social preference towards the junior, which might bias his decision. This bias is captured in a reduced form way in the model by b.[15] The senior puts a weight $\alpha \in [0, 1]$ on $E(\widetilde{a}|\theta)$, while he puts a weight $(1 - \alpha)$ on his social preference towards the junior (b). Since this is a bureaucracy with fixed wages and job security, we can think of α as a measure of the alignment of senior's interest with the organization. This could be a result of simple altruism towards the organization or other incentives (details below) all of which are some form of implicit incentives.

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

[14] 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.

[15] 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 collusion (Sobel, 2005; Tirole, 1986). It could capture friendship between senior and junior bureaucrats or simple altruism or loyalty of the senior towards juniors they have private information on (Rotemberg, 1994; Tabellini, 2008).

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 paper work and explaining their promotion decision. The more the effort by the senior (γ), the higher the probability of promotion of the junior. With $1-\gamma$ the junior is not promoted.[16] 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)[17] 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 $\nu_{own\ team}$, a position opens up in the senior's own team, while with probability $\nu_{other\ team}$ a position opens in other teams. This results in the senior's maximization problem as follows:

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

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 his own team means he is viewed as a high performer and a good manager, resulting in an increased chance of his own 'fast-track' promotion.[18] α_{other} on the other hand reflects reputation gain by promoting a junior of high ability in other teams.[19] α_{own} might be greater than, less than, or equal to α_{other}. The senior's effort in promoting a junior is therefore:

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

Power of the senior (ρ) affects senior's promotion effort as follows:

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

Lemma 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 for which 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

[16] 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 officer on special duty (OSD).

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

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

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

senior's own team as in other teams.

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

If $\alpha_m = 0$, then the senior gets no benefit from basing his decision on $\mathrm{E}(\widetilde{a}|\theta)$. 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 senior's promotion decision based on his private information that can only be due to implicit incentives. This is an 'existence' result. Observing senior's promotion decision based on his private information, implies the existence of implicit incentives in public sector bureaucracy.

Proposition 1. *With increases in power of senior (ρ), if $\alpha_m \neq 0$, promotions will be be more meritocratic in senior's own team than in other teams if and only if $\alpha_{own} > \alpha_{other}$. The opposite is true if $\alpha_{own} < \alpha_{other}$.*

If $\alpha_{own} > \alpha_{other}$ then senior places a greater weight on performance of the junior i.e. $E(\widetilde{a}|\theta)$ in his own team than in other teams. With increases in power of the senior, this relative meritocracy in senior's own team as opposed to other teams holds for public or private information of the senior. On the other hand if $\alpha_{own} < \alpha_{other}$, then the senior cares about his reputation on referral of a junior more than the career incentive of setting up the best team for himself. This means that the senior will exert more effort to promote a higher ability junior when the chance comes to promote for other teams, than if he is promoting for his own teams. The benefit of doing so is just larger.

3 Data: Key variables and descriptive statistics

3.1 Sample selection

The paper relies on four main data-sets that were newly digitized for the study i.e. (1) career charts data from the S&GAD that contains details of the careers and background of both Pakistan Administrative Services (PAS) and provincial services bureaucrats; (2) recruitment exam ranking of PAS bureaucrats from 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 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 records from the Board of Revenue.The exam rank data was matched with the career chart data on name and year of recruitment exam,[20] while tax data was matched on tehsil-month. Combining these data resulted in a bureaucrat-month panel data set.

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 record was destroyed due

[20]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 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.

to flooding in one of the basement record rooms of Board of Revenue, tax information is only available for 234 PAS bureaucrats.[21] Third, to identify a causal effect I have to restrict attention to junior's first job as Assistant Commissioner and rely on job allocation rules of the government. This further restricts the set of juniors on which the main analysis rests to 87 juniors *on whom tax performance information is available for their first job*. 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.[22][23] 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. The career charts data includes information on 785 of these 829, suggesting that the full PAS sample is as good as the universe of these officers.

Although the number of juniors are 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 in the main results are large (more than 50 percent of the mean of fast-track promotions), which further explains the statistical significance of the results. Despite that the small number of cross-sectional data might still raises 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.

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. 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.[24] 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).

[21] The tax collection data is at a revenue circle-month level. We observe 558 unique revenue circle from 1983-2013, resulting in 30,405 observations. The junior bureaucrats that are the people of interest in the setting head revenue administration at the tehsil level (each tehsil is composed of multiple revenue circles). To observe tax-related ability of PAS juniors, I collapsed these revenue circle-month observations at a tehsil-month level and then combine the tax collection and career charts data at a tehsil-month level. This results in observing tax performance of 644 bureaucrats. 406 of them are provincial services bureaucrats, while 234 are PAS.

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

[23] The set of juniors with information on tax performance in the first job (irrespective of exam performance) is 99. 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. PAS juniors with just information on first job and recruitment exam are 199, observed over 85 months (7.1 years) resulting in a total of 16,989 observations. These 199 juniors are from 40 cohorts that entered the civil services between 1975 and 2013. Results using just exam rank alone are presented in appendix.

[24] While exploring mechanisms behind meritocracy, I use a multinomial logit estimation and employ a two-step control function approach. In those regressions, following the literature, I use a score bootstrap procedure as suggested by Kline and Santos, 2012 for nonlinear models and report p-values.

[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.

Representativeness of the sample. The second potential issue is that of representativeness of the sample. Table 1 compares the 87 PAS juniors to the full PAS sample. Comparing our study sample to the full PAS sample we can see that these 87 juniors are a random subset of the larger PAS bureaucracy and are broadly representative of the them. Most importantly, there are no systematic differences in either the fast-track promotions or recruitment exam ranking across the two samples.

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's 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 cut-offs 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's's* 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 turn to 1 whenever a junior is in the top 10% or bottom 10% of their cohort in the recruitment exam, respectively. Appendix Tables C1 to C4 show the results defining high-low ability as the top-bottom 5's15%. The OLS results are robust to any definition of top and bottom exam performers. Estimates in the instrumental variable and reduced form regression are in the same direction, but are not significant for the top 5% of juniors.

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 Appendix A for details). A junior's first job is when he or she works as the head of the revenue administration in a tehsil.[26] The Board of Revenue (BOR) sets annual tax collection targets based on the official record of the number of farms and irrigated areas (see Appendix Table A1). Each junior collects taxes against these annual targets using his or her team of revenue officials. The records have information at a team level i.e. at a revenue circle level.[27] 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 at a tehsil-month level. 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

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

[27] A few villages together make up a revenue circle. A few revenue circles put together form a tehsil. Each junior is incharge of the tehsil level office.

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 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 50% of tax collectors. I also show the results for juniors that are in the top 10%, 20%, 30%, 40%, and top 50% of tax collectors in their cohort in the appendix.

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 performance is only observed by seniors in the district and not the organization as a whole. So, how is a metric like tax performance the private information of senior officials? In regular district-level meetings, tax collection 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 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 by a junior remain private information is then further corroborated by government reports and research articles on the issue. The National Commission for Government Reforms in their report on Reforming the Government of Pakistan (Husain, 2012 p.189, para 74) argue that objective measures are missing from both performance evaluation and promotions. They propose "An 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).

Do the tax collection and exam-based ability measures convey anything useful? Table 5 shows descriptive evidence on what the two measures of ability mean for job performance. I consider three different outcomes: whether a junior is evaluated as 'very good' or an 'outstanding' worker throughout his or her 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

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

[29] I was one of these junior tax collectors before I entered academia. When I went to get this performance data from the BOR, they kept sending me away, saying that they only had aggregates of the tax performance of districts. Since I had worked as a junior official, I knew this data existed, so I persisted. After many months of repeat visits, they allowed me to go to their record room and search for the data. I worked through all the files in their basement and found these records. I was then allowed permission to digitize these records for my own use. 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.

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 turns to 1 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 sample, I observe subjective evaluations for eight out of thirty cohorts, while in the case of 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 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 performance as the correlation between the measures is far from perfect. Tax performance, therefore, carries additional information about ability of junior that is not captured in entirety by either of these measures.

In the case of exam rank, we see that the top 10% exam performers are more likely to be evaluated as a very good or outstanding officer than mid 80% performers. The magnitude of the positive effect is similar to the case of high tax 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 (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 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% exam performers.

Taken together, these results provide support for the use of tax collection rankings as an ability measure, while exam ranking appears a noisy measure of ability.[30]

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. The seniors of interest are first seniors. These set of seniors remain fixed throughout the juniors's careers. The source for the variable is career records from 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 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.[31] Official promotions move bureaucrats from rank seventeen to twenty-two. I normalize them from 0-5, 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 power of first seniors across cohorts in the exam rank sample.

[30] While interpreting results based on citizen perceptions, there is one important caveat that needs to be kept in mind: it might be a little unfair to use these in the case of exam rank as an ability measure. This is because 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 employee's work files and his or her application of the laws and rules, we might see different results.

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

3.4 Fast-track promotions of juniors

Fast-track promotions are quantified as a dummy variable that turns to 1 whenever the junior works in a job that has a higher rank than his official rank. We can use career records to observe junior's official rank, designation and department for each time period (see Appendix A for details). Using these designations and departments, we can classify the rank of the job that juniors occupy. This is done by using the notifications of designations and their job ranks by the Services and General Administration Department (S&GAD) for various departments. These were personally acquired from 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. Once a civil servant is officially promoted, he or she 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 are allocated to a junior in his or her 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 team in the long term. Working in a team of first seniors is classified as a dummy variable that turns to 1 whenever the junior works in the team of any of his or her first seniors 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 tax performance of juniors. This is true in both the senior's own team as well as other teams.

4 Estimation Strategy

The estimation is:

$$Fast - track_{ict} = \kappa_c + \kappa_t + \gamma Ability_i + \pi \overline{Power}_{ct} + \phi \overline{Power}_{ct} \times Ability_i + \mu X_{ict} + \varepsilon_{ict} \quad (5)$$

where the outcome fast-track$_{ict}$ is a dummy variable that turns to 1 whenever the actual rank of the junior bureaucrat i, of cohort c, in month-year t, is higher than his or her official rank. $\overline{Power}_{ct}$ is the mean official rank of seniors of a cohort c, in month-year t. The results are presented for both seniors in the first job and all seniors that a cohort of juniors ever worked with.

Ability is measured in different ways depending on whether the ability measures are public information or the private information of seniors. When I consider ability that is public information: $Ability_i \in \{Exam\ top\ 10\%, Exam\ bottom\ 10\%\}$ where the top and bottom 10% of exam takers are dummy variables that turn to 1 whenever a junior i, of cohort c, is in the top 10% and bottom 10% of their cohort in the recruitment exam, respectively. When I consider ability that is the private information of the senior: $Ability_i \in \{\overline{Tax}\}$, where $\overline{Tax}$ is a dummy variable that turns to 1 whenever a junior i, of cohort c, is in the top 10%, 20%, 30%, 40%, or 50% of their cohort in tax collection in their first job.

Results remain robust to these definitions of top tax collector.

I control for time invariant, cohort specific, unobserved heterogeneity using cohort fixed effects κ_c, thus using only within cohort variation. These 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, the 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, as that is the level at which seniors are allocated (Abadie et al., 2017).

In this estimation, in a given time period, I compare cohorts of juniors that experienced more of a change in power of their seniors to those that experienced less or no change, and I test for the heterogeneity of the effect based on the ability of the juniors. The coefficient of interest is ϕ, which gives us the heterogeneous effect of the senior's power in promotion decisions according to the ability of the junior. If $\phi > \pi$ for high-ability juniors, then we can say that discretionary promotions are meritocratic.

4.1 Identifying variation: Promotion power of potential seniors

There are two big steps to 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) shows that particularly when studying the effect of workplace ties, there is positive selection bias. Homophily, or the tendency 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 the more motivated juniors select to work with the best seniors in the organization, our results will not be causal. Moreover, the rise of the senior can also be endogenous if star juniors allow the seniors to get a good evaluation, rise in the organization, and thus enjoy greater discretion. 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 a theoretical rule-based measure: power of potential seniors $\overline{Power^p}$ as an instrument for $\overline{Power}$.

To get a set of exogenously allocated first seniors, I exploit the job allocation rules of the government. Rules dictate that newly-recruited juniors can be assigned first jobs, as head of revenue administration, when the position is vacant or when the incumbent has spent at least one year on the job.[32] This gives, *for each cohort*, a set of 'potential' first seniors they could have worked with in their first job. In order to observe open positions I digitized for the first time pictures of incumbency boards of each tehsil office across Punjab (refer to appendix figure D6 for a picture of one incumbency board).[33] 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 tenure of each position. I combined this with dates of end of train-

[32]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.

[33]I called each tehsil office across Punjab and was able to get pictures of incumbency boards through Whatsapp. Bureaucrats take pride in adding their name to the board and so the data is consistent and of good quality.

ing of each cohort from the career chart data. Potential seniors are bureaucrats working in districts with open positions at the time of the junior cohorts' end of training and beginning of first job and they are the same for the whole cohort. The mean 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 twelve. The average number of potential seniors is twenty-six. Therefore, for each actual senior, a junior has approximately two potential seniors.

This cross-cohort variation in potential seniors in the first job is combined with a theoretical time variation in the rise of these potential seniors. Minimum Length of Service Rules of the government stipulate that a bureaucrat will get one official promotion at five, twelve, seventeen, and twenty-two years after entering the service.[34] For *each potential senior* this rule helps build their theoretical promotion in the organization. The instrumental variable: power of potential seniors $\overline{Power^p}$ is constructed by taking the average of theoretical promotion for the whole set of potential seniors for each cohort over a month-year. 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.

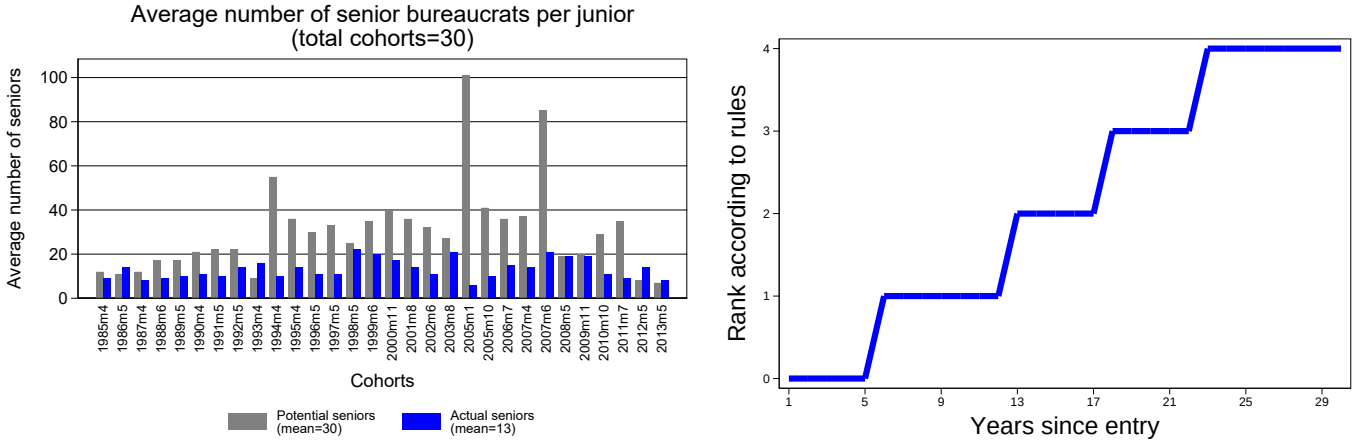

Figure 2: Left: The figure shows the average number of senior bureaucrats per junior bureaucrats. Right: The rank of seniors according to the Minimum Length of Service Rules.

There is variation in $\overline{Power^p}$ across cohorts because start of 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 people 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 4 years and 11 months in government service and so as per the rule stated above will be rising one grade in the coming month, resulting in the average theoretical grade of the potential seniors changing. While other potential seniors could have just enjoyed one hypothetical promotion and will not enjoy 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

[34] Establishment Division's O.M.No.1/9/80-R.2 dated 2-6-1983

seniors that the cohorts of newly-recruited 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 rule-based rank of potential seniors is based on the Minimum Length of Service Rules and $\tilde{S}$ 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's4. This is because these are the ranks to which the Minimum Length of Service Rules apply. Appendix Figure E6 shows cross-sectional variation in the power of potential seniors across cohorts, while Appendix Figure E7 shows the time variation in the mean power of potential seniors, across years, for 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 cross-sectional correlation between the power of actual and potential seniors and suggests that the measure is highly correlated in the cross-section.

Balance table, exclusion restriction. Table 2 shows the average characteristics of juniors at baseline, across above and below median power of potential seniors ($\overline{Power}^{p}$). Juniors whose seniors enjoy above median $\overline{Power}^{p}$ are more likely to be women, less likely to be married and less like to speak multiple languages. But the table shows that there are no systematic differences across high and low $\overline{Power}^{p}$ in almost all other baseline characteristics. This includes recruitment exam rank and tax performance, which suggests that potential seniors are not selected based on ability.

Next I discuss exclusion restriction and present evidence to support the main identifying assumptions. Exclusion could be violated if the rule-based rise of potential seniors directly affects fast-track promotions of juniors through unobservables of the juniors. Although it seems unlikely, however, this might be the case if junior cohorts with a lot of promise are allowed to begin their first job at a time of their liking so that they select the power of potential seniors in the future. Exclusion can also be violated if vacancies are created specifically for certain star cohorts of juniors. I find that neither is true in this setting. First, a central agency, rather than the juniors, select 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 beginning of first job of the new cohort of juniors and that is not the case (see table 3). 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 and 4 for details). Despite this, to be conservative and ensure that there is no cohort specific, time-invariant characteristics that might violate exclusion, below I include cohort fixed effects. In all specifications I also include month-year fixed effects along with experience and experience squared of the junior to control for any time trends that might be correlated with the instrument and also impact fast-track promotions of juniors.

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. Senior bureaucrats are just used to induce variation in supervisor characteristics, and are not of interest in themselves. This bifurcation of the subject 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 junior's characteristics and those of the senior.

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

$$Fast - track_{ict} = \gamma_c + \gamma_t + \theta Ability_i + \chi \overline{Power}^p_{ct} + \lambda \overline{Power}^p_{ct} \times Ability_i + \rho X_{ict} + \nu_{ict} \quad (6)$$

where all the variables are the same as in Equation 5, except for the power of potential seniors ($\overline{Power}^p_{ct}$), which is the monthly average of the rule-based rank of potential seniors that cohorts of junior PAS bureaucrats could have worked with in their first job. The error terms are again clustered at the cohort level, as that is the level at which first seniors are allocated (Abadie et al., 2017). The coefficient of interest is λ, which tells us the heterogeneous effect of the discretion or power of potential seniors according to ability of the junior. If $\lambda > \chi$ for high-ability juniors then we can say that discretionary promotions are meritocratic. Therefore, in each month-year, identification comes from a comparison of high and low merit juniors, in cohorts that experienced more change in the power of their potential seniors to those that experienced less or no change.

5 Results: Discretionary fast-track promotions of juniors

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

Table 6 presents the results using $\overline{Power}$, while Tables 8, 7 present the instrumental variables and reduced form results, respectively, using $\overline{Power}^p$ as an instrument for $\overline{Power}$. Table 9 presents the first stage of the IV estimation. The definition of $\overline{Tax}$ used in each case is specified at the top of each column, and goes from the top 10% to top 50% tax collectors. The outcome of interest is fast-track promotions of junior bureaucrats, which is a dummy that turns on 1 whenever a junior is fast-tracked in a month, and

remains zero otherwise.

First, let us consider the effect of power based on tax performance ranking alone. The reference category is bottom tax performers in each case. The key takeaway across Columns (1), (3), (5), (7) and (9) in OLS, IV and reduced form estimations is that ranking of juniors as tax performers matters for their fast track promotions. This results are almost identical across different definitions of $\overline{Tax}$, except for top 20 and 30% tax performers in OLS and IV. In that case too, the effects are in the same direction. They are positive and almost statistically significant. 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 performers have between 10% to 19% higher probability of being fast-tracked than bottom tax performers. The effects are large in magnitude and statistically and economically significant (between 18 to 48 percent of the mean effect). $\overline{Power}^p$ throughout has a negative, yet statistically insignificant effect on the probability of fast-track promotion of the bottom tax performers.

Since tax collection rank is an important determinant of performance (see Table 5), these results suggest that local information was harnessed by allowing discretion to seniors. We observe meritocracy on tax performance despite the fact that there is no explicit incentive for the seniors and tax performance of juniors is their private information. The wages of seniors are flat, there is no profit motive, or outside market competition, and they have job security. This heterogeneity by tax performance of juniors suggests that implicit incentives of seniors might be at work in this case.

I next test whether there is any heterogeneity of the effect of power based on both recruitment exam and tax performance ranking. Columns (2), (4), (6), (8) and (10) across tables 6, 7, 8 and 9 present the OLS, reduced form, IV and first stage results. The reference category in these tables is bottom tax performers that are mid 80% in recruitment exam. The first takeaway is that the results on tax performers remain almost unchanged when we add recruitment exam ranking. This suggests that private information continues to play a role in discretionary decisions of the senior. While tax performance matters, recruitment exam ranking also plays a role.

In Table 7, across all definitions of $\overline{Tax}$, results show that with a one rank above average increase in the power of potential seniors, the bottom 10% recruitment exam ranking juniors have between 20% to 34% lower probability of being fast-tracked than the reference category. The effects are large in magnitude and are both statistically and economically significant (between 30 to 75 percent of the mean effect). This effect reverses for the top 10% exam performers. For top 10% exam performers, the effects are positive, and both statistically and economically significant. An F-test (reported at the bottom of each table), testing similarity of the effect of power of seniors interacted with top and bottom exam performers rejects the null across all specifications and definitions of $\overline{Tax}$. However, an F-test testing similarity of the coefficient on power of seniors interacted with $\overline{Tax}$ and top exam performers fails to reject the null.

These results suggest that both public and private information play an important role in discretionary decisions of the 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 recruitment exam continues to be a predictor of careers despite information to the contrary. There appears to be path dependence so that those juniors that 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 the implicit incentive of setting up the best team for themselves or reputation concerns on referrals of juniors to other teams might have a role to play in meritocracy of promotions.

6 Results: Mechanism behind meritocracy

6.1 Who gets fast-tracked in senior's team?

Results in the previous section showed that despite lack of explicit incentives, promotion decisions of the seniors were meritocratic, based on both public and private information. In this section, I explore why that is the case. More specifically, I test whether implicit incentives like the career incentives of setting up the best team for himself or reputation gained from promoting a high ability junior in another senior's team are the reason behind meritocracy. Moreover, the estimation also allows me to test the relative importance of these two implicit incentives as drivers of meritocracy.[35]

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 senior's team, unless we use a multinomial logit estimation, the reference category will not be well defined. It can be anything from fast-track promoted in other teams to working in the senior's team but not fast-track promoted or neither fast-tracked nor in the senior's team. Using a multinomial logit regression allows us to study these two outcomes together with a well-defined reference category, and also allows a test for the similarity of effects within the senior's team and other teams. Therefore, the estimation of interest is as follows:

$$ln\frac{P(w_{ict}=j)}{P(w_{ict}=J)} = \alpha_{cj} + \alpha_{tj} + \theta_j Ability_i + \kappa_j \overline{Power}_{ct} + \mu_j \overline{Power}_{ct} \times Ability_i + \lambda_j X_{ict} \tag{7}$$

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

where $\overline{Power}_{ct}$ is the mean official rank of seniors of a cohort c, in month-year t. I use the power of potential seniors ($\overline{Power}^{p}_{ct}$) as an instrument for $\overline{Power}_{ct}$. Following the methods suggested in Petrin

[35] Another thing to note is that if these incentives are heterogeneous, so that the career incentives of setting up ones team outweighs reputation concerns on referrals, it will help rule out pure altruism as a mechanism for the senior's meritocratic promotion decisions.

and Train, 2010 and Imbens and Wooldridge, 2007, I use a control function approach to implement it. 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.[36] The coefficients reported are log relative risk ratios that are relative to the base category.

The power of potential seniors is the monthly average rule-based rank of potential seniors that cohorts of junior PAS bureaucrats could have worked with in their first job. Ability is measured in different ways depending on whether the ability measures are public information or private information, known only by seniors. When I consider ability that is public information: $Ability_i \in \{Exam\ top\ 10\%,\ Exam\ bottom\ 10\%\}$ where the top and bottom 10% are dummy variables that turn to 1 whenever a junior i, is in the top 10% and bottom 10% of their cohort in the recruitment exam, respectively. For ease of exposition, in this section, when I consider ability that is private information held by the senior, I restrict attention to juniors defined as 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 senior's (other's) teams based on whether we define a top tax collector as a top 10% tax collector or a top 20%, 30%, 40% or a top 50% one. Moreover, the results from subsection 5.1 show that the effects are similar across the tax collection distribution. Therefore, in this section $\overline{Tax}$ is defined as a dummy variable that turns to 1 whenever a junior i, is in the top 50%, of their cohort in tax collection for their first job. I control for time invariant, cohort specific, unobserved heterogeneity using cohort fixed effects α_{cj}. Time-varying characteristics, which are similar for all cohorts, are captured by α_{tj}. X_{ict} includes controls such as the annual time trend of the first job, the 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, as that is the level at which seniors are allocated (Abadie et al., 2017).

6.1.1 The role of *public* or *private* information

Tables 10 report results for the effect of $\overline{Power}$ of the senior along with its interaction with tax and recruitment exam performance. Table 11 report the reduced form effects. The first four columns of Table 10 report results for a simple multinomial logit, without accounting for any potential endogeneity of $\overline{Power}$. Table 10 , Columns (5)-(8) report multinomial IV results using a control function approach. As discussed, the definition of $\overline{Tax}$ used is top 50%. Table 10, Columns (1)-(2), (5)-(6) and Table 11, Columns (1)-(2) reports results using an interaction of power of the senior with just top tax performance. While Table 10, Columns (3)-(4) and (7)-(8) and Table 11, Columns (3)-(4) include both tax and exam performance. The reference category is not fast-track promoted. The outcome variables are fast-track promoted and moved across other teams in Table 10, Columns (1), (3), (5) and (7) and Table 11, Columns (1) and (3). While it is fast-track promoted and moved into seniors team inTable 10, Column (2), (4), (6) and (8) and Table 11, Column (2) and (4). The last four columns of table 10 use a control function approach.

Recall that in Tables 7 and 8 results showed that an above average increase in the seniors' rank had a differentially positive effect on the fast-track promotion of high tax performing juniors. Results

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

in Table 10 Columns (1) and (2) show that 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 performers to start working in other teams and be fasttrack promoted there (relative to the base category). This result is almost statistically significant. The score bootstrapped p-value is 0.13 in either case, while it is slightly higher in Table 11 in the case of promotions and moves into the seniors team.

Table 10 Columns (3) and (4) include exam performance. The key takeaway is that promotions are meritocratic in other teams based on private information of the senior. Results in Column (3) show that 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 performers to start working in other teams and be fasttrack promoted there (relative to the base category). This differential effect is both economically and statistically significant. Results in Column (4) show that while the effect on senior's team is positive, it is not statistically significant. However, an F-test at the bottom of the table testing the coefficient on $\overline{Power} \times \overline{Tax}$ in other teams versus seniors own team fails to reject the null.

Results in Column (3) and (4) also suggest that public information on ability of the junior also matters. A one rank above average increase in the power of potential seniors results in a nearly two time higher log of relative risk ratio for the top 10% exam performers to start working in seniors team and be fasttrack promoted there (relative to the base category). The effect is similar though not statistically significant in Column (3). An F-test at the bottom of the table testing the coefficient on $\overline{Power} \times ExamTop10\%$ in other teams versus seniors own team fails to reject the null.

Interestingly, the effects for those juniors that are bottom 10% in exam performance are negative and much stronger when it comes to promotions and moves across other teams, than promotions and moves into the senior's own teams. Results in Column (3) show that a one rank above average increase in the power of potential seniors results in a nearly 4 time lower log of relative risk ratio for the bottom 10% exam performers to start working in seniors team and be fasttrack promoted there (relative to the base category). An F-test at the bottom of the table testing the coefficient on $\overline{Power} \times ExamBottom10\%$ in other teams versus seniors own team rejects the null and has a p-value of 0.04.

Taken together 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 about their reputation on referrals of juniors to other teams more than the career incentives of setting up the best team for himself; and, third, negative public information on ability of junior is an important determinant of promotions of juniors and moves across other teams, which is not the case in senior's own team.

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 organization economics of the state. The two main contributions of the study are: first, that it investigates a way in which implicit incentives of the person exercising discretion can be leveraged for meritocratic promotions; and second, it sheds light on the role of public and private information of the decision maker in discretionary 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 is more general than just public-sector bureaucracies. There is decentralized information relevant for personnel management decisions in most organizations, both public and private. Allowing discretion of promotions and choice of teams to seniors can also help even private organizations use local information and select the best performers for promotion.

Results in the paper also shows how meritocracy and the feeling that *'it is not what you know but who you know'* can co-exist. While high merit juniors with powerful seniors get fast-tracked, those not as highly connected do not. A simple policy like job rotation of juniors, can go a long way in ensuring that seniors promote meritocratically from within the larger pool of juniors.

This study opens up further questions surrounding efficiency of discretionary allocations.[37] This is not straight forward to answer. First, it needs a deep 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 type junior to the senior with more power? What about direct learning spillovers from seniors? And the resultant career incentives that discretion of the seniors can generate.

Further work would also need to investigate whether junior workers promoted through discretion of seniors, perform better after being promoted. Various interpretations of the Peter Principle suggest that workers who are good in one job are not necessarily good in the job into which they are promoted (Lazear (2004) and Benson et al. (2019)). However, given the amount of time seniors and juniors spend together, it is quite possible that seniors can observe the more permanent and job relevant component of ability of junior workers. Allowing discretion to seniors could help organizations promote on the basis of this information, potentially avoiding pitfalls of the Peter Principle. These ideas needs further investigation.

[37] Aman-Rana et al., 2020 begin to address this question.

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Figures

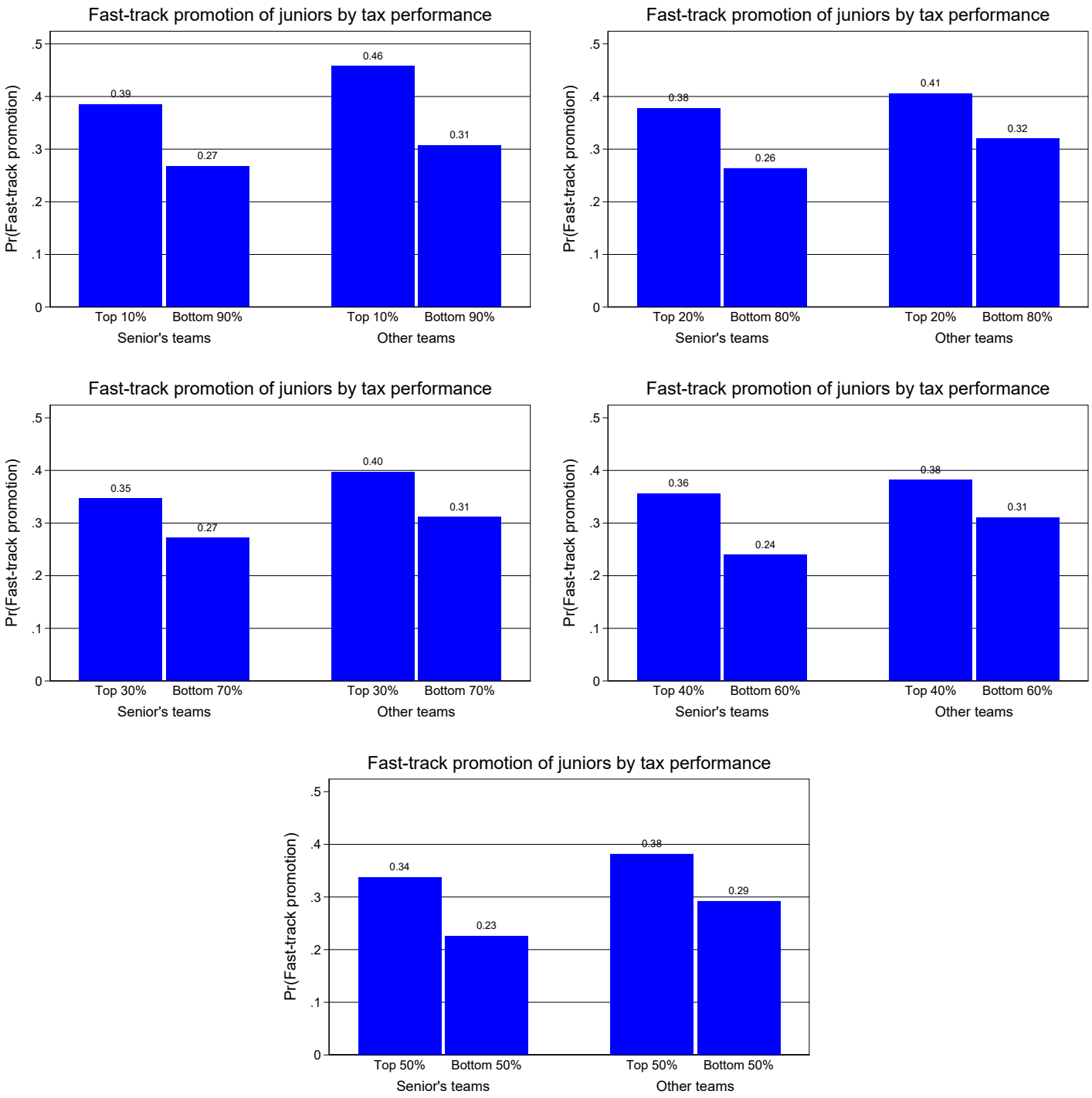


Figure 3: Fast-track promotions of various tax performing juniors across teams

Tables

Table 1: Study sample representativeness

	(1) Study Sample	(2) Full PAS Sample	(3) Difference (1) - (2)
Fast-track promotions	0.25	0.28	-0.03
	(0.23)	(0.24)	(0.03)
Recruitment exam rank	8.25	8.56	-0.31
	(5.24)	(5.54)	(0.64)
Size of overall cohort	173.13	165.82	7.31
	(46.22)	(42.07)	(4.89)
Age (years)	30.13	29.97	0.16
	(3.52)	(4.99)	(0.55)
Gender (female = 1)	0.25	0.12	0.13***
	(0.44)	(0.33)	(0.04)
Punjabi origin	0.48	0.72	-0.25***
	(0.50)	(0.45)	(0.05)
Home is in capital city	0.32	0.35	-0.03
	(0.47)	(0.48)	(0.06)
Home is in big city	0.46	0.53	-0.07
	(0.50)	(0.50)	(0.06)
Marital status (married = 1)	0.59	0.83	-0.24***
	(0.50)	(0.38)	(0.07)
Number of languages spoken	3.40	3.39	0.01
	(1.15)	(1.14)	(0.13)
Religion (Islam = 1)	1.00	1.00	0.00
	(0.00)	(0.07)	(0.01)
Diploma	0.00	0.06	-0.06
	(0.00)	(0.25)	(0.06)
Undergraduate	0.53	0.51	0.02
	(0.51)	(0.50)	(0.13)
Masters	0.41	0.31	0.10
	(0.51)	(0.46)	(0.12)
MPhil	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)
PhD	0.00	0.01	-0.01
	(0.00)	(0.10)	(0.02)
Engineer	0.06	0.05	0.00
	(0.24)	(0.23)	(0.06)
Law	0.41	0.48	-0.07
	(0.51)	(0.50)	(0.13)
MBA	0.00	0.06	-0.06
	(0.00)	(0.24)	(0.06)
Doctor	0.35	0.15	0.21**
	(0.49)	(0.36)	(0.09)
Observations	87	698	785

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

Table 2: 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)
Punjabi origin	0.44	0.51	0.07
	(0.50)	(0.51)	(0.11)
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)
Marital status (married = 1)	0.75	0.44	-0.31*
	(0.45)	(0.51)	(0.17)
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)
Diploma	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)
Undergraduate	0.42	0.80	0.38
	(0.51)	(0.45)	(0.26)
Masters	0.50	0.20	-0.30
	(0.52)	(0.45)	(0.27)
MPhil	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)
PhD	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)
Engineer	0.00	0.20	0.20
	(0.00)	(0.45)	(0.12)
Law	0.33	0.60	0.27
	(0.49)	(0.55)	(0.27)
MBA	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)
Doctor	0.42	0.20	-0.22
	(0.51)	(0.45)	(0.26)
Observations	44	43	87

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

Table 3: 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 4: Correlation between district characteristics, vacancies and tenure

	Dependent variable:			
	Vacancies (% per year)		Tenure (days per year)	
	(1)	(2)	(3)	(4)
Districts with large cities	1.638	6.939	-188.110**	398.320
	(1.394)	(25.704)	(79.934)	(674.876)
Real wage (Rs.)	0.027	0.062	0.734	0.154
	(0.034)	(0.046)	(0.770)	(0.994)
Population	-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)
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 5: **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 6: **Do seniors use public or private info meritocratically?**

Dependent variable:	**Fast-track Promotion**									
Definition of $\overline{Tax}$=	Top 10%		Top 20%		Top 30%		Top 40%		Top 50%	
	OLS (1)	OLS (2)	OLS (3)	OLS (4)	OLS (5)	OLS (6)	OLS (7)	OLS (8)	OLS (9)	OLS (10)
$\overline{Power}$ (θ)	-0.04	0.01	-0.01	0.03	-0.02	0.01	-0.05	-0.02	-0.07	-0.06
	[0.65]	[0.90]	[0.89]	[0.76]	[0.85]	[0.93]	[0.59]	[0.87]	[0.52]	[0.64]
$\overline{Power} \times \overline{Tax}$ (π)	0.16*	0.16	0.10	0.11	0.08	0.08	0.12***	0.12**	0.12*	0.16***
	[0.08]	[0.32]	[0.26]	[0.38]	[0.39]	[0.58]	[0.00]	[0.01]	[0.10]	[0.00]
$\overline{Power} \times$ Exam Top 10% (α)		0.09		0.11		0.13		0.12		0.11
		[0.64]		[0.62]		[0.55]		[0.58]		[0.59]
$\overline{Power} \times$ Exam Bot 10% (β)		-0.23**		-0.28*		-0.25*		-0.25*		-0.25**
		[0.02]		[0.06]		[0.10]		[0.08]		[0.05]
Ho: α=π (p-value)		0.71		0.98		0.83		0.99		0.83
Ho: β=π (p-value)		0.00		0.03		0.05		0.01		0.00
Mean of outcome	0.33	0.34	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	Yes	Yes
Cohort & month-yr fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Person x mon	6316	5482	6316	5482	6316	5482	6316	5482	6316	5482
Cohorts	30	30	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 brackets.
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 10%, 20%, 30%, 40% or 50% of their cohort in tax performance, in the first job. The definition of $\overline{Tax}$ used in each case is descriped above the columns. 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, 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 7: **Reduced form: Do seniors use public or private info meritocratically?**

Dependent variable:	**Fast-track Promotion**									
Definition of $\overline{Tax}$=	Top 10%		Top 20%		Top 30%		Top 40%		Top 50%	
	RF	RF	RF	RF	RF	RF	RF	RF	RF	RF
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
$\overline{Power}^p$ (θ)	-0.03	0.10	-0.03	0.09	-0.04	0.06	-0.07	0.03	-0.06	0.00
	[0.84]	[0.65]	[0.82]	[0.67]	[0.78]	[0.82]	[0.55]	[0.92]	[0.64]	[0.99]
$\overline{Power}^p \times \overline{Tax}$ (π)	0.19***	0.18***	0.11*	0.17***	0.10*	0.12**	0.14***	0.15***	0.11*	0.15***
	[0.00]	[0.00]	[0.09]	[0.00]	[0.06]	[0.01]	[0.00]	[0.00]	[0.09]	[0.00]
$\overline{Power}^p$ × Exam Top 10% (α)		0.20**		0.21**		0.25**		0.24*		0.25**
		[0.01]		[0.02]		[0.04]		[0.05]		[0.05]
$\overline{Power}^p$ × Exam Bot 10% (β)		-0.20**		-0.34***		-0.29***		-0.27***		-0.26***
		[0.03]		[0.00]		[0.00]		[0.00]		[0.00]
Ho: α=π (p-value)		0.87		0.81		0.32		0.49		0.44
Ho: β=π (p-value)		0.00		0.00		0.00		0.00		0.00
Mean of outcome	0.33	0.35	0.33	0.35	0.33	0.35	0.33	0.35	0.33	0.35
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cohort & month-yr fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Person x mon	6387	5553	6387	5553	6387	5553	6387	5553	6387	5553
Cohorts	30	30	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 brackets.

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. $\overline{Tax}$ is a dummy that turns on 1 whenever the junior is in the top 10%, 20%, 30%, 40% or 50% of their cohort in tax performance, in the first job. The definition of $\overline{Tax}$ used in each case is descriped above the columns. 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, 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**									
Definition of $\overline{Tax}$=	Top 10%		Top 20%		Top 30%		Top 40%		Top 50%	
	IV	IV	IV	IV	IV	IV	IV	IV	IV	IV
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
$\overline{Power}$ (θ)	-0.03	0.14	-0.03	0.13	-0.04	0.09	-0.08	0.04	-0.07	0.01
	[0.90]	[0.63]	[0.88]	[0.65]	[0.84]	[0.81]	[0.64]	[0.89]	[0.74]	[0.96]
$\overline{Power} \times \overline{Tax}$ (π)	0.19*	0.16	0.12	0.16	0.10	0.10	0.17***	0.17***	0.13*	0.18***
	[0.08]	[0.32]	[0.20]	[0.27]	[0.23]	[0.41]	[0.00]	[0.00]	[0.08]	[0.00]
$\overline{Power} \times$ Exam Top 10% (α)		0.26*		0.27*		0.32*		0.29		0.31
		[0.06]		[0.09]		[0.10]		[0.15]		[0.14]
$\overline{Power} \times$ Exam Bot 10% (β)		-0.23***		-0.34***		-0.30***		-0.29***		-0.28***
		[0.00]		[0.00]		[0.00]		[0.00]		[0.00]
Ho: α=π (p-value)		0.58		0.61		0.27		0.54		0.48
Ho: β=π (p-value)		0.00		0.01		0.01		0.00		0.00
Mean of outcome	0.33	0.34	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	Yes	Yes
Cohort & month-yr fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Person x mon	6316	5482	6316	5482	6316	5482	6316	5482	6316	5482
Cohorts	30	30	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 brackets.

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 10%, 20%, 30%, 40% or 50% of their cohort in tax performance, in the first job. The definition of $\overline{Tax}$ used in each case is descriped above the columns. 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, 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: **First stage: Do seniors use public or private info meritocratically?**

Dependent variable:	Promotion power of seniors ($\overline{Power}$)									
Definition of $\overline{Tax}$=	Top 10%		Top 20%		Top 30%		Top 40%		Top 50%	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
$\overline{Power}^p$ (θ)	0.69***	0.74***	0.73***	0.76***	0.72***	0.75***	0.72***	0.74***	0.69***	0.74***
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
$\overline{Power}^p \times \overline{Tax}$ (π)	0.09	0.12	-0.03	0.04	-0.01	0.05	-0.01	0.05	0.04	0.04
	[0.16]	[0.30]	[0.85]	[0.46]	[0.94]	[0.25]	[0.86]	[0.20]	[0.29]	[0.25]
$\overline{Power}^p$ × Exam Top 10% (α)		-0.02		0.01		0.01		0.02		0.03
		[0.77]		[0.83]		[0.84]		[0.69]		[0.58]
$\overline{Power}^p$ × Exam Bot 10% (β)		-0.23		-0.27		-0.27		-0.25		-0.25
		[0.50]		[0.42]		[0.50]		[0.52]		[0.52]
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cohort & month-yr fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Person x mon	6316	5482	6316	5482	6316	5482	6316	5482	6316	5482
Cohorts	30	30	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 brackets.

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 10%, 20%, 30%, 40% or 50% of their cohort in tax performance, in the first job. The definition of $\overline{Tax}$ used in each case is descriped above the columns. 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, 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 10: **Multinomial logit: Why are discretionary promotions meritocratic?**

Dependent Variables:	*Reference category: Not fast-track promoted*							
	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
					IV-control function		IV-control function	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$\overline{Power}$ (θ)	-0.47	1.14	-0.28	1.35	-0.30	-1.32	0.35	-1.25
	[0.44]	[0.47]	[0.70]	[0.59]	[0.84]	[0.58]	[0.87]	[0.74]
$\overline{Power} \times \overline{Tax}$ (π)	0.71	1.00	0.94*	1.58	0.82	1.39	1.28**	1.39
	[0.13]	[0.21]	[0.06]	[0.19]	[0.13]	[0.13]	[0.01]	[0.34]
$\overline{Power} \times$ Exam Top 10% (α)			0.52	0.34			1.30	3.28***
			[0.62]	[0.75]			[0.42]	[0.00]
$\overline{Power} \times$ Exam Bot 10% (β)			-3.78**	1.98			-4.67**	-0.99
			[0.03]	[0.13]			[0.03]	[0.67]
α=β (p-value)			0.04	0.24			0.00	0.10
α=π (p-value)			0.70	0.53			0.99	0.40
β=π (p-value)			0.00	0.84			0.00	0.39
Other teams (π)=Seniors team (π) (p-value)	0.75		0.63		0.57		0.95	
Other teams (α)=Seniors team (α) (p-value)			0.89				0.29	
Other teams (β)=Seniors team (β) (p-value)			0.00				0.23	
Controls	Yes		Yes		Yes		Yes	
Cohort & month-yr 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, clustered at cohort level, 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, 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 11: **Reduced Form Multinomial Logit: Why are discretionary promotions meritocratic?**

	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)	-0.30	-0.60	0.19	-0.85
	[0.78]	[0.72]	[0.91]	[0.74]
$\overline{Power}^p \times \overline{Tax}$ (π)	0.70	0.88	1.04***	0.64
	[0.12]	[0.37]	[0.00]	[0.62]
$\overline{Power}^p$ × Exam Top 10% (α)			1.09	1.85*
			[0.39]	[0.07]
$\overline{Power}^p$ × Exam Bot 10% (β)			-3.73*	1.05
			[0.06]	[0.40]
α=β (p-value)			0.01	0.55
α=π (p-value)			0.97	0.57
β=π (p-value)			0.01	0.80
Other teams (π)=Seniors team (π) (p-value)	0.85		0.76	
Other teams (α)=Seniors team (α) (p-value)			0.48	
Other teams (β)=Seniors team (β) (p-value)			0.04	
Controls	Yes		Yes	
Cohort & month-yr 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, clustered at cohort level, 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, 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

Lemma 1

Proof. If $\alpha_m = 0$ then

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

and therefore,

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

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.

□

Lemma 2

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

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

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

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

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.

□

Proposition 1

Proof. From senior's optimization problem and further differentiation with respect to power (ρ), public information ($\mu_{\tilde{\theta}}$) and senior's private information (θ), we get $\frac{\partial^3 \gamma_m}{\partial \rho \partial \theta \partial \mu_{\tilde{\theta}}} = \alpha_m \pi_\theta$, where $\pi_\theta > 0$. If we evaluate this derivative at $\alpha_{own\ team}$ and $\alpha_{other\ team}$ respectively and compare we get $\left.\frac{\partial^3 \gamma}{\partial \rho \partial \theta \partial \mu_{\tilde{\theta}}}\right|_{\alpha_{own\ team}} > \left.\frac{\partial^3 \gamma}{\partial \rho \partial \theta \partial \mu_{\tilde{\theta}}}\right|_{\alpha_{other\ team}}$ if $\alpha_{own} > \alpha_{other}$ and vice versa if $\alpha_{own\ team} < \alpha_{other\ team}$.

□

Appendix Tables

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

	Tax Targets (Rs. in million)	
	OLS	OLS
	(1)	(2)
Past tax collection	0.01	0.05
	(0.06)	(0.17)
Election year	-2.81	0.37
	(4.34)	(6.15)
Real wage	-0.01	-0.01
	(0.07)	(0.08)
Population estimates	-0.79	-4.14
	(0.82)	(5.63)
Rural employment	0.32**	0.28*
	(0.13)	(0.14)
Agriculture production	0.40***	2.15
	(0.10)	(1.61)
Irrigated area	0.02***	0.04
	(0.01)	(0.05)
controls	No	No
district FE	No	Yes
fiscal year FE	Yes	Yes
mean of outcome	7.24	7.24
district x year	120	120
districts	33	33

* 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) set by the Board of Revenue for juniors in a tehsil. 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.

Table A2: **Do seniors use public information to promote meritocratically?**

Dependent variable:	**Fast-track Promotion**		
	OLS	IV	RF
	(1)	(2)	(3)
$\overline{Power}$	-0.04	-0.08	
	[0.44]	[0.33]	
$\overline{Power}$ × Exam Top 10% (α)	0.09	0.11	
	[0.37]	[0.27]	
$\overline{Power}$ × Exam Bot 10% (β)	-0.07	-0.07	
	[0.54]	[0.54]	
$\overline{Power^p}$			-0.03
			[0.53]
$\overline{Power^p}$ × Exam Top 10% (α)			0.08
			[0.18]
$\overline{Power^p}$ × Exam Bot 10% (β)			-0.04
			[0.63]
Ho: α=β (p-value)	0.22	0.21	0.20
Mean of outcome	0.31	0.31	0.31
Controls	Yes	Yes	Yes
FE	Yes	Yes	Yes
Person x mon	15948	15911	16989
Cohorts	40	40	40

* p<0.1, ** p<0.05, *** p<0.01. Cameron et al., 2008 wild bootstrap p-values, clustered at cohort level, in brackets.

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. 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% and bottom 10% are included. Controls include cohort & month-year FE, 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 A3: **First Stage - Do seniors use public information to promote meritocratically?**

Dependent variable:	$\overline{Power}$	
	(1)	(2)
$\overline{Power}^p$	0.61***	0.59***
	[0.00]	[0.00]
$\overline{Power}^p \times$ Exam Top 10% (α)		-0.12
		[0.40]
$\overline{Power}^p \times$ Exam Bot 10% (β)		-0.04
		[0.59]
Controls	Yes	Yes
FE	Yes	Yes
Person x mon	18415	15911
Cohorts	40	40

* p<0.1, ** p<0.05, *** p<0.01. Cameron et al., 2008 wild bootstrap p-values, clustered at cohort level, in brackets.

Notes: The unit of observation is a civil servant-month. 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. 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, experience, experience squared, official rank of the junior, a dummy for field position, time trend of the first job. All specifications exclude first job.

7 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).[38] 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.[39]

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.[40] 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.

[38] 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.

[39] 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.

[40] 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.[41] 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

[41] 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/

skills required to perform well in almost all of these other tasks is also team management of the revenue 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 5 provides evidence in support of this assumption.

Appendix C: Tables

Table C1: **Do seniors use public info to promote meritocratically?**

	Dependent variable: Fast-track promotions										
Definition of $\overline{Exam}$=	Top5	Top6	Top7	Top8	Top9	Top10	Top11	Top12	Top13	Top14	Top15
Definition of $\underline{Exam}$=	Bot5	Bot6	Bot7	Bot8	Bot9	Bot10	Bot11	Bot12	Bot13	Bot14	Bot15
	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
$\overline{Power}$	-0.06	-0.05	-0.05	-0.05	-0.05	-0.04	-0.05	-0.04	-0.05	-0.05	-0.04
	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)
$\overline{Power} \times \overline{Exam}$	0.09	0.09	0.08	0.08	0.08	0.09	0.10	0.10	0.10	0.10	-0.00
	(0.09)	(0.09)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.07)
$\overline{Power} \times \underline{Exam}$	0.07	-0.04	-0.04	0.05	-0.05	-0.07	-0.07	-0.07	-0.06	-0.03	-0.06
	(0.05)	(0.08)	(0.08)	(0.09)	(0.13)	(0.10)	(0.10)	(0.10)	(0.09)	(0.08)	(0.07)
controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
cohort, month-yr fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
mean of outcome	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31
person x mon	15948	15948	15948	15948	15948	15948	15948	15948	15948	15948	15948
cohorts	40	40	40	40	40	40	40	40	40	40	40

* p<0.1, ** p<0.05, *** p<0.01. Clustered standard errors 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. $\overline{Exam}$ is a dummy that turns on 1 whenever the junior is in the top 5% to top 15% of their cohort in the recruitment exam. $\underline{Exam}$ is a dummy that turns on 1 whenever the junior is in the bottom 5% to bottom 15% of their cohort in the recruitment exam. The definition of $\overline{Exam}$ and $\underline{Exam}$ used in each case is descriped above the columns. Levels of exam $\overline{Exam}$ and $\underline{Exam}$ are included. Controls include cohort & month-year FE, 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 C2: **Reduced form: Do seniors use public info to promote meritocratically?**

	Dependent variable: Fast-track promotions										
Definition of $\overline{Exam}$=	Top5	Top6	Top7	Top8	Top9	Top10	Top11	Top12	Top13	Top14	Top15
Definition of $\underline{Exam}$=	Bot5	Bot6	Bot7	Bot8	Bot9	Bot10	Bot11	Bot12	Bot13	Bot14	Bot15
	RF	RF	RF	RF	RF	RF	RF	RF	RF	RF	RF
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
$\overline{Power}^p$	-0.06	-0.05	-0.05	-0.05	-0.04	-0.03	-0.04	-0.03	-0.04	-0.04	-0.03
	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)
$\overline{Power}^p \times \overline{Exam}$	0.07	0.07	0.07	0.08	0.07	0.08	0.09*	0.09*	0.09*	0.08*	0.02
	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)
$\overline{Power}^p \times \underline{Exam}$	0.05	-0.02	-0.01	0.04	-0.03	-0.04	-0.04	-0.04	-0.02	-0.01	-0.04
	(0.05)	(0.06)	(0.06)	(0.07)	(0.09)	(0.07)	(0.07)	(0.07)	(0.07)	(0.06)	(0.04)
controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
cohort, month-yr fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
mean of outcome	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31
person x mon	16989	16989	16989	16989	16989	16989	16989	16989	16989	16989	16989
cohorts	40	40	40	40	40	40	40	40	40	40	40

* p<0.1, ** p<0.05, *** p<0.01. Clustered standard errors 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 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. $\overline{Exam}$ is a dummy that turns on 1 whenever the junior is in the top 5% to top 15% of their cohort in the recruitment exam. $\underline{Exam}$ is a dummy that turns on 1 whenever the junior is in the bottom 5% to bottom 15% of their cohort in the recruitment exam. The definition of $\overline{Exam}$ and $\underline{Exam}$ used in each case is descriped above the columns. Levels of exam $\overline{Exam}$ and $\underline{Exam}$ are included. Controls include cohort & month-year FE, 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 C3: **Do seniors use public info to promote meritocratically?**

	Dependent variable: Fast-track promotions										
Definition of $\overline{Exam}$=	Top5	Top6	Top7	Top8	Top9	Top10	Top11	Top12	Top13	Top14	Top15
Definition of $\underline{Exam}$=	Bot5	Bot6	Bot7	Bot8	Bot9	Bot10	Bot11	Bot12	Bot13	Bot14	Bot15
	IV	IV	IV	IV	IV	IV	IV	IV	IV	IV	IV
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
$\overline{Power}$	-0.13	-0.11	-0.11	-0.11	-0.09	-0.08	-0.08	-0.08	-0.09	-0.09	-0.09
	(0.09)	(0.08)	(0.08)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)
$\overline{Power} \times \overline{Exam}$	0.10	0.10	0.10	0.12	0.11	0.13	0.15	0.15	0.15	0.14	0.00
	(0.10)	(0.10)	(0.10)	(0.10)	(0.10)	(0.10)	(0.10)	(0.10)	(0.10)	(0.10)	(0.07)
$\overline{Power} \times \underline{Exam}$	0.08	-0.04	-0.04	0.06	-0.05	-0.06	-0.06	-0.06	-0.05	-0.02	-0.06
	(0.08)	(0.09)	(0.09)	(0.11)	(0.13)	(0.10)	(0.10)	(0.10)	(0.09)	(0.08)	(0.07)
controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
cohort, month-yr fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
mean of outcome	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31
person x mon	15911	15911	15911	15911	15911	15911	15911	15911	15911	15911	15911
cohorts	40	40	40	40	40	40	40	40	40	40	40

* p<0.1, ** p<0.05, *** p<0.01. Clustered standard errors 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. $\overline{Exam}$ is a dummy that turns on 1 whenever the junior is in the top 5% to top 15% of their cohort in the recruitment exam. $\underline{Exam}$ is a dummy that turns on 1 whenever the junior is in the bottom 5% to bottom 15% of their cohort in the recruitment exam. The definition of $\overline{Exam}$ and $\underline{Exam}$ used in each case is descriped above the columns. Levels of exam $\overline{Exam}$ and $\underline{Exam}$ are included. Controls include cohort & month-year FE, 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 C4: **First Stage: Do seniors use public info to promote meritocratically?**

	Dependent variable: Fast-track promotions										
Definition of $\overline{Exam}$=	Top5	Top6	Top7	Top8	Top9	Top10	Top11	Top12	Top13	Top14	Top15
Definition of $\underline{Exam}$=	Bot5	Bot6	Bot7	Bot8	Bot9	Bot10	Bot11	Bot12	Bot13	Bot14	Bot15
	IV	IV	IV	IV	IV	IV	IV	IV	IV	IV	IV
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
$\overline{Power}^p$	0.57***	0.58***	0.58***	0.58***	0.58***	0.58***	0.58***	0.58***	0.57***	0.57***	0.57***
	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)
$\overline{Power}^p \times \overline{Exam}$	-0.12	-0.13	-0.13	-0.13	-0.13	-0.12	-0.11	-0.11	-0.11	-0.11	-0.09
	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)	(0.11)	(0.07)
$\overline{Power}^p \times \underline{Exam}$	0.06	-0.09	-0.09	-0.06	-0.04	-0.04	-0.04	-0.04	-0.03	-0.02	-0.05
	(0.05)	(0.09)	(0.09)	(0.07)	(0.07)	(0.05)	(0.05)	(0.05)	(0.05)	(0.04)	(0.04)
AP F Statistic-I	62	77	78	80	93	91	89	86	76	76	70
AP F Statistic-II	73	69	75	90	91	97	101	101	93	103	169
AP F Statistic-III	250	276	276	259	299	394	398	398	534	600	516
controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
cohort, month-yr fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
person x mon	15911	15911	15911	15911	15911	15911	15911	15911	15911	15911	15911
cohorts	40	40	40	40	40	40	40	40	40	40	40

* p<0.1, ** p<0.05, *** p<0.01. Clustered standard errors 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. $\overline{Exam}$ is a dummy that turns on 1 whenever the junior is in the top 5% to top 15% of their cohort in the recruitment exam. $\underline{Exam}$ is a dummy that turns on 1 whenever the junior is in the bottom 5% to bottom 15% of their cohort in the recruitment exam. The definition of $\overline{Exam}$ and $\underline{Exam}$ used in each case is descriped above the columns. Levels of exam $\overline{Exam}$ and $\underline{Exam}$ are included. Controls include cohort & month-year FE, 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 C5: **Do seniors use public info to promote meritocratically?**

Definition of $\overline{Exam}$=	**Dependent variable: Fast-track promotions**				
	Top10%	Top20%	Top30%	Top40%	Top50%
	OLS	OLS	OLS	OLS	OLS
	(1)	(2)	(3)	(4)	(5)
$\overline{Power}$	-0.06	-0.05	-0.06	-0.06	-0.01
	(0.05)	(0.05)	(0.06)	(0.06)	(0.05)
$\overline{Power} \times \overline{Exam}$	0.09	0.00	0.01	0.01	-0.05
	(0.08)	(0.07)	(0.05)	(0.05)	(0.05)
$\overline{Exam}$	-0.04	-0.02	-0.02	-0.01	0.01
	(0.04)	(0.03)	(0.03)	(0.03)	(0.04)
controls	Yes	Yes	Yes	Yes	Yes
cohort, month-yr fixed effects	Yes	Yes	Yes	Yes	Yes
mean of outcome	0.31	0.31	0.31	0.31	0.31
person x mon	15948	15948	15948	15948	15948
cohorts	40	40	40	40	40

* p<0.1, ** p<0.05, *** p<0.01. Clustered standard errors 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. $\overline{Exam}$ is a dummy that turns on 1 whenever the junior is in the top 10% to top 50% of their cohort in the recruitment exam. The definition of $\overline{Exam}$ used in each case is descriped above the columns. Controls include cohort & month-year FE, 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 C6: **Reduced form: Do seniors use public info to promote meritocratically?**

Definition of $\overline{Exam}$=	**Dependent variable: Fast-track promotions**				
	Top10%	Top20%	Top30%	Top40%	Top50%
	RF	RF	RF	RF	RF
	(1)	(2)	(3)	(4)	(5)
$\overline{Power}^p$	-0.05	-0.05	-0.06	-0.06	-0.04
	(0.05)	(0.05)	(0.06)	(0.06)	(0.05)
$\overline{Power}^p \times \overline{Exam}$	0.08*	0.02	0.03	0.03	-0.01
	(0.05)	(0.05)	(0.04)	(0.04)	(0.04)
$\overline{Exam}$	-0.02	-0.01	-0.03	-0.01	0.00
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
controls	Yes	Yes	Yes	Yes	Yes
cohort, month-yr fixed effects	Yes	Yes	Yes	Yes	Yes
mean of outcome	0.31	0.31	0.31	0.31	0.31
person x mon	16989	16989	16989	16989	16989
cohorts	40	40	40	40	40

* p<0.1, ** p<0.05, *** p<0.01. Clustered standard errors 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 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. $\overline{Exam}$ is a dummy that turns on 1 whenever the junior is in the top 10% to top 50% of their cohort in the recruitment exam. The definition of $\overline{Exam}$ used in each case is descriped above the columns. Controls include cohort & month-year FE, 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 C7: **Do seniors use public info to promote meritocratically?**

Definition of $\overline{Exam}$=	**Dependent variable: Fast-track promotions**				
	Top10%	Top20%	Top30%	Top40%	Top50%
	IV	IV	IV	IV	IV
	(1)	(2)	(3)	(4)	(5)
$\overline{Power}$	-0.12	-0.12	-0.14	-0.13	-0.11
	(0.09)	(0.09)	(0.10)	(0.10)	(0.09)
$\overline{Power} \times \overline{Exam}$	0.13	0.01	0.05	0.04	-0.00
	(0.10)	(0.07)	(0.05)	(0.06)	(0.06)
$\overline{Exam}$	-0.04	-0.02	-0.02	-0.01	0.00
	(0.04)	(0.03)	(0.03)	(0.03)	(0.03)
controls	Yes	Yes	Yes	Yes	Yes
cohort, month-yr fixed effects	Yes	Yes	Yes	Yes	Yes
mean of outcome	0.31	0.31	0.31	0.31	0.31
person x mon	15911	15911	15911	15911	15911
cohorts	40	40	40	40	40

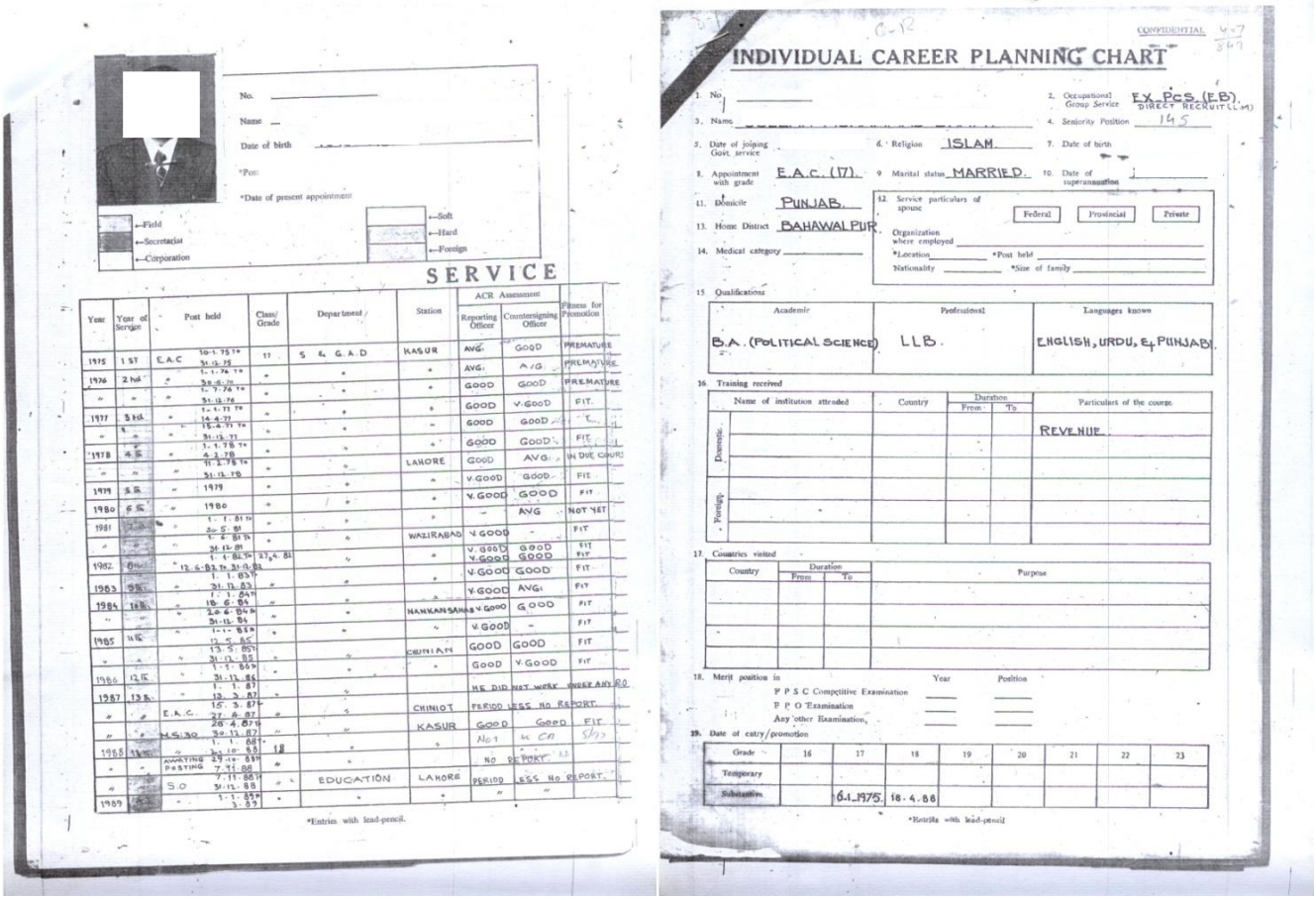
* p<0.1, ** p<0.05, *** p<0.01. Clustered standard errors in parentheses.
Notes: The unit of observation is a civil servant-month. Fast-track promotions is defined as a dummy that turns on one whenever the actual rank of the junior bureaucrat is higher than his or her official rank. Promotion power of seniors ($\overline{Power}$) is the monthly average official promotions of the first set of seniors. $\overline{Exam}$ is a dummy that turns on 1 whenever the junior is in the top 10% to top 50% of their cohort in the recruitment exam. The definition of $\overline{Exam}$ used in each case is descriped above the columns. Controls include cohort & month-year FE, 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 C8: **First Stage: Do seniors use public info to promote meritocratically?**

Definition of $\overline{Exam}$=	**Dependent variable: Fast-track promotions**				
	Top10%	Top20%	Top30%	Top40%	Top50%
	IV	IV	IV	IV	IV
	(1)	(2)	(3)	(4)	(5)
$\overline{Power}^p$	0.59***	0.58***	0.57***	0.57***	0.56***
	(0.08)	(0.08)	(0.09)	(0.09)	(0.09)
$\overline{Power}^p \times \overline{Exam}$	-0.11	-0.03	0.00	0.01	0.03
	(0.12)	(0.06)	(0.05)	(0.05)	(0.04)
$\overline{Exam}$	-0.01	-0.03	-0.02	-0.01	-0.02
	(0.04)	(0.03)	(0.02)	(0.02)	(0.02)
AP F Statistic-I	62	54	56	57	46
AP F Statistic-II	66	134	190	216	331
controls	Yes	Yes	Yes	Yes	Yes
cohort, month-yr fixed effects	Yes	Yes	Yes	Yes	Yes
person x mon	15911	15911	15911	15911	15911
cohorts	40	40	40	40	40

* p<0.1, ** p<0.05, *** p<0.01. Clustered standard errors 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. $\overline{Exam}$ is a dummy that turns on 1 whenever the junior is in the top 10% to top 50% of their cohort in the recruitment exam. The definition of $\overline{Exam}$ used in each case is descriped above the columns. Controls include cohort & month-year cohort, month-yr fixed effects, experience, experience squared, official rank of the junior, a dummy for field position, time trend of the first job. All specifications exclude first job.

Appendix D: Data



INDIVIDUAL CAREER PLANNING CHART

CONFIDENTIAL

SERVICE

Year	Year of Service	Post held	Class/ Grade	Department	Station	ACR Assessment: Reporting Officer	ACR Assessment: Countersigning Officer	Fitness for Promotion
1975	1 ST	E.A.C	17	S & G.A.D	KASUR	AVG	GOOD	PREMATURE
1976	2 nd	"	"	"	"	AVG	AVG	PREMATURE
"	"	"	"	"	"	GOOD	GOOD	PREMATURE
1977	3 rd	"	"	"	"	GOOD	V.GOOD	FIT
"	"	"	"	"	"	GOOD	GOOD	FIT
1978	4 TH	"	"	"	"	GOOD	GOOD	FIT
"	"	"	"	"	LAHORE	GOOD	AVG	IN DUE COURS
1979	5 TH	"	"	"	"	V.GOOD	GOOD	FIT
1980	6 TH	"	"	"	"	V.GOOD	GOOD	FIT
1981	[illegible]	"	"	"	"	—	AVG	NOT YET
"	"	"	"	"	WAZIRABAD	V.GOOD	-	FIT
1982	[illegible]	"	"	"	"	V.GOOD	GOOD	FIT
"	"	"	"	"	"	V.GOOD	GOOD	FIT
1983	[illegible]	"	"	"	"	V.GOOD	AVG	FIT
1984	[illegible]	"	"	"	NANKANSAHIB	V.GOOD	GOOD	FIT
"	"	"	"	"	"	V.GOOD	-	FIT
1985	[illegible]	"	"	"	CHUNIAN	GOOD	GOOD	FIT
"	"	"	"	"	"	GOOD	V.GOOD	FIT
1986	[illegible]	"	"	"		HE DID NOT WORK UNDER ANY RO		
1987	[illegible]	"	"	"	CHINIOT	PERIOD LESS NO REPORT		
"	"	E.A.C.	"	"	KASUR	GOOD	GOOD	FIT
"	"	M.S:30	"	"	"	NOT	K CN	S/D
1988	[illegible]	"	18	"	"	NO REPORT		
"	"	AWAITING POSTING	"	"	"			
"	"	S.O	"	EDUCATION	LAHORE	PERIOD	LESS NO REPORT	
1989	[illegible]	"	"	"	"	"	"	

*Entries with lead-pencil.

1. No. 1
2. Occupational Group/Service: EX PCS (E.B) DIRECT RECRUITEE (L.M)
3. Name
4. Seniority Position: 145
5. Date of joining Govt. service
6. Religion: ISLAM
7. Date of birth
8. Appointment with grade: E.A.C. (17)
9. Marital status: MARRIED
10. Date of superannuation
11. Domicile: PUNJAB.
12. Service particulars of spouse — Federal / Provincial / Private; Organization where employed; *Location; *Post held; Nationality; *Size of family
13. Home District: BAHAWALPUR.
14. Medical category

15. Qualifications

Academic	Professional	Languages known
B.A. (POLITICAL SCIENCE)	LLB.	ENGLISH, URDU, & PUNJABI.

16. Training received

	Name of institution attended	Country	Duration: From	Duration: To	Particulars of the course
Domestic					REVENUE.
Foreign					

17. Countries visited

Country	Duration: From	Duration: To	Purpose

18. Merit position in — Year / Position
PPSC Competitive Examination
PPO Examination
Any other Examination,

19. Date of entry/promotion

Grade	16	17	18	19	20	21	22	23
Temporary								
Substantive		6.1.1975.	18.4.88					

*Entries with lead-pencil

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

FEDERAL PUBLIC SERVICE COMMISSION
Aga Khan Road, F-5/1

Islamabad the 10th May, 2017.

PRESS NOTE

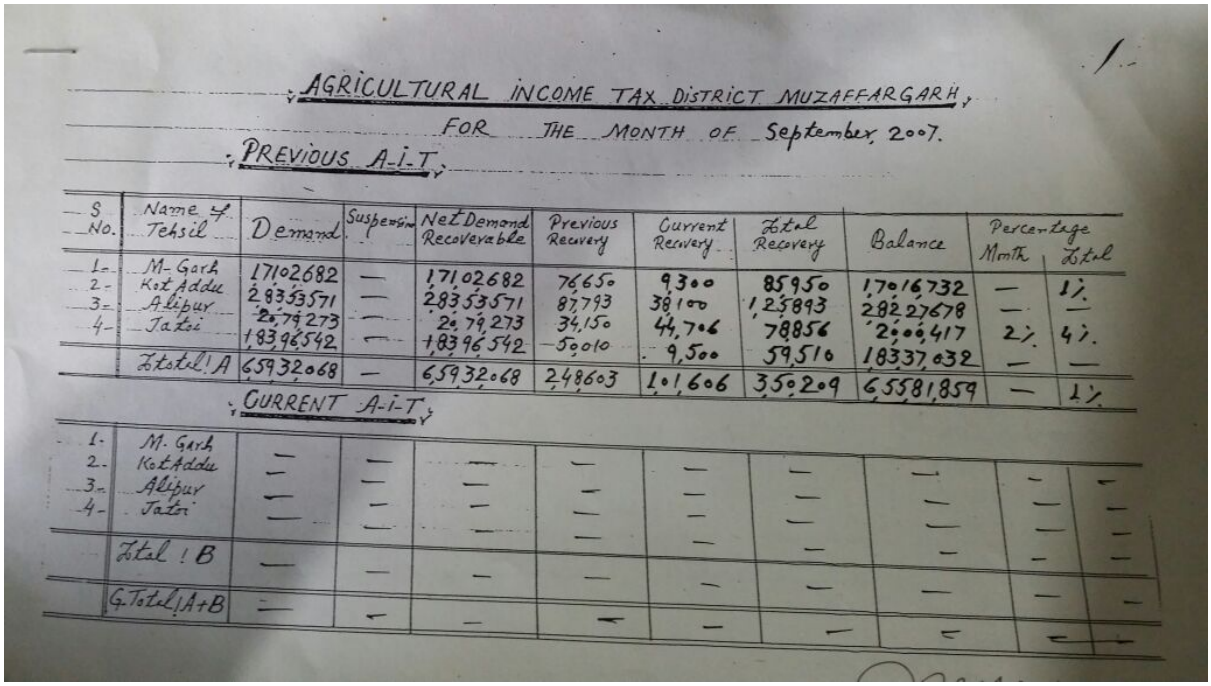
Subject: - **FINAL RESULT OF COMPETITIVE EXAMINATION (CSS), 2016 FOR RECRUITMENT TO POSTS IN BS-17 UNDER FEDERAL GOVERNMENT**.

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

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



AGRICULTURAL INCOME TAX DISTRICT MUZAFFARGARH,

FOR THE MONTH OF September 2007.

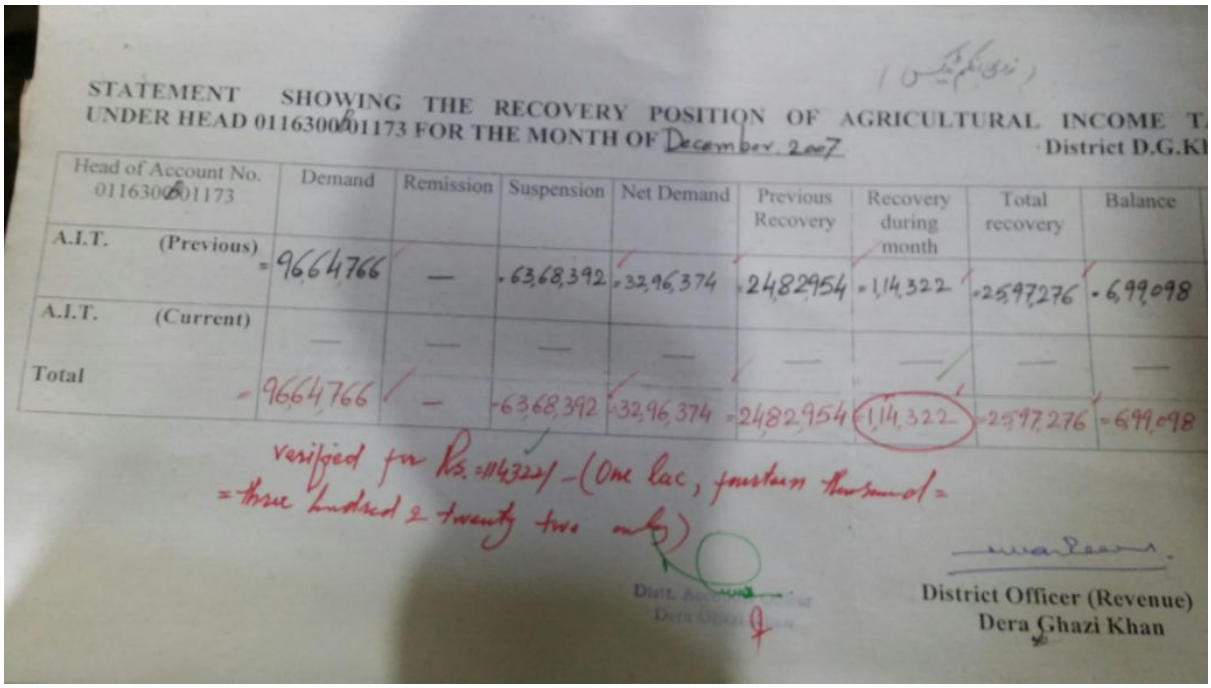
PREVIOUS A-I-T.

S No.	Name of Tehsil	Demand	Suspension	Net Demand Recoverable	Previous Recovery	Current Recovery	Total Recovery	Balance	Percentage Month	Percentage Total
1-	M-Garh	17102682	—	17102682	76650	9300	85950	17016732	—	1%
2-	Kot Addu	28353571	—	28353571	87793	38100	125893	28227678	—	—
3-	Alipur	2079273	—	2079273	34150	44706	78856	2000417	2%	4%
4-	Jatoi	18396542	—	18396542	59010	9500	59510	18337032	—	—
	Total A	65932068	—	65932068	248603	101606	350209	65581859	—	1%

CURRENT A-I-T.

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

Figure D4: The BOR tax collection pro forma



STATEMENT SHOWING THE RECOVERY POSITION OF AGRICULTURAL INCOME T
UNDER HEAD 01163000101173 FOR THE MONTH OF December 2007
District D.G.K

Head of Account No. 01163000101173	Demand	Remission	Suspension	Net Demand	Previous Recovery	Recovery during month	Total recovery	Balance
A.I.T. (Previous)	9664766	—	6368392	3296374	2482954	114322	2597276	699098
A.I.T. (Current)	—	—	—	—	—	—	—	—
Total	9664766	—	6368392	3296374	2482954	114322	2597276	699098

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

District Officer (Revenue)
Dera Ghazi Khan

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 E: Figures

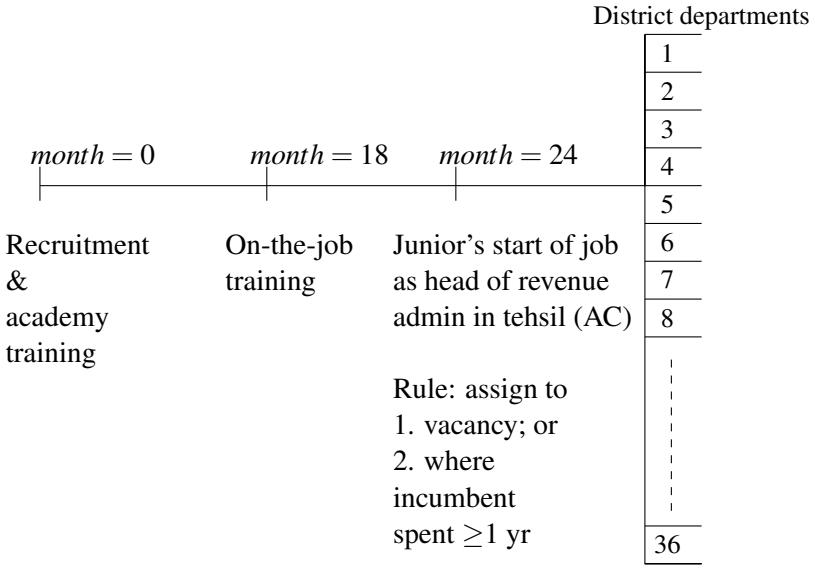


Figure E1: Timeline of the initial career of PAS newly recruited juniors

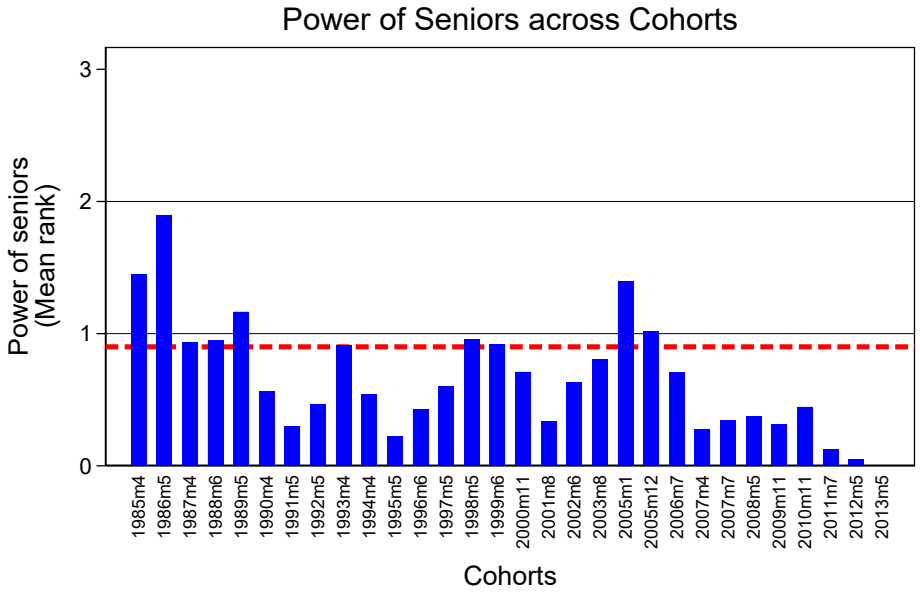


Figure E2: Variation in promotion power of seniors across cohorts. Red dotted line is the mean power of seniors.

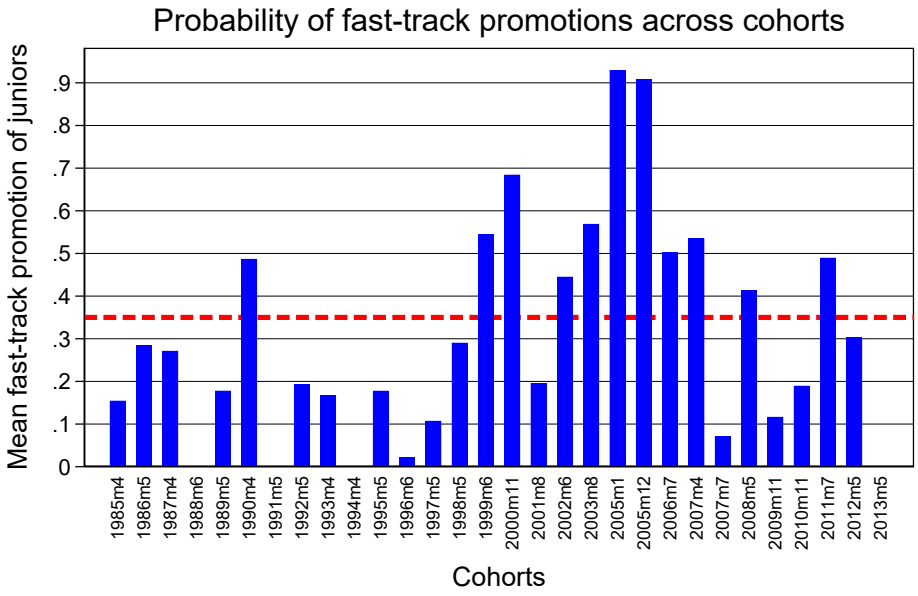


Figure E3: Variation in fast-track promotion of juniors across cohorts. Red dotted line is the mean of fast-track promotions.

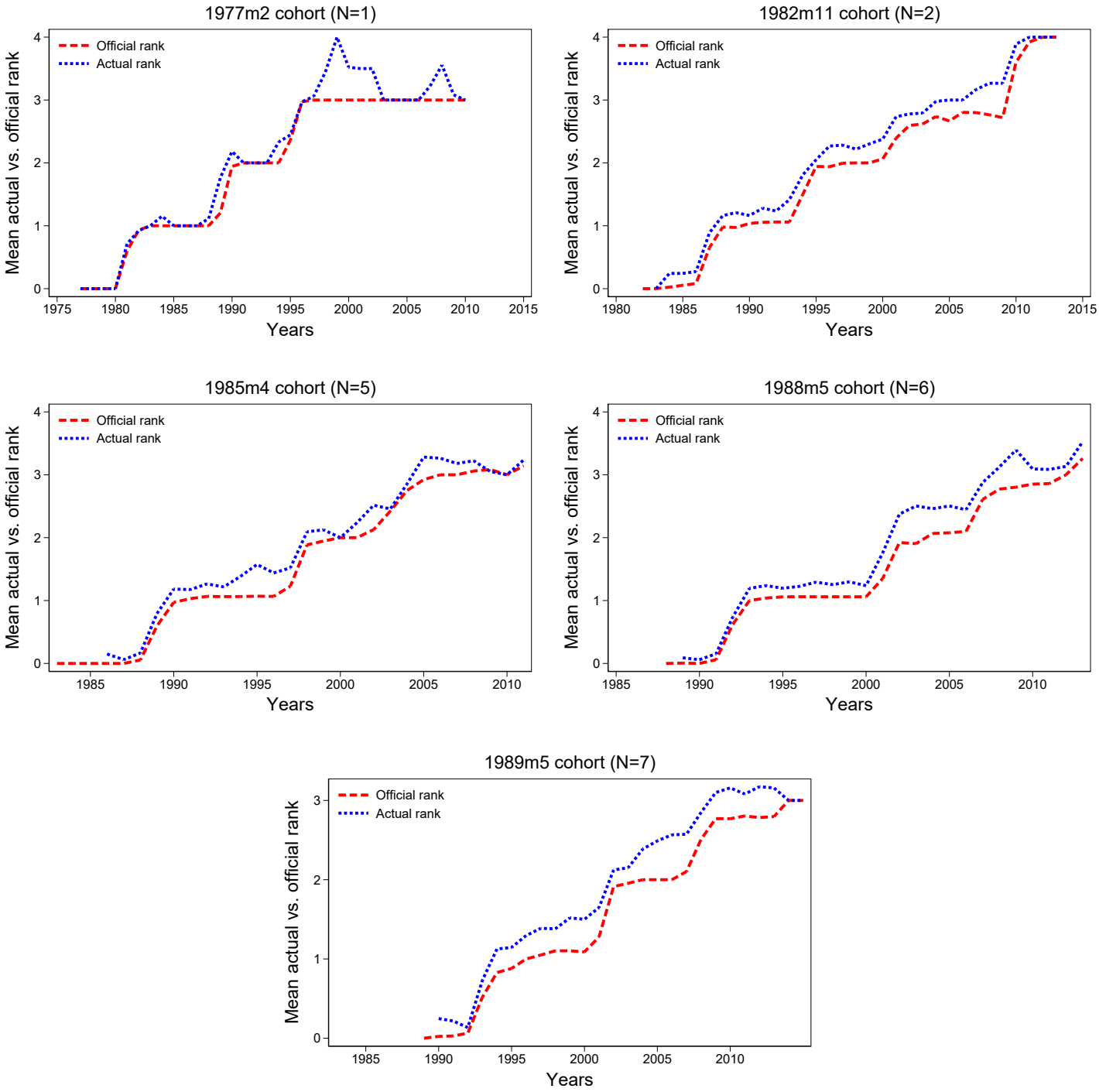


Figure E4: Actual vs. official rank: The blue line is the actual rank of a cohort while the red line is their official rank. Official rank is based on official promotions. Actual rank can differ from official seniority at the discretion of senior civil servants and chief executive of the province.

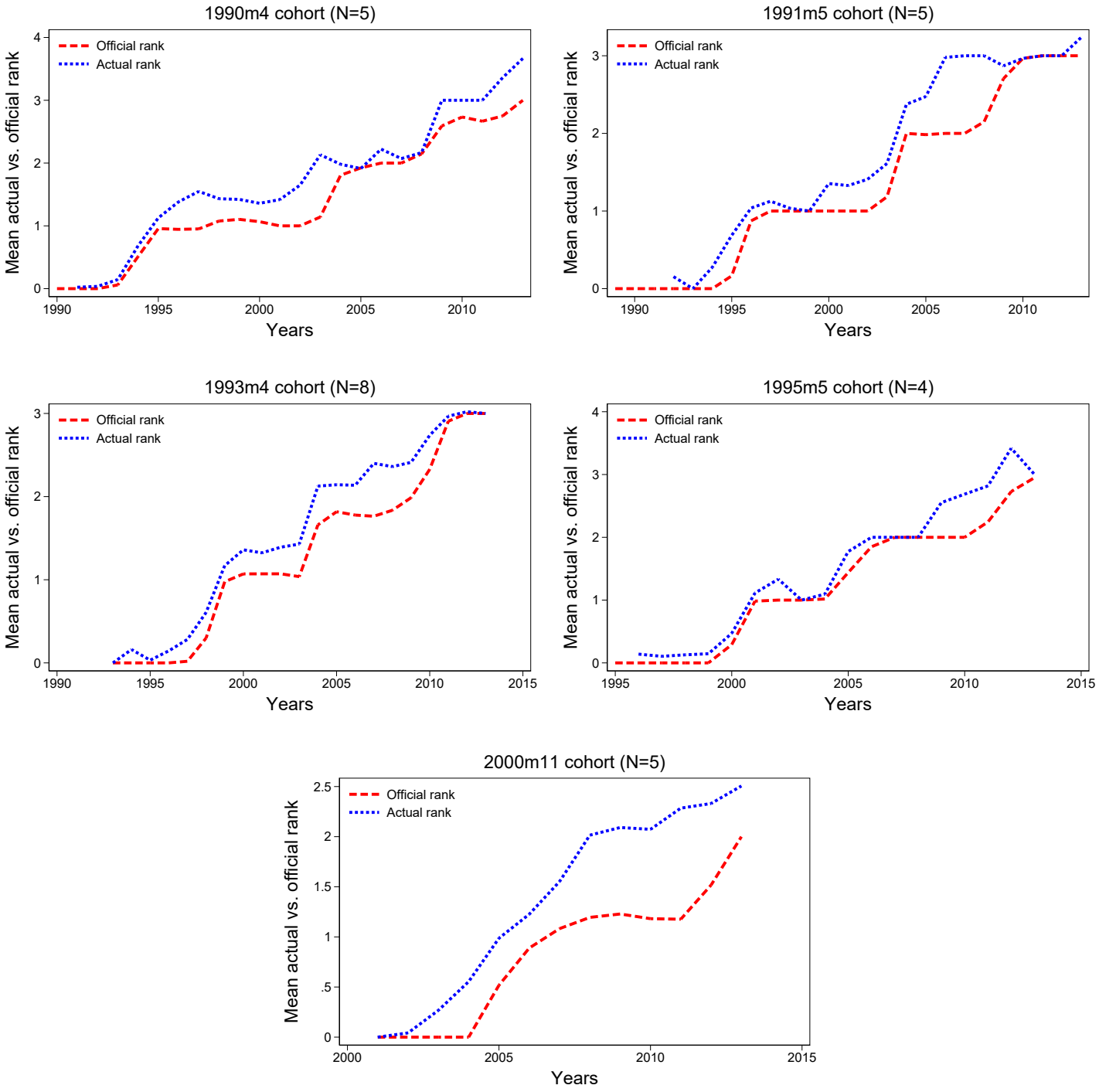


Figure E5: Actual vs. official rank: The blue line is the actual rank of a cohort while the red line is their official rank. Official rank is based on official promotions. Actual rank can differ from official seniority at the discretion of senior civil servants and chief executive of the province.

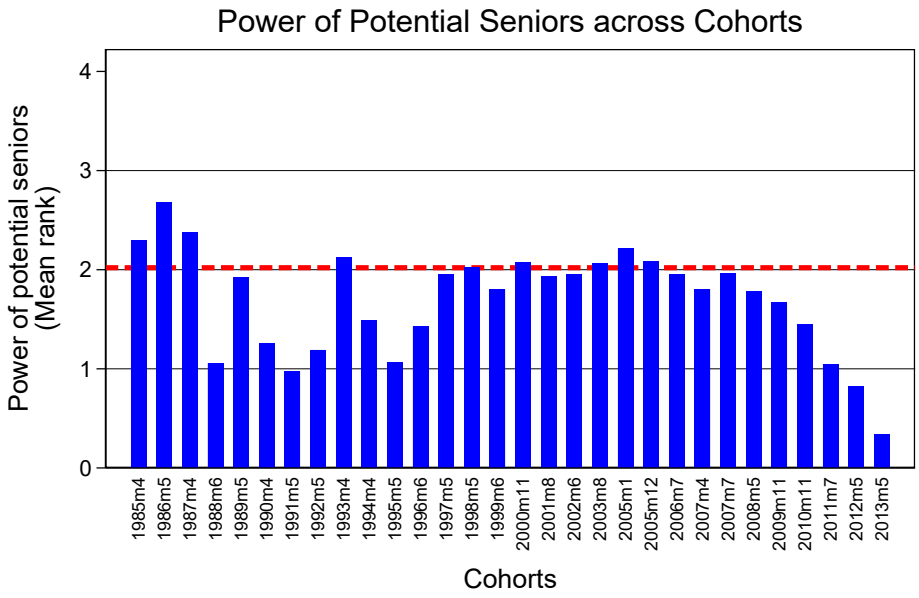


Figure E6: Variation in promotion power of potential seniors across cohorts

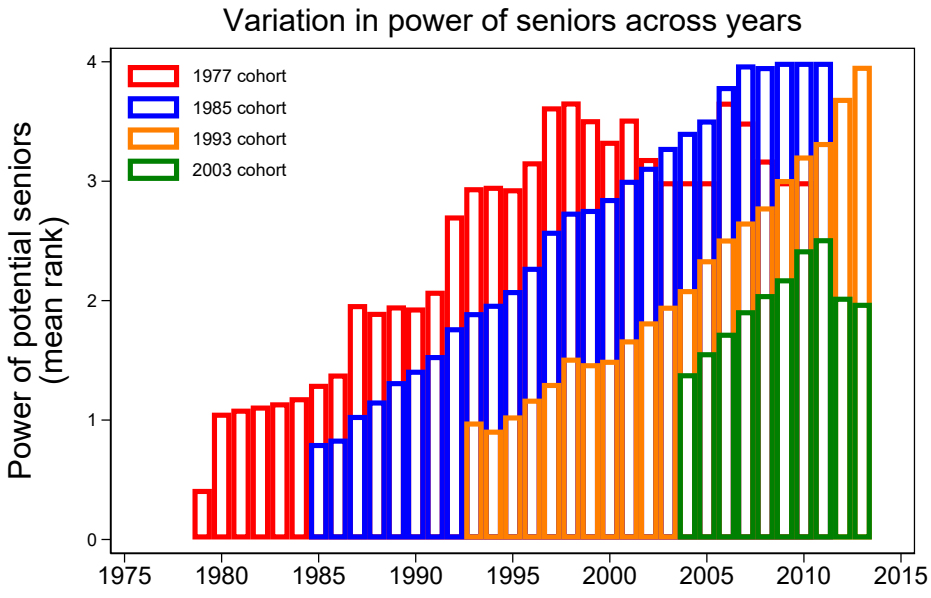


Figure E7: Time variation in promotion power of potential seniors

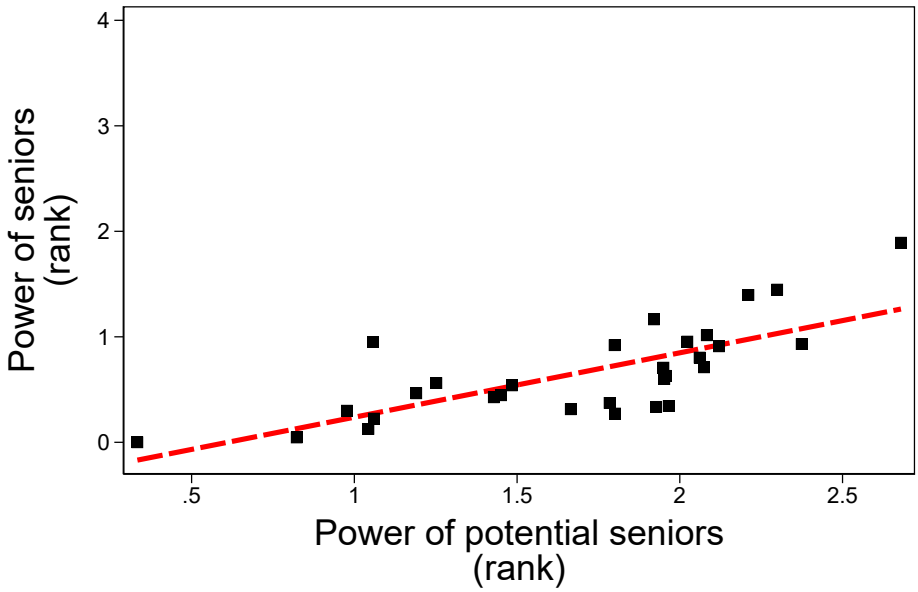


Figure E8: Cross sectional correlation between promotion power of potential and actual seniors